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eye-ease and beauty
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Write for completely descriptive folder
Despite all protests, Congress votes $12 million to alter Capitol facade

After House and Senate action last month added $12 million more to the $5 million voted last year to move the central eastern facade of the Capitol forward 40', it looked as if this needless boondoggle, which would destroy an invaluable American architectural heritage, would be hard to stop.

About the only prospects for reversing enacted law now depended on an aroused public opinion to persuade either of two small, powerful groups to rise above themselves and veto or halt the project. One group was the Architect of the Capitol. Stewart, a former Congressman, who would last year. Unfortunately, Architect of the Capitol J. George Stewart, who would act as a general contractor appointed to assist "in determining the proper architectural treatment of the East Front" (AF, June '56, News), which conceivably could recommend that this part of the over-all project be dropped. This committee is not scheduled to report before fall. The other group was the "client"—the Commission for the Extension of the Capitol, composed of the Vice President, the Speaker of the House, the Senate and House minority leaders, and the Architect of the Capitol.

How Congress Erred. In the confused and sometimes somewhat Machiavellian situation surrounding the controversial proposal to alter the East Front, two important factors stood out:

Most Congressional action had been hasty, and without the benefit of very much authoritative advice. It held no public hearings on the prime legislation last year. Unfortunately, Architect of the Capitol J. George Stewart, who would supervise the project and was the principal Government agency spokesman on behalf of the legislation, is not an architect. For 1955 legislation, the bill that also appropriated Congressmen's salaries and expenses for the extension was supposed to supply.

The Senate report revealed that AIA's National Committee more than a year ago prepared a report in favor of the alteration, as the agency man in charge of all the Capitol grounds and buildings. He neglected to tell the committee of some important opposition of the critical judgment of Washington and Jefferson. The committee was ready to spend, and being no architect he was short of acumen in finding or developing some acceptable and much less expensive means to provide the creature comforts Congressmen desired, a restaurant and more hearing rooms that the extension was supposed to supply.

A Mixed-up AIA. From testimony at Senate subcommittee hearings released last month, and other sources, there emerged a story of the dilemma that plagued officials of AIA's Octagon and largely accounted for AIA's confusing and hardly effectual role while the controlling legislation was being enacted last year and this.

The Senate report revealed that AIA's National Capital Committee more than a year ago prepared a report in favor of the alteration. But this was never adopted or became official policy. The 1955 Minneapolis convention, in fact, emphatically repudiated any alteration proposal. At that, Sen. D. Stewart exploded, suggested that Purves apologize to the committee for purporting to testify about the position of an organization, but then claiming its committee's special study of the project under review was secret. "One of the most unusual things I have heard of... so anything you may say would have no weight with me," said Bridges.

Chairman of this AIA committee was former President Glenn Stanton of Portland, Ore. Other members, up to the 1956 convention, were John Graham Jr., Falls Church, Va.; Kenneth Wischmeyer, St. Louis; Dana B. Johannes, Silver Spring, Md.; Branch E. Elam, Washington; and alternate, Frank Duane, Silver Spring, Md.

Ironically, this committee also seemed out of order in ever considering the Capitol alterations at all. Another AIA Committee, on Preservation of Historic Buildings, is specifically charged with "matters concerning the preservation of individual buildings of historic importance in Washington, D. C." Despite this, and despite the convention resolution, Stanton continued to lobby actively in Washington for the East Front alteration.

Late in June, AIA's new president, Leon continued on p. 12
Lexsuco roof construction with Koroseal vapor barrier classified fire retardent

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FACTORY MUTUAL, after a series of tests, classifies the Lexsuco roof vapor barrier and securement constructions fire retardent with a Class 1 rating. Here is what Factory Mutual says in their report:

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2. READY FOR THE FIXTURES • The UNI-RACE in place showing the built-in receptacles at 48” intervals. While the building is under construction, it will serve as a source of power for tools and temporary lighting.

3. SNAP—AND IT’S UP! • When the painters have left, the fixtures can be delivered to the building and snapped into place as fast as they are unboxed. Each fixture has a built-in plug which engages the receptacle in the UNI-RACE. Fixtures align themselves automatically.

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Jefferson's Virginia State Capitol gated the situation in preparing a roundup by Congress in its haste to adjourn last August. The people own the Capitol. We suspect not own the Capitol, but only lives in it. "Careful with that Facade. Congress does not own the Capitol, but only lives in it. The people own the Capitol. We suspect that in matters architectural, the people would rather listen to the American Institute of Architects than to Congressmen." St. Louis Post-Dispatch.

"Monumental Folly. Maybe we lack the esthetic perception of our Congressmen, but to us that Capitol looks as though it would be more harmed than helped by tampering . . . Put that [$17 million] back in the kitty and leave the Capitol Building as it is, is what we say." Detroit Free Press.

"Leave the Capitol Alone. The recent appropriation of $12 million by the House, for alterations to the east front, lacks the popular support that so radical a project requires . . . All in all, the east-front alteration project looks like a waste of money. It should be abandoned." New York Herald Tribune.

"Spare the Capitol! We think the U.S. public will have a hole in its head if it doesn't rise up in wrath to stop this botation." LIFE.

Central East Front of Capitol designed for Jefferson by famed Architect Latrobe, built by famed Architect Bulfinch in time for Jackson's inaugural, and never changed since, is what Capitol Boondoggle Operation would tear down, rebuild further forward to new designs. Purpose: to make room behind it for corridors etc. which expert opinion says that careful re-planning could regain, for a fraction of the cost, inside present building. East Front extension would eliminate the recessed forecourt, used as splendid historic setting for inaugurations of all presidents since Jackson. (See photo, p. 9.)

Proponents cite textbook "error" of composition which Architect Walter, who completed today's enlarged dome after Civil War, intended to "correct" later (dome too far forward on base). Yet today's top critics like Joseph Hudnut say history has proved that Walter's "temporary expedient" was really an inspired accident which gave Capitol Front a beauty and character unique in world architecture. "A cascading tumult of columns from top to base," LIFE calls it.

No architect or critic has opposed giving Congress its practical needs or beautifying forecourt. Opposition is only against East Front extension. Comments of some leading architects: "Object very strongly . . . I think it is cannibalism of the worst kind for any architect to try to change the character of the Capitol. The dome will be less dominant from the east court and be diminished in its esthetic effect. Let's stop the outrages," Ralph Walker.

"The Capitol has been saved by wary birds . . . Silhouette had long ago been recognized as portraying personality even to far distant onlookers. Close-by experts also better beware of plastic surgery for shortening from below a cherished face by a brand-new protruding chin." Neutra. of the Capitol.

"History has harmonized a thousand imperfections in the United States Capitol. We would do well, I think, to leave this building in the hands of that ingenious architect. Besides, we should then spare our descendants the trouble of improving our improvements," Joseph Hudnut.
Elevated ‘shoppers plaza’ proposed to revitalize downtown

Minneapolis business and civic officials were studying last month a fairly simple, presumably inexpensive and certainly provocative proposal for giving their central downtown shopping area a new type of merchandising “sex appeal.”

The idea: an elevated, enclosed, heated and air-conditioned “shoppers’ plaza” extending four blocks along busy Nicollet Ave., with entrances to buildings on each side of the avenue at second-floor level. The principal sponsor: Leslie G. Park, president of Baker Properties, Inc., one of the city’s largest downtown owners.

Park first outlined his plan before the development committee of the Downtown Council, of which he is a member. This council was formed about a year ago to bolster and stimulate downtown shopping, business activity and general improvement of the downtown area.

Costs, advantages. According to Park, this doubling of street area would cost about $1 million per block and could easily be financed through city bonds amortized from levies against benefitted property owners. He also suggested that the city could lease the facility to the Downtown Council to operate, and the council could cover operating expenses out of rentals from various lessees in it.

Multistory department stores occupy three full blockfronts of the proposed Minneapolis plaza, said Park, and there are only a few other stores that do not have second floor space available to give them plaza access. Under a plan to route all city buses through Nicollet Ave., making this a sheltered mass transportation loading and unloading concourse, he explained, merchants with only ground floor facilities would still get the benefits of a large, important pedestrian traffic past their doors.

Besides its relative economy, compared with more elaborate downtown conservation schemes proposed in many other cities, Park listed these other features and advantages for his plan:

- Escalators to the plaza at all cross streets, and plantings inside that could give the plaza a landscaped effect unobtainable without such a plaza.
- Overhead lighting almost as powerful as daylight would serve traffic driving under the 14’ high plaza. Both street and plaza would be freed of any snow problem. It would simply stay on the plaza roof.

After discussing his idea with merchants and engineers, Park had Larson & McLaren, Minneapolis architects, draw sketches to illustrate it. They studied downtown improvement plans proposed recently for Ft. Worth, Tex., Los Angeles, and San Francisco and other cities, in most cases felt costs for most other kinds of plans would be relatively prohibitive when contrasted with what Albert O. Larson called “the simple practicability of the plaza.”

NEWS continued on p. 16
New! **Vulcan LINOVENTILATOR**

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The LINOVENTILATOR System meets the exacting requirements for schoolroom heating-ventilating as established by recognized authorities. It now places heating-ventilating (heretofore impossible because of high cost) within the reach of many more school budgets.

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NEW BUILDINGS

A Roundup of significant proposals and completions

AIRPORT HOTEL

Idlewild International Terminal in New York will include this Y-shaped hotel structure designed by New York Architect William B. Tabler & Associates. The front, slightly angled portion of the Y, to be built first, will contain 320 guest rooms on its five upper floors; dining room and cocktail lounge on the ground floor. A future wing with another 160 rooms will complete the Y in the rear. Fully air-conditioned structure will have bright, white brick exterior, double-glazed windows that will also help keep out airplane noises. Knott Hotels Corp. will operate the $4 million project after its completion by Nov. '67.

PHYSICAL ED BUILDING

This interesting structure for the University of California Santa Barbara College will have an exterior of cinnamon-colored, modular cement blocks that will harmonize with existing campus buildings. Plans stress flexibility and provisions for expansion. The gymnasium will be able to accommodate 3,800 spectators in demountable bleachers. Pereira & Luckman are architects for this $1.8 million, 75,000 sq. ft. structure.

ADULT EDUCATION CENTER

The University of Georgia in Athens, Ga. will soon have a 450-seat hexagonal auditorium (1) and a five-story hotel and restaurant wing for 300 persons (r). Its two-story academic section will consist mostly of conference and seminar rooms. Without any fixed curriculum, the center will conduct a flexible, experimental program of institutes, seminars and short courses on any subjects in which a sufficient number of people display an interest. Architects for this unusual $2.5 million complex, the Georgia Center for Continuing Education, are Stevens & Wilkinson, of Atlanta.

WOMEN'S QUADRANGLE

For the University of Chicago Eero Saarinen & Associates have designed three four-story dormitory units to accommodate 516 students which will be linked to a central entrance, visitors' lounge and dining hall building. Ground for the $3.2 million project was broken last month, and an application has been made for a $2 million federal loan toward its cost under the College Housing Loan program of the HHFA.
CONCRETE TOWER
The first skyscraper for Charlotte, N.C. will be this multi-colored 15-story Wachovia Bank & Trust Co. structure designed by Harrison & Abramovitz of New York and A. G. Odell & Associates of Charlotte. Stone will cover the four-story base of the $5 million building. Tower portion will be sheathed with prismatic precast concrete panels impregnated with varicolored stones. Elevators and utilities will be housed in a separate shaft section connected to office space by tinted-glass corridors.

GLASS-AND-WOOD LODGE FOR YELLOWSTONE PARK
Los Angeles Architect Welton Becket has designed a group of timber-glass-and-stone buildings for Yellowstone Park, which has been swamped by an increasing number of visitors each year, swelling in 1955 to 1,350,000.

Becket's additions to the present 3,128-room facilities consist of motel buildings clustered in groups of six or eight, laid out to take advantage of the Park's terrain; also two larger service buildings (see cuts) which are about as simple in structure as a building can be. Each is in effect a pitched roof, carried to the ground, partially sheathed, combining support and structure and producing an almost column-free interior.

The new main lodge, 320' long, will contain dining facilities, kitchens, tourist services (photo shops, etc.), and a cocktail lounge, and, on a lower level, maintenance shops, beauty salon, barber shop and employee quarters.

EXPENDABLE WALLS
The floor-to-ceiling windows in this circular hurricane- and earthquake-proof bank in Puerto Rico will not be boarded up during tropical storms; they will simply be replaced. Ground floor interior will be designed to withstand wind and water without ill effects, while valuable papers and documents are stored in the waterproof windowless basement. In the back will be tellers' windows for drive-up banking as well as parking space for patrons. The air-conditioned building in Hato Rey for Banco Popular de Puerto Rico was designed by New York Architect Chauncey W. Riley.

NO WINDOWS AT ALL FOR HOUSTON RESERVE BANK
In contrast to Skidmore, Owings & Merrill's AIA-First Honor Award all-glass, meet-the-public bank for the Manufacturers Trust Co. in New York (AF, Dec. '54), this new four-story home for the Federal Reserve Branch bank in Houston will be entirely windowless.

Architects for this $2.1 million, 90,000 sq. ft. reinforced concrete structure are Golemon & Rolfe with Phelps & DeWees & Simmons, of San Antonio as consulting architects. First floor exterior of the air conditioned building will wear dark granite, upper floors light-colored granite or limestone. All utilities will be housed on second floor, and design will allow future addition of five more floors. Site on fringe of downtown area in path of accelerating department store and business expansion, includes parking space for 68 cars.

NEWS continued on p. 21
No puffery is intended, but...

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Zeckendorf outlines new projects; annual report helps clarify policies

Radiating optimism at the release to the press of his company's 1955 annual report, Webb & Knapp President William Zeckendorf gave details of some of the newest continent-wide reality, redevelopment and building programs he has started nurturing.

With this latest report and his press conference remarks, Builder-Developer Zeckendorf also helped observers gain a little better insight into the objectives of W&K operations and made a little less puzzling what he himself has called its "labyrinthian balance sheet."

New Louisiana city? Elaborating on his recent acquisition of control of almost 25,000 acres between New Orleans and Baton Rouge, ebullient Entrepreneur Zeckendorf disclosed that he may eventually develop an entire new "city" on some of the land. This property was formerly sugar plantation land of Godchaux Sugars, Inc., in which W&K has bought 85% stock interest. It includes Mississippi River frontage that has "especially great potential for heavy and light industry," in an area that has already started to experience considerable industrial development. Parts of it are also astride the New Orleans-Baton Rouge Airline Highway and would be suitable for residential development—and a good portion of its profits from the sales or disposal of its capital assets, to boot—before doing its duty by the Internal Revenue Service.

In essence, the firm apparently escaped federal income taxes on all of its property operation profits. And with capital gains deductible against administrative or operating deficits, it paid capital gains taxes on only a portion of those profits. Thus W & K are in the forefront among those who have reshaped the old New Deal recession insurance. Tipping his hat to the firm's urban redevelopment project for Montreal.

Recession insurance. Tipping his hat to the possibility of economic squalls sometime, Zeckendorf said W&K has pursued a course to avoid "overburdening liabilities in the event of deflation." Its policy of "embracing upon unusual urban redevelopment projects" in various cities, he added, "is in part a hedge against the possibility of a recession. The scope of these projects is such that they would in all probability be viewed as essential "pump priming" operations by government authorities seeking to stimulate business activities, and it might be expected that money would be more readily available and at lower rates during a period of general business slackness."

Spending or be taxed. Should congressional tax-law writers ever consider whether the 53% corporation income tax rate is self-defeating, Zeckendorf could make a witness of undisputed authority. He exemplifies the shrewd businessman-taxpayer who has reshaped the old New Deal threat of "spend and spend and spend; tax and tax and tax" into the latter-day taxpayer's maxim of "spend and spend and spend, to reduce your taxes and reduce your taxes and reduce your taxes."

In this respect the W & K 1955 annual report discloses that for the third successive year thriving, prospering W & K spent all its profits from its vast property operations—and a good portion of its profits from the sales or disposal of its capital assets, to boot—before doing its duty by the Internal Revenue Service. In essence, the firm apparently escaped federal income taxes on all of its property operation profits. And with capital gains deductible against administrative or operating deficits, it paid capital gains taxes on only a portion of those profits. Thus W & K are in the forefront among those who figure it may often be wise to spend a $1 capital gain the year it is earned, rather than husband the $754 from it that Internal Revenue allows a savings-minded person or corporation to retain.

Highlights from the 1955 report, in conjunction with comparable data from '53 and '54 statements:

> Profits from disposal of capital assets in 1955 were $7.2 million; profits from property operations another $3.0 million. But after spending all property operation profits, and $512,000 from capital profits, net income before federal taxes was only $6.7 million.

> For the three years, 1953-55, profits from disposal of capital assets totaled $16.2 million, and profits from property operations were $5.2 million. After spending all property operations profits, and $4.2 million of capital profits, total net income before federal taxes over the three years was reduced to $12 million. (Zeckendorf statements to discourage anyone who might attach excessive importance to this recurring contraction in net income: "We are dealers in income producing properties. Our liquidating value is more interesting to us, and of far greater importance than per-share earnings." W & K properties, he has said, should be viewed "not as things we use, but as things for sale.")

> Provision for federal income taxes in 1955 was $1,599,000, or 23.8% of before-tax income. For the three-year period provision for federal taxes was $1,699,000, or 14.1% of its before-tax income.

Good-by $8,250,000. At his press conference Zeckendorf also clarified a statement in the 1955 report that he had agreed to waive $8,250,000 of his personal cumulative preferred-stock dividends through 1957 in conjunction with an agreement by Robert R. Young's Allegheny Corp. to lend W & K $20 million, through the purchase of 5%, 15-year debentures. This would be a "permanent" waiver, not a temporary waiver or deferral until 1958.

On paper, $8,250,000 looked like a very stiff personal premium for him to pay for a $20 million 5% loan for his firm. Yet it was probably truly more blessed for Zeckendorf to give than to receive in this case, and charity its own handsome tax reward.

By waiving these dividends the equity, liquidation value of the 20 million outstanding shares of Webb & Knapp common stock (5.9 million owned by Zeckendorf himself) automatically rose 264 each, as Zeckendorf illustrated with a chart in the 1955 report. Moreover, the firm also escaped the need to earn the far greater "before taxes" income it would have had to produce and retain to meet this obligation. And besides, even if $8,250,000 was brought through W & K, and Internal Revenue, to Zeckendorf personally, only a small portion of that could be expected to survive the second bout with the Revenue on personal income taxes.

NABOM office space survey shows first upturn since 1952

Office building occupancy showed its first upturn since May '52 in the semi-annual national survey by the National Assn. of Building Owners and Managers as of May 1. Over the last four years occupancy had shown a very slight but steady decline, to a national average of 96.56 last October. But in May it registered a marked recovery to 96.88, or a 3.12% continued on p. 25

BOCA re-elects Rutherford; McCormick on executive unit

At the annual convention of the Building Officials Conference of America in Hartford the nation's two top code association officers worked in concert, installing BOCA President Arthur M. Rutherford (1 of West Hartford) on a second term was C. G. McCormick, of Tacoma, a new member of the BOCA executive committee. McCormick is president of the former Pacific Coast Building Officials Conference, which effective this month, because membership now covers 800 cities in 40 states, Alaska, Hawaii and Canada, has been renamed the International Conference of Building Officials, BOCA voted to hold its 1957 convention in New Orleans.
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vacancy. This gain was the more remarkable when balanced against a decrease in the government tenancy, which dropped from 8,025,000 sq. ft. in October to 7,760,000 sq. ft. in May, and declined from 5.98% to 5.25% of total occupancy.

The latest market survey by NAREB also reflected stronger office rental conditions, with 72% of reporting communities registering vacancies of 2% or less, 18% vacancies of 3% to 5%. Higher rents than a year ago were reported by 31% of reporting communities; unchanged rates in 60%; lower rents in only 9%.

New York's phenomenal office construction was continuing unabated. In the uptown area, Pepsi Cola bid $2 million (or $160 a square foot) when the city auctioned off its old Board of Education headquarters at Park Ave. and 59th St. last month. Skidmore, Owings & Merrill would be its architects for a "prestige" headquarters it would erect on the site, but it was still undecided whether to include rental space in the building.

New York's downtown, Wall St. area also was witnessing an upsurge. At Wall and William Sts., Metropolitan Life announced it would build a 27-story, 370,000 sq. ft. structure by Voorhees, Walker, Smith & Smith for two major bank and insurance company tenants. A block away at Wall and Pearl Sts., the Franklin Atlas Corp. announced a new 33-story, 248,000 sq. ft. tower designed by Lama, Proskauer & Prober. After a previous deal had bogged down in litigation, a new investing group headed by Realtor Charles F. Neyes and embracing the Vincent Astor, Jeremiah Milbank and Lazard Freres interests completed arrangements to erect a $25 million 800,000 sq. ft. structure on the site of the present Produce Exchange at 2 Broadway, which may be increased before it is started to 1,200,000 sq. ft.

Zorach panels rejected by Texas bank; Calder, Noguchi to do UNESCO works

Architectural sculpture and sculptors made news in several ways last month:

- Conspicuous by their absence at dedication of the new $16 million Bank of the Southwest in Houston were three large, high-relief panels it had ordered from Lithuania-born Brooklyn Sculptor William Zorach, 69-year-old dean of US sculptors. In an "amicable settlement" the bank had rejected the final works, paying "in the neighborhood of $50,000" on its $124,755 contract, by its own account, but $110,000, according to a statement by Zorach.

- Board Vice Chairman L. R. Bryan Jr. denied there were any "political implications" in its rejection although Zorach was one of four artists accused of Communist leanings earlier this year by a Dallas citizens' group—a charge he vigorously denied. Bryan said the panels were rejected because they would have been unsuitable after the bank changed its name, having previously been called the Second National Bank of Houston, and also because they would be "too modern" for the new aluminum and granite structure.

- Zorach said the works were 80% cast, in aluminum with polished silver finish, when rejected. He scoffed at the bank's name reason, said the panels depict the history of Texas allegorically and would be suitable for any Texas bank. One panel, to go over the main entrance was 30' x 32' and two panels for side entrances 10' x 12' each. In Houston, Architect Kenneth Franzheim, designer of the building had "no comment," but Zorach reported him "shocked" by the rejection, and said he was endeavoring to have the bank change its mind on the matter, or find another place for the panels.

- Given commissions to decorate the UNESCO headquarters under construction in Paris were Sculptors Alexander Calder and Isamu Noguchi from the US, Henry Moore of Britain, and Jean Arp of France, and Spanish-born painters Pablo Picasso and Joan Miro. For a "delegates' piazza" Noguchi will create a twentieth-century garden echoing traditional Japanese motifs (including pools using water from the air-conditioning system). Joining this piazza he also will design a sunken garden, including a Calder mobile. Briton Moore has been asked to design a "monumental" work to stand on a grass island before the structure's main entrance, and Arp a low relief work for a large library wall. Picasso will paint a 1,100 sq. ft. mural for the main conference hall wing. Architects for the building are Marcel Breuer of the US, Pier Luigi Nervi of Italy, and B. F. Zehrfuss of France (AF, June '63).

To help architects give clients a "general idea" of costs for sculptural decorations before a project is undertaken, the National Sculpture Society has distributed a handy do-it-yourself gimmick which reveals the Society's scale of recommended fees for preparing plaster models for statuary and bas reliefs and for executing such models in stone or bronze (see cuts). The rates were established in cooperation with carvers and bronze casters. The society noted that these charts for architectural sculpture "by the foot" were based on averages of fees quoted by a number of sculptors, foundries and carvers for typical jobs and warned actual prices will "vary according to individual sculptor's ability, reputation and experience"—a prudent qualification!

ZORACH WITH MODELS OF UNUSED RELIEFS

This is table supplemented with another chart on recommended rates for bronze and limestone statues, by heights. At 5' bronze runs just over $1,000, stone just above $3,000, but this cost gap gradually narrows, at 10' both are about $17,500.

For news about trends—p. 29
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BUILDING VOLUME: Nonresidential outlays $845 million ahead of 1955—thanks to industrial, commercial booms

Big building was taking the spotlight as the economic hero of 1956—developing into a billion-dollar lifesaver that was butressing business activity against the declines in autos and home building.

An analysis of construction expenditures estimates of the Commerce and Labor Depts. for the first five months of the year (see table) showed a drop of $476 million in residential construction, compared with 1955 spending. To offset this decline, and push total January to May outlays $569 million ahead of those a year ago, nonresidential construction registered a husky, prosperity-sustaining $845 million advance over '55 outlays.

Commercial, industrial booms. At a midyear business outlook symposium of the US Chamber of Commerce last month, AGC Executive Director James D. Marshall reiterated his organization's prediction that 1956 construction outlays will set another all-time record of about $44.5 billion, or roughly 4% above 1955 spending. Commerce and Labor officials concurred.

Private commercial and industrial building, and highways and state and local public works "are emerging as the giants of nonresidential construction this year," said Marshall. Last December AGC predicted nonresidential expenditures this year should approach $28 billion, he predicted, nonresidential expenditures this year, "will register a husky, prosperity-sustaining $845 million advance over '55 outlays.

Private commercial and industrial building, and highways and state and local public works "are emerging as the giants of nonresidential construction this year," said Marshall. Last December AGC predicted nonresidential expenditures this year should approach $28 billion, he recalled, but now it appears they will probably go another $1 billion above that.

Private industrial building outlays have been running 25% ahead of 1955 spending (see chart), and according to Marshall should pass the $3 billion mark for the full year. Commercial construction, running 23% ahead of 1955, and likely to step up even more during the summer, may climb as high as $3.8 billion.

Public construction gains. While federal construction spending has been contracting sharply, state and local public works projects have been soaring, with total public expenditures for January-May 6% greater than a year ago. Outlays for public industrial building (mostly atomic energy facilities) are trailing 1955 spending by 57%, and public hospital and institutional spending down 14%. But a marked increase in highway construction in May sent outlays for that purpose 28% ahead of last year's for January-May.

Bright industrial outlook. Three different reports released last month indicate prolonged, increasing construction of new industrial plants:

A survey by the Society of Industrial Realtors found: vacant land suitable for industrial or warehouse buildings commanded premiums, more costly than a year ago, and still rising; sites in established industrial parks also higher; modern single-story plants readily saleable at prices nearer to replacement costs than ever before—but few available; older multi-story buildings sliding in price and harder to sell than before at almost any price.

The latest Commerce Dept.—SEC survey of expenditures for new plants and equipment shows them running at a rate of $34.8 billion a year during the April-June quarter, and slated to hit a rate of $36.7 billion a year this quarter. For the full year, these agencies said, they would average $35 billion, compared with $28.7 billion in 1955.

The latest annual McGraw-Hill survey of plans for new plants and equipment is more optimistic than the government's. It indicates that such outlays this year will total $39 billion, or 30% more than in 1955. But the most significant feature revealed by this survey is the very high level of expenditures already planned for 1957, 1958 and 1959. For the first time since these surveys were started nine years ago, preliminary plans for the second year ahead (1957) almost equal those for the current year ($38.1 billion next year, compared with $39 billion this year), and advance plans for 1958 and 1959 are only slightly lower ($34.1 and $33.6 billion). With the normal increase over preliminary plans that usually occurs, according to McGraw-Hill officials, this means the "industrial building boom is set to roll three more years."—at least.

BUILDING PERMITS BY CITIES

*GRAND TOTAL. 3,659 15,760 15,391 2

*Minor components not shown, so total exceeds sum of parts.

**Less than one per cent.

TOTAL CONSTRUCTION expenditures in May were $3,659 million, or 2% greater than the $3,606 million in May '55. After Labor and Commerce Depts. revised official April estimates to $3,351 million (originally $3,250 million), March was the only month so far this year when outlays trailed those in 1955.

PRIVATE INDUSTRIAL construction expenditures for the first five months of 1956 totaled $1,156 million, a 25% increase over 1955 Jan. to May outlays. For May these expenditures were $247 million, 34% greater than May '55.
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(c67)
BUILDING COSTS: Rise in materials prices halts temporarily;
California builders study ways to curb cutthroat bidding

No agreement was in sight between steel producers and steel workers as FORUM went to press. It was still uncertain whether there would be a crippling strike beginning July 1, or what the ultimate price boosts for structural and other steels would amount to—with or without a strike. Few, however, expected the hike for structural would be less than $9 a ton.

In a temporary deviation from its steady uptrend, the BLS index of average wholesale prices of building materials dipped 0.3% from April to May (see chart). At the same time the Boeckh index of nonresidential building costs advanced 0.8%, showed a 5.9% increase over May, 1955.

Profits down? But as costs and prices continued generally upward, so did the complaints of contractors who moaned about slimmer and slimmer profit margins, murderous competition and steadily mounting failures (an increase of about 35% over 1955 in construction, according to latest Dun & Bradstreet figures). In the San Francisco Bay area, in fact, the Central California AGC chapter was so concerned over profitless, cutthroat competition that chapter Secretary-Manager A. Bruce McKenzie was launching a campaign to identify its main sources, discourage the evil.

The first project involved a $1.6 million

BUILDING MATERIALS PRICES declined 0.3% in May to 130.9 from 131.3 in April. Main cause of this decline in the BLS Index of average wholesale prices was a 3.7% drop in average prices for metal doors, sash and trim.

BUILDING MONEY: Worst of credit "squeeze" passing;
scarcity of lease-purchase bids disappoints GSA

Through open-market purchases of government securities Federal Reserve officials last month were easing credit conditions slightly. The peak of the tight-money squeeze of 1956 appeared to have passed, and short-term interest rates were gradually moving lower.

But whether it was the 1956 spring squeeze, or other factors, General Services Administration officials were sorely disappointed over the bids they received for the financing on the first building they proposed to erect under lease-purchase arrangements. On three alternate types of bids they received no bids on the financing alone, only one qualified bid covering construction and then assume all arrangement. Before the end of the year McKenzie also hopes to make a "full time study" in Sacramento of the conditions under which various contractors who failed were able to obtain their contractor's licenses in the first place.

CONSTRUCTION COSTS for nonresidential buildings rose 0.8%, from 273.7 in April to 276.0 in May on the index compiled by E. H. Boeckh & Assoc. For the first five months of the year the Boeckh index increase was 2.7%.

Mostly ignorance. The main problem of cutthroat contractors is probably ignorance, according to McKenzie. They think profits will be very easy. Few know what real current costs are; fewer know what future costs will be. An example, he says, is a pending carpenters' strike in northern California. AGC members, he says, are not making any agreements that do not provide for whatever wage scales will prevail after a settlement is reached. But inexperienced, cutthroat bidders are making contracts with little regard for this future cost increase, he says, and later will find it wiping out their profits.

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scarcity of lease-purchase bids disappoints GSA

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But whether it was the 1956 spring squeeze, or other factors, General Services Administration officials were sorely disappointed over the bids they received for the financing on the first building they proposed to erect under lease-purchase arrangements. On three alternate types of bids they received no bids on the financing alone, only one qualified bid covering both construction and financing, and four bids on construction alone. But without financing, the construction-only bids were of little value, and at month's end, McKenzie was expected GSA would reject all bids and try again with a fresh call for offers.

The first project involved a $1.6 million Post Office and Courthouse in Rock Island, Ill. To follow it soon were 28 more for another $90 million already approved by Congress, and perhaps another 25 for still another $310 million being submitted to the present session of Congress for approval. For the first project GSA required financing bids that would not reflect an interest rate exceeding 4% over a 25-year amortization period, a rate established by the Budget Bureau some time before the recent credit squeeze. The Budget Bureau took the position that such financing would be virtually as good as a government bond, inasmuch as the owner-lender would be scarcely more than a bystander. The government would supervise construction and then assume all maintenance and operation responsibilities.

But in the money market that prevailed a month ago, even the lone bidder who offered to provide the lease-purchase financing at the 4% ceiling tied an extra condition to his bid. If the government wanted to shorten the amortization period to less than 25 years, he wanted a prepayment premium.
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Fred Manske named National Gypsum president;
John Yeon wins Brunner Prize of National Institute of Arts and Letters

MANSEE
EXECUTIVE PARADE
One time newsboy Fred A. Manske, 55, who worked his way through Armour Institute of Technology for his mechanical engineering degree (1923), was advanced last month from the executive vice presidency of National Gypsum Co. to succeed President Lewis R. Sanderson, who retired on reaching the nation's second largest manufacturer of building materials in 1933, when Melvin H. Baker, now National's board chairman, hired him as an assistant to the vice president for operations. He was promoted to general production manager in 1949, vice president for operations in 1951, and executive vice president in 1954.

As it started celebrating its 50th anniversary year, the Bryant & Detwiler Co., of Detroit, general building contractors for the GM Technical Center, Ford Central Staff Building, Northland Shopping Center and the Detroit City-County Building, installed as president Erwin F. Covenev, who joined the company as a staff estimator in 1915. R. W. Detwiler, who joined the firm the year after it was established by his brother Ward A. Detwiler and John A. Bryant, and was president for the last ten years, became board chairman.

Charles A. ("Chuck") Kilgore, executive secretary of the Portland (Ore.) Assn. of Building Owners and Managers since 1945, resigned to become executive assistant to Executive Vice President Robert B. Beach in NABOM's Chicago headquarters.

ELECTED: Worthington Corp. Vice President Matthew M. Lawler, as president of the Air-Conditioning and Refrigeration Institute succeeding James Emmett Jr., of the Jas. P. Marsh Corp.;


QUITTING SCHOOL

Because he felt no staff member should serve more than a decade in a top administrative position, William T. Arnett resigned after ten years as dean of the University of Florida's college of architecture and applied arts to resume his former position as full professor of architecture. Named acting dean: H. W. Chandler, university vice president for academic affairs.

Architectural Librarian Ruth Cook of Harvard University's graduate school of design, friend and follower of Harvard architectural students and faculty for 37 years, who also made the school's collection of architectural books, pamphlets and folios one of the most outstanding in the nation, retired last month with an unusual tribute: a fund for a 'round-the-world tour contributed by 460 Crimson architectural alumni, faculty and students.

HONORED: New York realtor and investment syndicate expert Harry B. Helmsley, who as a Quaker donated $75,000 to Brandeis University "to stimulate the growth of understanding among peoples of different faiths, already symbolized on the Brandeis campus by its three chapels" (AF, Sept. '54), was saluted by N. Y. realty leaders at a dinner arranged by the Brandeis Centennial Fund Committee with William Zeckendorf as toastmaster. Two weeks later Zeckendorf also was honored for his civic and philanthropic activities in New York, received a Gold Medal of the city from Mayor Robert Wagner.

In Washington Vice President Richard Nixon presented the 1956 Distinguished Service Medal of the Society of American Military Engineers to Eugene A. McGovern, vice president of Caubwell-Wingate Co., N. Y. C. builders. In Columbus, Ohio, at the third annual conference for engineers and architects of Ohio State University college of engineering, Distinguished Alumni Awards were given to outstanding alumnus in their respective fields were given to Architect L. Morgan Yost; Clinton Dudley Clawson, president of the Ferro Corp.; and Richard C. Diehl, president of the Chase Brass & Copper Co. In Cleveland, Ferro Corp. Vice President Glenn A. Hunt, president of the Porcelain Enamel Institute, was made a fellow of the American Ceramic Society for "productive scholarship in ceramic science and notable contribution to the ceramic arts and industry."

GRANTS AND PRIZES
Annual awards from the National Institute of Arts and Letters announced a month ago included: Gold Medal for Sculpture, to Ivan Mestrovic; the $1,000 Arnold W. Brunner Memorial Prize in Architecture, to Portland (Ore.) Architect John Yeon (honorable mention to Minoru Yamasaki); a grant of $1,000 in literature, to architectural Historian Henry-Russell Hitchcock.

The John Simon Guggenheim Memorial Foundation announced a series of Guggenheim Fellowships for 1956 that included: sociology, Author Lewis Mumford, the development of cities; history of architecture, Yale University Professor of History George Alexander Kubler, studies of Portuguese and Spanish architecture, research engineering, Cornell University Structural Engineering Professor George Winter, structural engineering.

DIED: Clarence Wilson Brazer, 76, former president of the Pennsylvania State Assn. of Architects, National Council of Architectural Registration Boards, also a noted philatelist who once appraised President Franklin D. Roosevelt's stamp collection, May 6 at his home in Philadelphia; Harold Alexander Ley, 83, former president of Fred T. Ley, Inc., builders of New York's Chrysler Building and founder of the Life Extension Institute, May 11 in N.Y.C.; Walker Gibson White, 60, N.Y.C. building contractor, manager of contracting operations for the Westinghouse elevator division and former chairman of the National Elevator Manufacturing Industry, May 14 in N.Y.C.; five Crane Co. executives of the Society of American Military Engineers to Eugene A. McGovern, vice president for academic affairs. Two weeks later Zeckendorf also was honored for his civic and philanthropic activities in New York, received a Gold Medal of the city from Mayor Robert Wagner.

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there's a RIXSON concealed closer or pivot set for every door

ENTRANCE • VESTIBULE • INTERIOR

According to your requirements in appearance, hanging style, function and construction detail, YOU CAN SPECIFY RIXSON THROUGHOUT.

offset hung

nos. 18 • 20 • 25
single acting floor type

for entrance, vestibule and interior doors—where full unobstructed door opening space and wide door swing (to 180°) are important. Special styles are available for fire doors and x-ray room doors. Arm locking arrangement allows vertical adjustment of door.

UNI-CHECKS
nos. 65 • 66 • 67 • 68
single acting floor type

UNI-CHECKS nos. 65 • 66 • 67 • 68 single acting floor type

offset hung

center hung

nos. 18½ • 21 • 26
single acting floor type

UNI-CHECKS nos. 65 • 66 • 67 • 68 single acting floor type

center hung

butt hung

nos. 318½ • 321 • 326
single acting floor type

for entrance, vestibule and interior doors—where concealment of both closer and door hanging hardware is desirable when door is open or closed. Ideal for batteries of doors. No mullions required, allowing utmost use of entrance area.

for interior room doors—where full unobstructed door opening space and wide door swing (to 180°) are important. Depth of 2½" (including cement base) to suit shallow floors. Special styles meet Underwriters' Laboratories approval for fire doors.

Because screws are at right angles to opening leverage, pivotal hung doors are more securely attached—less apt to pull away from the jamb.
conceal the closer and expose the beauty of the door

center hung

center hung

butt or center hung

offset and center hung

classic floor type

classic floor type

classic floor type

nose. 30 • 40
double acting

CONTOUR CLOSER
	nose. 10 • 12 • 15 • 16 • junior
double acting

double acting

DUO-CHECKS

nose. 218 • 220 • 225

double acting

double acting

MATCHING PIVOT SETS

nose. 218½ • 221 • 226

butcher or center hung

DUAL-ADJUSTABLE BALL HINGES

nose. 117 • 117½ • 117½

nose. 117 • 117½

for entrance, vestibule and interior doors—where double door swing and complete concealment of door hanging and closer hardware are desirable. These closers are ideal for hospital and restaurant doors where people pass through with hands occupied.

for entrance, vestibule and interior doors—where it is desirable to conceal closer in jamb above door. Compact size, 2½ x 2½ x 17, makes closer ideal for modern, narrow trim installations. RIXSON adjustable ball hinges are recommended for use with No. 218 series.

for pivotal door hanging only. Match the hanging style and general appearance of doors with RIXSON offset or center hung closers. Widely used on inactive doors such as on closets and wardrobes. Styles available for all doors from the lightest to the heaviest.

write for full information on any RIXSON device

THE OSCAR C. RIXSON COMPANY

9100 west belmont avenue • franklin park, illinois

architectural FORUM / July 1956
Award-winning school housing 770...

plus playgrounds...on less than 2-acre site...

by Charles R. Colbert

Most cities with mass populations are faced with the problem of adequate educational facilities. Land is a precious commodity. Land clearance is a luxury in which taxpayers will allow only small indulgence. This situation was especially acute in the section of New Orleans where the Phillis Wheatley Elementary School now stands. Specifically, 770 elementary school children had to be housed on a mid-city site of less than 2 acres for one-half million dollars.

To solve this problem, the firm of Charles R. Colbert, Architect and Planner, elevated the classrooms! This excellent use of cantilever system provided extensive playgrounds beneath the 22 classrooms and sheltered these grounds from frequent rains as well. In recognition of this creative ingenuity, the school received an Award Citation from Progressive Architecture Magazine and a Top Award from School Executive Magazine.

Like many other outstanding schools throughout the country, Phillis Wheatley is a good example of what can be accomplished when the Tectum Method is used. Method, because Tectum is more than a roof deck. In fact, Tectum serves four basic needs—it's a noncombustible roof deck; it furnishes thermal insulation; it provides sound control; it is a finished ceiling—all in a single plank.

Chances are that Tectum can be used to great advantage in a building of your design. For your next project, consult your nearest Tectum distributor or Sweet's files, 2e/Te. Tectum Division, Peoples Research and Manufacturing Company, 310 South Sixth Street, Newark, Ohio.

In this classroom, Tectum is used over welded steel joists. Note the spacious air that this achieves. The spatial design of Phillis Wheatley was originally conceived as a "house of cards".

Steel beams, used both on flat and raised planes, provide interesting variety in the cafeteria. Tectum is easily installed over either steel, wooden or prestressed concrete beams; the resultant effect is always arresting.

why lay a roof deck... cover it with insulation...
Architect's rendering of Phillis Wheatley Elementary School, New Orleans, Louisiana. Effect of plane against mass, transparency to solid, right angle to acute intersection was exploited through an exposure of structure and utilitarian items usually hidden within. Charles R. Colbert, Architect; Mark P. Lowrey, S. C. Moschella, Frances Fort, Associates; Keller Construction Corp., General Contractor. All are of New Orleans.

Stairs leading from classrooms to ground level are sheltered by Tectum. The clatter of students on these concrete stairs is also absorbed by Tectum, instead of bouncing off as with hard materials.

Tectum goes down—so easily and quickly—on any job. Here, Tectum is being laid; grouting is applied; felt paper is made ready for built-up roofing — without delay for drying or curing.

and add acoustical material when... you get all 3 plus noncombustibility ...plus a finished ceiling with the

Tectum METHOD

For Plants • Commercial Buildings • Institutions • Homes
Colorful beauty that lasts a lifetime!

All-vinyl...with beautiful colors going through-and-through, Amtico Vinyl Flooring is the most complete line and offers unlimited design possibilities...takes hardest wear for years.

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DATES

"Twenty Years of Photography by Gott- schalch-Schlesener," architectural collection, through summer, Museum of the City of New York, New York.


School Plant Planning Workshop, Dept. of Architecture, University of Colorado, through July 20, Boulder, Col.


International Federation for Housing and Town Planning, annual convention, July 22-28, Vienna, Austria. Information: Charles A. Shepher, 303 West End Ave., New York 25, N.Y.

National Shade Tree Conference, annual convention, Aug. 20-24, Royal York Hotel, Toronto, Canada.

Associated General Contractors, midyear board meeting, Sept. 17-19, Schroeder Hotel, Milwaukee, Wis.

Building Research Institute, conference on Modern Masonry Construction, at the institute, September 19-20, Washington, D.C.

American Title Association, annual convention, Oct. 17-20, Fontainebleau Hotel, Miami Beach.

National Assn. of Housing & Redevelopment Officials, annual convention, Oct. 21-24, Statler Hotel, New York City.

National Assn. of Real Estate Boards, annual convention, Nov. 11-16, Jefferson Hotel, St. Louis, Mo.


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The buildings above are just a few examples of what architects are doing these days, using Butler metal buildings as the basic structure. Where building capital is limited, Butler buildings give you important opportunities to cut cost corners.

Your engineering costs are minimized. Butler metal buildings are pre-engineered to meet building codes.

Use non-load bearing walls and partitions. The rigid frame structure supports all live and dead loads.

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Construction time and cost is radically reduced on all Butler components. Every part is precision fabricated to fit its mates exactly, which makes construction a fast assembly job. Butler buildings are easily and economically insulated, and when insulated, provide a highly efficient thermal barrier.

Your reputation is safeguarded. Butler buildings are widely accepted for commercial and industrial construction because they are designed and manufactured as permanent structures in plants with the engineering and machinery resources to do the job right. And because Butler is the largest manufacturer of metal buildings, far more standard sizes are available.

Why not investigate the cost advantages of designing on a Butler basic building. Ask your local Butler Builder to drop in and talk it over...you'll find his name in the Yellow Pages...or write direct to the Butler office nearest you.
when traffic is heaviest

WRIGHT VINYL TILE flooring gives years more care-free wear!

WRIGHT Vinyl Tile provides the ultimate in rugged serviceability. Here is truly durable tile flooring, resisting the hardest abuse from scratches, scuff marks, stains. Acids, alkalis, and grease are quickly removed from its water-proof, non-slip surface. Impervious to temperature change, it will not warp, buckle or crack. Maintenance is easier, more economical too, than with any other type of resilient tile flooring.

Completely homogeneous, WRIGHT vinyl meets the most exacting quality control specifications. Its smooth, even surface never loses its brilliance, and the deep, clear colors retain their full richness even after years of wear.

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When you turn this page, you will read a message which ranks in significance with any we have published in our 50-year history.

Herman Nelson Division
American Air Filter Company, Incorporated.
Herman Nelson Announces
Designed, Built, Priced

NOW—after years of research, developing and testing—it’s here! The Herman Nelson HerNel-Cool Air Conditioner, long-sought solution to year round classroom comfort, is the only unit especially designed to meet exacting classroom needs.

10 Years in Development. Herman Nelson engineers saw the "handwriting on the chalkboard". As far back as 1945, they were already at work on the problem of developing a unit that would combine complete summertime air conditioning with the long accepted heating-ventilating-natural cooling advantages of the unit ventilator. The ultimate goal was to produce a year round air conditioning unit, sensitive and versatile, automatic and... economical.

Fully Tested... In Classrooms. There were countless design changes, innumerable modifications. Finally, the working models—with factory installed packaged controls, electronic or pneumatic—were ready. These were put to work proving themselves on the job. First installations were made in classrooms throughout the South, where air conditioning needs could put them to the stiffest tests. Here—during the
winter months—they function as natural cooling-heating-ventilating units. When temperature zooms, they switch automatically to mechanical air conditioning. Conditions were rigorous, but the HerNel-Cool Air Conditioner exceeded every requirement!

**It’s Ready For You . . . NOW.** Recognizing the growing need and demand for year-round air conditioning at the college, university and high school level, the Herman Nelson HerNel-Cool Air Conditioner is now ready to meet this requirement. Years of proof-in-use is always a sound buying gauge. And the HerNel-Cool Air Conditioner *has it.* For your FREE copy of our new 20-page book “HerNel-Cool AIR CONDITIONER for Schools,” write Herman Nelson Unit Ventilator Products, American Air Filter Company, Inc., Louisville 8, Kentucky.

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*PRODUCTS*

American Air Filter Company, Inc.
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... in white
and eight soft
decorator's colors

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mineral acoustical tiles

... the only all mineral, acoustical tile
which is attractively colored — throughout.
Available in bright white, too!

Kilnoise mineral acoustical tiles feature
outstanding beauty, maximum noise absorption,
high light reflectivity and dimensional stability
(Totally unaffected in tests of 17 days —
100% humidity — 110° F.).

No heavy fissures . . . no drilled holes . . .
Kilnoise ceiling tiles have a soft swirl pattern
which enhances any room. Easy to install by
all methods, Kilnoise tiles are also
pre-primed for positive adhesion.

When you're considering
mineral tiles, ask your
applicator for a Kilnoise quotation.
You'll be pleasantly surprised!

Write for descriptive booklet 39-B.

NEW ENGLAND LIME COMPANY
Adams, Massachusetts

(CRITICISM)

What do you say when a friend is taking
you on a tour of his latest building and you
don't like it? This ticklish question has
tightened many a pleasant afternoon be­
tween friends, between builders, between
architects, between building owners—and
between editors and all these categories.

Here is an answer which many of us
must recognize as the truth. Architect
Charles R. Colbert, in a recent speech at
Texas A & M (where he is the new direc­
tor of the department of architecture),
discussed it in a jocular aside to a seri­
ous address at College Station this spring.
Director Colbert prescribed three re­
 sponses which can be, and usually are, de­
 livered heartily without real hypocrisy:

1. Pronounce very vigorously: "This is
SOME building; yes, indeed, this is
SOME building." Keep saying it. Or . . .

2. Nod deeply and seriously, and squint
into the sun and say: "Yes, I certainly
can see the problems you had. I certainly
can." Repeat if necessary. Or . . .

3. Breathe deeply and intone: "This cer­
tainly is a CHURCH (insert school, jail,
beer garden or other appropriate designation).
This sure is a church (insert school, jail,
beer garden or other appropriate designa­
tion). Repeat.
Now, is that settled? Do we all understand one another?

It was our pleasure, several days after hearing Colbert make this speech, to accompany him on a tour of his beautiful schools in New Orleans. And, do you know, those were schools; they sure were schools. We told him, and he s-m-i-l-e-d.

(INSIDE JOB)

These days more and more buildings are being built inside buildings, especially under the expansive roofs of our great city railroad terminals. Here is one of the most recent, a shopping center laid out in the middle of the main concourse of the Chicago Union Station. The storekeeper: Fred Harvey; the wares: candy, gifts, toys, liquor, books, cosmetics, jewelry, greeting cards, men's and women's accessories, and, of course, newspapers and magazines. Also information.

The traffic path shunts 50,000 people a day past this city slicker's version of a country fair; the Fred Harvey Co. plans to put counterparts in a number of other stations. Designers and builders: the Equipment Manufacturing Co. of Chicago.

(BACKDROP)

From time to time in the past this department may have commented unkindly on architects' treatment of artists and sculptors, which sometimes amounts to subjugation of the allied arts. It does happen frequently: the designer decides he knows exactly what he wants (how big, what colors, what shape) and tries to tune in the artist's creative powers like a TV set. The result is usually as thin as TV.

But the reverse happens too. The artist sometimes seizes control himself, as Matisse did in building his chapel at Vence. It is time to admit this doesn't always work very well either.

Here is a new branch of the Home Savings and Loan Assn. in Beverly Hills, Calif., which our correspondent informs us was designed by Artist Millard Sheets and executed by a firm of architects and builders, symmetrical except for the traffic light.

(1984 MINUS 28)

The General Precision Laboratory Inc. is a stirring company title for our times (although not quite up to New York's Chemical Corn Exchange Bank). The company has an interesting new product. In the New London, Wisconsin High School, General Precision has installed what may be the nation's first closed circuit TV study-hall monitor. The students sit without a teacher to supervise them. Instead, the unblinking eye of a TV camera is trained their way from a table-top tripod which somehow has the air of a giant praying mantis.

The other end of the system, the monitor screen, is located in the school's general office, where secretaries can glance at it periodically to check conditions in the study hall (there is a connecting P.A. system too). The New London superintendent of schools, Paul K. Loofburos, cites two undeniable advantages of this system: first, saving money; second, relieving teachers from nonteaching supervisory chores.

It is true that the pupils look a little moody in the photograph, but perhaps this is the appropriate aspect in all study halls. The manufacturer reports no cut wires, no paper bags placed over the eye of the mantis. According to General Precision the kids "Have accepted the TV monitor without animosity. . . . When the system began operating the pupils not only accepted it, but completely ignored the camera's presence."

An enigmatic generation.

(SUMMER)

School, however, is still out. The TV season is slack; the study-hall eye is dim, resting for the fall season, while student and teacher escape both ends of the circuit. And speaking of escape, this is also the season for office picnics.

As a reminder of how pleasant these outings can be, here is a photograph taken last year at the picnic of Baltimore Contractors, Inc., when 2,000 employees of this big firm of big builders spent a fine day at Bay Shore Park swimming, sunning, having tug-of-war contests and proclaiming Miss Barbara Weaver to be Miss Baltimore Contractor, Inc., 1985. W. McD.
York’s prior planning service helps

Atlanta’s Fulton National Bank Building —
Air conditioned with York equipment, this 25-story building is Georgia’s tallest. York engineers collaborated with these concerns in the execution of this contract:

Architect and engineer: Wyatt C. Hedrick Co., Dallas
Associate Architect: Wiltner & Milkey, Atlanta
Contractor: Henry C. Beck Co., Atlanta
Plumbing and air conditioning: Sam P. Wallace Co., Dallas
assure maximum return
on air conditioning investment

Economic analysis — York engineers work closely with builders and owners to determine air conditioning requirements, and projected investment cost per sq. ft. of floor area.

Specification — York makes all systems of air conditioning. The York engineer studies your problem objectively, then assists in the selection of the right system for your particular job.

Design — Your architect or consulting engineer can call on the York engineer early for his suggestions in solving space and design problems, thus helping to avoid expensive changes later.

York sales engineers work with you, your architect, your consulting engineer and your builder from the very first planning stage. York calls this Prior Planning Service, and it helps you in these three ways:

1. The York Engineer helps analyze your air conditioning requirements. Your average climate conditions, number of occupants and traffic conditions — these are some of the considerations weighed by the York engineer in making his study of your building. With his broad experience and extensive training, he can analyze your problem and make available to you the facts and technical data you need.

2. The York engineer can help you select the proper air conditioning system. York supplies all systems of air conditioning and refrigeration, depending upon the requirements of the job. Thus, your York engineer studies your problem objectively, recommending the system that is right for your job.

3. The York engineer can assist in space and architectural design. He can be of aid to your architect or consultant, supplying him with the information he needs to make best use of the available space to guarantee maximum effectiveness of whatever system is chosen.

Clearly, York's Prior Planning Service depends upon superior engineering ability. Realizing this, York selects engineering graduates carefully, then trains them in classrooms, in research and development laboratories, in the factory and in the field. You may rely with complete confidence upon the good judgment and recommendations of the York engineer.

Call him in early in your planning.

Economic analysis — York engineers work closely with builders and owners to determine air conditioning requirements, and projected investment cost per sq. ft. of floor area.

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Call him in early in your planning.
Exterior siding and woodwork treated with Cabot's Creosote Stain

For distinctive beauty and...
LASTING PROTECTION

Cabot's CREOSOTE STAINS

Cabot's stains enhance the grain and texture of siding and shingles and add years to their life. The high content of creosote oil guards against decay and insects; due to careful refining these stains may be painted over later if desired.

Cabot's Creosote Stains will not crack, peel, or blister. Easy and economical to apply; cost less than half the price of good house paint; available in 18 modern colors ranging from rich reds, greens, and browns to soft weathering grays.

A quality product from Cabot Laboratories...manufacturing chemists since 1877

Samuel Cabot

- Request a color card today-

SAMUEL CABOT INC.
731 Oliver Bldg., Boston 9, Mass.
big or small...old or new...

efficiency of operation prompts architects to specify usAIRco

for air conditioning churches

Typical of recent usAIRco installations are these two Oklahoma churches—the internationally known Boston Avenue Methodist and the new Church of Madeleine, excellent example of the modern type of building.

usAIRco's packaged central station (Model RK), frequently used in church installations, is a compact unit containing all elements of a built-up system (blower section, compressor section and evaporative condenser). The built-in evaporative condenser continually recirculates water, saving 95% in water consumption costs.

All component parts are factory tested and balanced, delivered ready for immediate installation. Only three simple connections are required: to ducts, water supply and drain, and power supply. Available in 8 sizes, 10 to 60 hp., single or in dual circuit arrangements.

Another economy proved usAIRco unit for cooling churches is the unusually flexible "packaged" air conditioner, consisting of separate conditioner, blower, and plenum sections, allowing rearrangement in the field to fit any installation. Compressor spring mounting insures quiet operation. The usAIRco "packaged" air conditioner comes in 6 sizes, from 2 to 15 hp. 5 year warranty.

usAIRco air conditioned Tulsa's new Church of the Madeleine. Architect: David Murray. Engineer: James Netherton.

For descriptive literature, write Robert W. McLain

UNITED STATES AIR CONDITIONING CORPORATION
MINNEAPOLIS 14, MINNESOTA
Export: 13 E. 40th St., N. Y. 16, N. Y., U. S. A.
Patient comfort always is a consideration in the building of a hospital. But when architect Leo A. Daly designed the Bishop Clarkson Memorial Hospital, Omaha, Nebraska, specialphasis was given that factor. Hal G. Perrin, administrator, and Robert H. Storz, chairman of the building committee, consulted with architect Daly ... patients were queried ... all agreed that noise, daylighting, and ventilation should come in a critical study. The soundproof characteristics of Ceco-Meyer Concrete Joist Construction and daylighting and ventilating advantages of Ceco-Meyer Windows met the requirements. Architect Daly made this further comment on the building method: "The construction is light in weight, but affords exceptional stiffness because of additional depth provided by the monolithic floor and joist section.
Joist section superimposed on solid slab of equal live load capacity

Concrete added
Joint section

Concrete eliminated by a shape of section which allows maximum depth for rigidity.

In buildings, there's nothing better than reinforced concrete... rugged, firesafe and available now. In floors, Ceco-Meyer Concrete Joist Construction brings you those advantages... with savings of 10% to 30% in concrete and steel.


Meeting Rail Section, Series 200-B Window — Heavy extruded box sections assure rugged performance... double-contact stainless steel weather-stripping provides tightness. Weatherstrip at jambs gives a spring cushion sliding contact.

Steel Double-Hung Aluminum Windows got all for better daylighting because glass areas bigger... mullions sleeve together. The windows are tight, a factor in efficient air-conditioning they operate silently and are easy to maintain. They helped the contractor maintain a fast pace of construction by coordinated deliveries of reinforcing steel, steelforms and windows. For your next project, consult Ceco Engineers. You can be sure unsel and service to aid you in adapting the building product to your particular problem.

Concrete visors for shading and window washing are dramatized in this view. Shaded windows are Ceco-Sterling Double-Hung Aluminum Windows and Picture Windows.
A bold new design concept, Modular Sightron offers the critical lighting professional a solution for office, store, school and hospital corridor and utility area lighting problems. Smooth white injection molded polystyrene diffusers provide efficient, glarefree illumination. These 2 foot modules fit tightly together in 2, 4 or 8 foot steel housings which may be used individually or in rows for flowing lines of continuous light. They snap out easily with fingertip pressure for easy re-lamping and trouble-free maintenance. Smooth, uninterrupted right angle turns for pleasing geometric patterns, corridor and perimeter lighting are obtained by using the new Modular Sightron corner bracket. Also available are accessory reflectors for additional downlight when required, and matching wall brackets.

For a folio of Sightron lighting by Lightolier, write today on your professional letterhead to Dept. AF-76.

**MODULAR SIGHTRON**

**LIGHTOLIER**

ARCHITECTURAL LIGHTING DIVISION • JERSEY CITY 5, NEW JERSEY
in the home everybody benefits from

STAINLESS STEEL

THE ARCHITECT designs Stainless Steel into windows, kitchens, work surfaces, ovens and other important places because he knows there is nothing like Stainless for clean, lasting beauty.

THE BUILDER has had long experience with Stainless Steel. It's easy to install, does not chip or peel, and its beautiful finish presents no problem on matching or replacement.

the owner likes living with Stainless Steel. It's always gleaming and beautiful, cleans with a wipe, and lasts forever. And, to complement her kitchen she loves to own those shiny pots, pans, tableware, and appliances, all made of Stainless Steel.

McLouth Stainless Steel

FOR THE PRODUCT YOU MAKE TODAY AND THE PRODUCT YOU PLAN FOR TOMORROW SPECIFY McLouth HIGH QUALITY SHEET AND STRIP STAINLESS STEEL

McLouth Steel Corporation DETROIT, MICHIGAN • MANUFACTURERS OF STAINLESS AND CARBON STEELS
Walworth offers four lines of Bronze Globe Valves with stainless steel, plug-type seats and discs. Advantages of these valves include:

- **Stainless Steel Plug-Type Seats and Discs**, heat-treated to a minimum of 500 Brinell hardness reduces wire-drawing to a minimum. Seats and Discs are machined and fitted simultaneously, assuring perfect mating.

- **Deep Stuffing Boxes with Glands** are fitted with reinforced, molded packing. Valves can be repacked under pressure when fully opened.

For Longer Bronze Valve Life...

**“500 BRINELL” PLUG-TYPE STAINLESS STEEL SEATS AND DISCS**

<table>
<thead>
<tr>
<th>Size</th>
<th>WSP</th>
<th>WOG</th>
</tr>
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<tbody>
<tr>
<td>150 lb.</td>
<td>350 WSP 550F, 1000 WOG</td>
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<tr>
<td>200 lb.</td>
<td>300 WSP 550F, 600 WOG</td>
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<tr>
<td>300 lb.</td>
<td>200 WSP 550F, 400 WOG</td>
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<tr>
<td>350 lb.</td>
<td>150 WSP 500F, 300 WOG</td>
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</tbody>
</table>

- **Oversize Stems**, made of high tensile strength silicon-bronze, assure long life.

- **Rugged Body Hexes**, are flat on top; do not interfere with wrench gripping body-to-bonnet union ring connection.

- **Bodies**, made of Composition M bronze (ASTM B61), have ample wall thickness to provide high safety factor.

- **Patented Handwheels** are air-cooled and designed with a “finger-fit grip.” Makes turning easy even when wearing greasy gloves.

- **Identification Plates** secured by lock-washer under stem nut, show Figure Number of valves and make re-ordering sure and easy.

FOR COMPLETE INFORMATION, SEE YOUR WALWORTH DISTRIBUTOR OR WRITE FOR ILLUSTRATED CIRCULAR

WALWORTH

60 East 42nd Street, New York 17, New York

SUBSIDIARIES: ALLOY STEEL PRODUCTS CO. CONOFLOW CORPORATION M & H VALVE & FITTINGS CO. SOUTHWEST FABRICATING & WELDING CO., INC. WALWORTH COMPANY OF CANADA, LTD.
GOOD FOR THE School

Superior Steam Generators are an ideal solution to the problem of heating schools. Shipped completely assembled after factory test, they are backed by the undivided responsibility of their maker. Installation is simple and inexpensive. No special foundation is required. Rugged and compact, they fit into small space.

Superior's built-in induced draft eliminates the need of an expensive chimney, and also provides that extra measure of safety so desirable in school installations by preventing the escape of combustion gases into the boiler room and the rest of the building.

Built for years of dependable low-cost operation, Superior Steam Generators reduce maintenance to a minimum and earn their cost many times over through long-lived efficiency. They are guaranteed to generate their maximum capacities at thermal efficiencies in excess of 80% and will burn the cheapest grades of fuel oil (or gas) fully automatically.

Clean, quiet, safe, reliable operation, plus fuel savings of 20% or more over conventional boiler installations, make Superior Steam Generators ideal for both the school and the budget. A full range of sizes from 20 to 600 b.h.p. for pressures from 15 to 250 p.s.i., or in the hot water type, provides units of proper capacity for every school.

For complete details, write for Catalog 812

for performance you can BANK on

SUPERIOR COMBUSTION INDUSTRIES INC.
TIMES TOWER, TIMES SQUARE, NEW YORK 18, N.Y.
With their eyes on the future, architects August Perez & Associates planned the Shell Building ... a brilliant new addition to New Orleans' skyline ... a building completely ahead by design.

Every one of its spacious, air conditioned offices is custom-tailored to the individual taste and needs of each tenant. And, setting a new trend in convenience, eight floors of one wing are hotel rooms ... with a huge auditorium for business and social functions. Attractive shops, a bank and restaurant are conveniently located on the ground floor.

Built of limestone and glass with a granite base, the Shell Building represents a big step ahead in structural design ... because its multi-story frame is the first ever constructed of all-lightweight concrete.

And ... through the architects' foresight ... Westinghouse Water Coolers daily refresh all those fortunate enough to work in or visit this great new building.
AHEAD... by design

Shell Building, New Orleans
Designed by August Perez & Associates
Built by Gurvais Favrot Company

WESTINGHOUSE WATER COOLERS
Were specified by architects August Perez & Associates because by design they, too, are . . .

Ahead for Convenience! Only Westinghouse offers Dual Electric Control—both finger-tip and toe-tip control—at no extra cost . . . plus Automatic Stream Height Regulator for no-spurt, no-splash drinking. Compact, space-saving design occupies only 14 square inches of floor space.

Ahead for Efficiency! They deliver up to 60% more cold water at less cost . . . thanks to the Patented Pre-Cooler and Super Sub-Cooler that use waste cold water to pre-cool incoming water and sub-cool the hot liquid refrigerant.

Ahead for Reliability! Amazing new Solenoid Water Valve eliminates all possibility of leaks . . . Hermetically-sealed Refrigeration System assures more years of trouble-free performance . . . and the E-Z Clean Strainer prevents water stoppage due to pipe scaling. All models backed by Westinghouse 5-Year Guarantee plan.

Plan Ahead . . . put Westinghouse in your plans, just as more and more leading architects are doing. Specify the newest and finest of water coolers for your clients. 18 handsome models to choose from. Call your Westinghouse Water Cooler Distributor today. He's listed in the Yellow Pages of your telephone directory. Ask him about the new PAY-WAY PLAN . . . and learn how Westinghouse Water Coolers actually pay for themselves.

EXACTLY THE RIGHT TYPE AND SIZE FOR EVERY NEED

Westinghouse Electric Corporation
Electric Appliance Division
Springfield 2, Massachusetts

WATCH WESTINGHOUSE WHERE BIG THINGS ARE HAPPENING FOR YOU!
Above is a cross section of a Mahon M-Floor constructed with M-Floor Section M-3 and energized with a Three Header Duct Electrical Distribution System. The installation at the right is Mahon M-Floor Section M-2 in the Body Engineering and Research Building, Ford Research and Engineering Center, Dearborn, Michigan. Voorheis, Walker, Smith & Smith, Architects. Bryant & Deltiiler Company, General Contractors.

---

**Insulated Metal Walls**

Three exterior patterns with a "U" Factor equivalent to or better than a conventional 16" Masonry Wall. Constructed up to sixty feet in height without a horizontal joint.

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**Steel Roof Decks**

Standard Double Rib, Wide-Flange Double Rib, and Long Span M-Decks, which can be furnished perforated and fitted to provide an efficient acoustical ceiling.

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**Rolling Steel Doors**

Standard Manually, Mechanically or Power Operated Rolling Steel Doors and Grilles, Underwriters' Labeled Automatic Rolling Steel Fire Doors and Fire Shutters.
Insure Against Electrical Obsolescence

... Provide Convenience of Over-all Electrical Availability!

And, to Build with M-Floors COSTS LESS than any other type of PERMANENT construction

When you build with M-Floors, you build in unlimited circuit capacity for telephone, intercom, signal, and the various types of electrical service. It's there for the life of the building... all you have to do is drill a neat hole into a Cel-Beam Raceway and install a floor service fitting where you want it. Rearrangement of office space or moving of partitions poses no problem in buildings with M-Floor construction... floor service fittings can be removed and relocated or additional fittings installed quickly, easily and without fuss or muss.

This alone, should make M-Floors your choice for all new construction. But, M-Floors have many other advantages: Your building will cost less... the Strength/Weight ratio of M-Floor construction will save up to 30% in the structural frame and foundation of some multiple story buildings. Your building will be built in less time, too... M-Floors go in as fast as the steel frame goes up, and, it is dry construction which provides an ideal storage and working platform for other trades—allows them to get on the job at an earlier date.

To derive full benefit from M-Floor construction, costwise, your building must be designed, structurally, for this type of floor. Cellular steel floor construction and the particular Cel-Beam Section to be employed, should, therefore, be one of your first planning decisions. And, if you compare design and engineering features, you will find that M-Floors will meet your over-all requirements better.

See Sweet's Files for information, or write for Catalog M-571.

THE R. C. MAHON COMPANY • Detroit 34, Michigan
SALES-ENGINEERING OFFICES in DETROIT, NEW YORK and CHICAGO • REPRESENTATIVES IN PRINCIPAL CITIES

MAHON
Electronic control of commercial air conditioning is only seven years old, yet already it has set new standards in operating economy and convenience. Why? The answer lies in the basic advantages of the electronic system. They're presented here as another in a series of reports from the pioneer manufacturer of electronic controls.

The Electronic Revolution in commercial

Honeywell electronic Supervisory Data-Center permits complete management of air conditioning systems from a single point. This is centralized control — now practical and economical for installations of any size.

As modern standards of indoor comfort become more refined, they demand year-round air conditioning plants of increasing complexity. This is costly equipment. It must pay off in terms of efficient, economical operation. Hence the mounting interest in controls — most vital accessory the air conditioning system can have.

When Honeywell developed the electronic thermostat in 1949, it was possible at last to have a control installation that met every demand of architects, engineers and building managers. For with electronics, central control comes into its own as a tool for getting the most out of the air conditioning system. The Supervisory Data-Center, an electronic panel, gives one man supervision over the entire system from one control point. The result is an entirely new kind of convenience and efficiency that means savings — big savings — in several important ways.

Take the case of the modern skyscraper, such as the huge new Mid-America Home office of the Prudential Insurance Company in Chicago. With a conventional control installation, this building’s 203 thermostats could require the services of full-time maintenance men for operational checks alone.

Not so with the Prudential’s electronic installation. From a central location, one man can make a one-degree adjustment in the comfort level of a space 20 floors away, if needed. His control is based on complete information supplied by the Supervisory Data-Center, where it’s displayed visually for analysis and interpretation.

Another example is in the new quarters of The Houston (Texas) Post. Here, a Honeywell electronic panel automatically oversees the entire 400-ton cooling plant’s operation. Visual display of performance data permits convenient, instantaneous review of component function, indicating any adjustment needed.
Instrumentation's Role

Honeywell instrumentation, built into the central panel, is the ultimate refinement that stamps the electronic control installation with the mark of superiority.

For by combining Honeywell-made instruments with Honeywell electronics, engineers are able to achieve certain advantages that assure control efficiency never before realized.

Precision indicators at the panel—the eyes of the central panel—show temperatures throughout the system. Through electronics, control points can then be adjusted remotely with unusual accuracy. Only electronics makes economically feasible such a convenient combination of data visualization and control point adjustment at a spot remote from the controlled equipment. It’s this combination that affords the precise control needed to avoid costly overheating or overcooling.

Instruments also permanently record performance of heating and cooling components, providing precise data for efficiency studies.

Other Important Benefits

Valuable as it is, central control is only one of the advantages that’s proving the benefits of the electronic installation. Another is automatic sequencing, which only electronics makes fully practical for any commercial system.

With electronics, automatic sequencing is convenient: the same thermostat may sequence from heating to full ventilating to mechanical cooling. It’s effective: it utilizes the thermostat’s full operating range. It’s economical: automatic use of outside air to carry part of the cooling load cuts refrigeration costs.

With electronics, use of averaging thermostats—although no substitute for adequate zoning—is no longer costly and complicated. In controlling an open area as a single zone, for example, it’s simple to locate inexpensive electronic thermostats so that load changes peculiar to the enclosure’s equipment or occupancy are sensed and averaged out, maintaining a constant comfort level.

Compensation Greatly Improved

Faster, more accurate, more stable compensation is achieved through electronics. Especially valuable for short-occupancy spaces such as retail stores, this feature also prevents discomfort due to variations of wind and sun effects or sudden changes in outdoor temperature. Automatic winter-summer reset, utilizing an outdoor thermostat, cures temperature drift in winter, air-cooling shock in summer. This means consistent comfort in any building, in any weather.

No specialist is needed for installing and servicing electronic controls. Wiring is low voltage, with standard color coding easily understood by any heating and air conditioning technician. Today’s installations will be up-to-date for many years to come. Maintenance and equipment aging problems are minimized, because the electronic thermostat contains no moving parts.

Key Word: Flexibility

These advantages are summed up in one word: flexibility. It means that all or any combination of the electronic installation’s features are readily adaptable to the solution of any control problem. The results are better, more efficient, more convenient operation of the air conditioning system—and important dollar savings.

In fact, it’s flexibility—in the entire field of temperature control—that helps establish clearly Honeywell’s leadership. For only Honeywell makes all three types of control systems: pneumatic, electric, electronic, each with distinctive advantages for certain applications. Thus only Honeywell is able, with complete objectivity, to help you select the one system shaped perfectly to the needs of the building and its occupants.

* * *

Ask for our new electronic control booklet which tells more fully how to apply electronics to your control problems. Write Honeywell, Dept. MB-7-04, Minneapolis 8, Minn.

Minneapolis-Honeywell Regulator Company
LETTERS

ST. LOUIS' AIR TERMINAL
Forum:
I have received the May issue of FORUM which features St. Louis' new Airport Terminal building.
Words cannot express my deep appreciation for the treatment which your fine magazine has given this new facility. As the leading architectural magazine in the country, your publication has done much to publicize this new terminal building.
We have many reasons here in St. Louis to be grateful to FORUM for the tremendous amount of assistance it has given the community. The round table meeting which FORUM sponsored (How to Rebuild Our Cities Downtown; AF, June '55) came at a most opportune time and was of great assistance to us in expediting our redevelopment plans.
The inspiration and encouragement given by FORUM during this period of progress have been of great value in the rebuilding of St. Louis.

RAYMOND E. TUCKER, mayor
St. Louis, Mo.

FT. WORTH PLAN
Forum:
As chairman of the Baton Rouge City-Parish Planning Commission I wish there were some way every citizen here could see your article on Fort Worth in the May issue of FORUM. Our city is growing faster than Fort Worth and our downtown problem has become a real headache.
Can you furnish me with reprints?

W. J. EVANS
Bodman & Murrell & Smith, architect*
Baton Rouge, La.

GAUDI
Forum:
I notice that your article on Gaudi (AF, March '56) contains a marginal note to the effect that it is based on a forthcoming book. I do hope this good news will finally prove true. There is a great need for a book in English on this architect. As a librarian, I am very much aware of the student interest in him.

ARTHUR B. WAUGH, head
Architecture Library
University of California
Berkeley, Calif.

PUBLIC ROOMS
Forum:
Your article on "Open Kitchens" (AF, March '56) is especially well done, containing a wealth of interesting material for anybody—undertaking a remodeling or rebuilding program. We would like 100 copies since we frequently get requests for just that type of information.

RALPH G. PETERSON
Director of Public Relations
National Restaurant Assn.
Chicago, Ill.

continued on p. 66
Corrugated Box Plant Achieves Better Daylighting

With Heat Absorbing, Glare Reducing Glass

Production efficiency and quality controls benefit from the high levels of natural illumination possible with Coolite. For Coolite, the heat absorbing and glare reducing glass, filters out unwanted elements in "raw sunlight." For example, this modern Hinde & Dauch corrugated box plant, Gastonia, North Carolina, takes full advantage of southern sunshine without distracting, uncomfortable glare and heat. 12000 sq. ft. Coolite, glare reduced both sides for maximum diffusion, is installed in two elevations ... throws eye-easy daylighting deep into the structure. And since Coolite absorbs up to 50% of unwanted heat rays, the interior remains comfortable while flooded with low cost, natural illumination.

Employees feel better, work better, under Coolite-conditioned daylighting. In your new building or remodeling projects, let light give a lift to production. Specify Coolite by Mississippi ... the heat absorbing and glare reducing glass that brightens any production picture.

Translucent, light diffusing glass by Mississippi for better daylighting, is available, wired and unwired, in a wide variety of patterns and surface finishes, all scientifically designed to distribute light to best advantage. Available at most leading distributors of quality glass.

Write today for free Coolite catalog.
Address Dept. 6.
Since its use on the

First Baptist Church, Wilmington, N.C., Architect: Charles C. Hartman. Wilmington and Greensboro, N.C. Sheet Metal Contractor: E. S. Piffl & Son. 12,000 lbs. of non-rusting Revere 16, 20, and 24 oz. Col. Rolled Copper replaced a heavy material with which the two steeples were originally covered and which was deteriorating. The larger of the two steeples is 212' high with a 4' base tapering to 1' at the top. Revere Copper was supplied by Lyon Conklin and Potts Farrington.

St. Anthony Church, Detroit, Mich., where 33.0 lbs. of enduring Revere Sh Copper were used to place a roof that was considered to be too difficult to keep in place. Dave Pomaville & Son Roofing & Sheet Metal Company did the job. Revere Copper was supplied by S. Miller Wholesale Supply.

Danforth Chapel, of Colorado A&M College, Minneapolis. Architect: James M. Hunter, A.I.A. Flashing and louvers as well as the repousse doors (see close-up) are of Revere Copper. Inside, candelabra, lectern and cross also are fashioned from Revere Copper.
Old North Church in 1806

REVERE COPPER

Has protected our houses of worship the Country over

According to a record book recently discovered in an old chest stored in a stable, Paul Revere once sold 681/2 pounds of sheet copper at 48 per lb., and assorted copper wrought nails at .54 per lb. for use on the steeple of the Old North Church, Boston. The dates were July 19th and September 18th, 1806, five years after Paul Revere rolled the first copper sheet in America at his mill in Canton, Mass.

In 1954, the modern mills of Revere rolled and donated approximately 8,000 lbs. of copper for sheathing the new steeple of the Old North Church replacing the one toppled by Hurricane Carol (see photos this page).

So, for a century and a half Revere Sheet Copper has been used on churches of every denomination, for crosses, roofs, gutters, leaders, flashing, doors, spires, flches and other ornamentations. And, on the inside, Revere Copper Water Tube is being used extensively in radiant panel heating systems and water lines. Not alone in churches, but in Government Buildings, State Capitols, hospitals, schools, municipal and office buildings, from one end of our land to the other, Revere Copper has served faithfully.

REVERE COPPER AND BRASS INCORPORATED
Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

Sales Offices in Principal Cities, Distributors Everywhere

When final assembly of the steeple was made at the site, the largest crane in Boston was called on to hoist steeple into place. All trim, flashing, roofing and deck are Revere Leadtex Copper.
THE FIBERGLAS-REINFORCED BUILT-UP ROOF
FIRST MAJOR BUILT-UP ROOFING

THE DILEMMA
For 100 years, roof decks have been built up by applying successive layers of asphalt or coal-tar pitch. The application problem has always been: How to use enough bitumen to protect the deck, and still keep the built-up roofing from cracking or alligatoring? To add to architects' building worries, there's the possibility of voids and holidays between the roofing layers.

THE RIGHT REINFORCEMENT
Owens-Corning Fiberglas has found the answer to this dilemma in the revolutionary but proved-in-use Fiberglas*-reinforced built-up roof. Ageless fibers of glass in Fiberglas Perma-Ply* roofing reinforcement weld the hot bitumen into one continuous monolithic sheath. It's the same principle of reinforcement that puts strength into Fiberglas-reinforced fishing rods and bulletproof vests!

THE PROOF
Nine Years of field testing, over 6 million square feet of roofing, show that Fiberglas roofing reinforcement will not rot or decay . . . will outlast the bitumen itself! And look at these extra advantages:
- Use 40% more bitumen without risk of cracking!
- Inorganic glass felts will not absorb or hold moisture . . . can't wick out essential oils!
- Three plies do the work of 4 plies of conventional felts—roofing-in goes faster!
- Owens-Corning will bond Fiberglas-reinforced built-up roofs for up to 20 years!

INDESTRUCTIBLE "ALL-GLASS" ROOFS
Beneath the Fiberglas-reinforced built-up roof, specify the most widely used of all roof insulations—light and durable Fiberglas Roof Insulation. Make your new roofs ALL-GLASS from top to bottom—for strength, insulating efficiency, fire-safety and permanence. It's amazing the difference Fiberglas makes!

DESIGN DATA
Specification information on Fiberglas Reinforcement for Built-Up Roofing, even later than that in Sweet's Catalog, is contained in new 32-page booklet—Reinforced Built-Up Roofs. For your free copy, contact local Fiberglas sales representative or write directly to Owens-Corning Fiberglas Corporation, Dept. 171-G, Toledo 1, Ohio.

ORDINARY ROOFING
Felts separate bitumen applications, creating layered construction. Destructive air or moisture may be trapped in poorly bonded areas, causing premature roof failure.

FIBERGLAS ROOFING
Reinforcement is highly porous . . . allows bitumen to penetrate and bond all layers together forcing out air and moisture. The result is a monolithic, reinforced, long-lasting roof.

ROOFING PRODUCTS
Fiberglas Perma-Ply No. 6, Fiberglas Base Sheet, Fiberglas Roof Insulation, Fiberglas Farm Board, Fiberglas Mop Yarn, Fiberglas Corer-top* (Cold-application roof resurfacing).
IMPROVEMENT IN 100 YEARS!

This illustration was taken from a micro-photograph showing strong reinforcing structure of Fiberglas strands.
BUSH 'BC' Blower-Condensers

Bush 'BC' Blower Condensers permit air conditioning or refrigeration systems to operate without condensing water... provide the answer to excessive water costs, limited supply, excessive impurities or disposal problems.

Available in capacities up to 20 Tons, new Bush 'BC' Blower Condensers feature low noise level... quiet operation.

Patented Inner-Fin coil construction, a Bush exclusive, makes these the most compact units on the market. Units are easy to install, have rugged all-steel cases with durable rust-resistant finish... are available arranged with either blower fan or propeller fan.

The BUSH line of water-savers, most complete in the industry, also includes:

'COT' COPPER DECK COOLING TOWERS with all copper decking which cannot rust or rot. Capacities from 3 to 75 tons.

'IEC' INNER-FIN EVAPORATIVE CONDENSERS featuring patented inner-fin coils. Both units available with blower or propeller fan. Capacities from 3 to 90 tons.

'PFC' PROPELLER FAN CONDENSERS — Two basic models, 2.2 Tons and 3.3 Tons, can be combined by mounting in banks to obtain any desired tonnage.

'PS' PRESSURE STABILIZERS which automatically maintain satisfactory head pressure when air cooled condensers operate outside in low ambient temperatures.

Write direct for complete information or contact your experienced BUSH representative for valuable engineering and application assistance.

BUSH MANUFACTURING COMPANY
WEST HARTFORD 10, CONNECTICUT
RIVERSIDE • CALIFORNIA
How to save your clients
$194 a year in maintenance costs per 1,000 square feet of floor space

For every 1,000 square feet of floor space in heavy traffic areas, you can actually save your clients an average of $194 a year, or 50.7% on maintenance costs by carpeting those areas.

New studies prove that carpet in reception rooms, busy work areas, and corridors cuts costs 50.7%. The average cost, per 1,000 square feet, of maintaining carpeted floors at accepted standards of maintenance averages $189 a year in heavy traffic areas. For non-carpeted floors, this figure shoots up to $383—an increase of $194 a year for each 1,000 square feet.

This tremendous difference in maintenance cost exists simply because carpet is so much easier to clean. Fewer man-hours, less equipment are needed because carpet’s “brushing” action confines soil to a small area, and soil stays high in the pile where routine vacuuming can easily remove it. One operator—one operation.

And since there’s no gloss to wear off to reduce the appearance level, carpet looks better between cleanings. In addition, carpet compares very well for durability.

Figure the floor space on the job you’re now doing to see how much carpet can save your client. On top of this tremendous economy, carpet acts as a blotter to absorb noise and provides safe, sure, slip-proof footing. In general office areas, corridors, reception rooms and other heavy traffic areas, carpet will prove the most economical, most dignified, most practical choice for your clients.

Send for your file copy of "Cutting Costs With Carpet," the complete breakdown of actual field costs on maintaining carpeted and non-carpeted floors. Write to Dept. A3, Carpet Institute, Inc., 350 Fifth Avenue, New York 1, N. Y.

Specify carpets designed and made for the American way of life by these American manufacturers

Artloom • Beattie • Bigelow • Cabin Crafts-Needleluff • Downs • Firth • Gulistan
Hardwick & Magee • Hightstown • Holmes • Karastan • Lees • Magee • Masland
Mohawk • Nye-Wait • Philadelphia Carpet • Roxbury • Sanford • Alexander Smith

CARPET INSTITUTE, INC., 350 Fifth Avenue, New York 1, N. Y.
Good creative design, planning and construction are the results indicated in the completed structure shown above. Results of the “finished job” begin with materials that offer compatibility with others and yet maintain freedom of design as well as economy to over-all construction costs. Davidson Architectural Porcelain for the building shown above was Type 2 Facing Panels in a ripple powder blue finish, which were mounted on steel framing and set at an angle.

Whether the application is porcelain facing panels or curtain-wall panels for new or remodeling use, you can rely on Davidson Architectural Porcelain Panels to offer unlimited freedom of design expression.
DESIGN STUDY

NUMBER

Davidson

TYPE 2 Porcelain

Facing Panels

DESIGN & DETAIL STUDY OF

ARCHITECTURAL PORCELAIN

Security Trust and Savings Bank, Billings, Montana

For further information on the application of Davidson Architectural Porcelain check and send for the following:

- Full scale drawings showing the application of Architectural Porcelain for the Security Trust and Savings Bank, Billings, Montana.
- Detailed, 16-page Architectural Catalog, 1956 Edition
- Porcelain Panels for Store Fronts
- Porcelain Panels for Shopping Centers
- Porcelain Panels for Schools
- File of Typical Construction Details
- Reference File Jacket on Architectural Porcelain
- Reprints of this Study #2. Quantity

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You see in the enlarged cut-away view at the left how PC Glass Blocks “discipline” daylighting. Tiny prisms, pressed into the inner faces of the block, collect the daylight, bend the rays and direct them upwards. Installed in panels, these light-directing Glass Blocks bounce daylight off the ceiling, and distribute it uniformly throughout the room. This balanced illumination bans glare and high-contrast shadows. Students are relaxed and receptive. They see better, learn better.

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City._________________________ Zone.________________________ State._________________________
LETTERS cont'd.

HIGH STAGEHOUSES
Forum:

According to the judges who selected the prize-winning plans for the community youth center in the Porcelain Enamel Design Competition (AF, March '56), the "high stagehouse remained an unsolved problem." I did not see a copy of the design program for this competition, but I would like to ask why the judges think such a high stagehouse is necessary. Do the architects who set up this program expect this youth center theater to house nothing but touring Broadway musical shows? Most Broadway theaters with their high stagehouses and counterweight systems for flying scenery date from a period when old-fashioned, late Victorian wing and drop settings were still in use. New York theaters continued to be constructed in this way until all theater building stopped in the late twenties when excessive land values made it impractical to provide sufficient off-stage area for other methods of shifting.

WENDELL COLE
Associate Professor of Speech and Drama
Stanford University
Stanford, Calif.

The stagehouse tower was required by the competition program to force contestants to study the difficult problem of sheathing a multistory blank wall in porcelain enamel metal.—ED.

NEW FASTENERS
Forum:

In your article on fastening in the April issue I believe you overlooked the tremendous possibilities of using these new methods in specialty work. While bolting and welding are having their greatest advancement in heavy or structural connections, the powder-actuated and stud welds are just coming into their own in building specialties. The initial high cost of the equipment, charges and pins are rapidly overcome by the time saved in these days of high-priced labor. The time required for setting sash, door bucks and anchoring attachments has been cut appreciably by the use of these tools. In one small curtain wall job of some 4,000 sq. ft. of surface we used powder-actuated studs to fasten into the structure consisting of %-" thick steel or a concrete surround. So effective was this means of anchoring that we were able to erect the aluminum for well under 50¢ per sq. ft. We have never come close to this cost when required to use such old-fashioned methods as welding or drilling and tapping the structural steel.

STANLEY E. ARONOFF
Southern Plate Glass Co.
Baltimore, Md.

Incidentally, Forum failed to credit to the pioneering Nelson Stud Welding Division of Gregory Industries Inc. the photo at the top of p. 161.—BD.

72
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Glazing Instructions
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Suggested Specifications

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EXCERPTS

**Technique vs. style**

Excerpts from an address by Architect Robert Barnard O'Connor at the Trinity College Convocation on "Liberal Education and the Creative Man"

In the early years of the modern movement in architecture there was endless talk of functionalism as if Louis Sullivan or Frank Lloyd Wright or the Bauhaus had suddenly discovered something new in history and through it had brought new dimensions to every other art. Nor was there a serious architecture that was not functional. Whether it was great or not is another matter.

The difficulty, indeed, with architecture is the dichotomy inherent in it since it first became an art, between building as technique and building as aesthetic expression—between the skeleton and the life. So far has modern invention gone in providing a well-nigh endless choice of materials and structural methods, and so complex have become the necessities of the mechanical services, that we have come to mistake the bare coordination of technical detail for the whole art of architecture. It is because of this possibility of producing architecture of high technical efficiency without any effective claim whatever to aesthetic depth that we see such thinness, such uncertainty, and such lack of emotional impact in architectural design today.

Success in the one aspect and failure in the other epitomizes the modern life our architecture reflects. With brilliant achievement in science and technology our mechanomorphic society has yet almost lost touch with all that conduces most to emotional balance and spiritual enrichment; with everything, in short, that has contributed qualitative values in the struggle for human growth.

Style, which in architecture is the ageless factor that remains when technical innovation and functional detail have passed into history, and which comes at last to summarize for posterity the whole intricate balance of need and beauty, intellect and emotion, ambition and idealism from which is woven the physical fabric of its time, will not again attain coherence and grandeur until man achieves it.

Reliance on technology and science, and training, however thorough, in the analytical method, is not enough. Nor is even a knowledge of all the facts of history and the arts, "the tree of knowledge," as Ruskin says, "is not the tree of life." We must again enlist the whole capacities of mind, the emotional as well as the intellectual, the intuitive as well as the analytical. And we must regain that firm sense of purpose without which change ceases to be progress and creation loses all feeling of joy and fulfillment.

continued on p. 82

**TUF-FLEX DOOR FACTS**

L.O.F Tuf-flex Glass Doors are made in 16 types, of 3/8" and 7/32" tempered plate glass, to finished sizes. Bronze or Alumilited Aluminum fittings are applied at the factory. Furnished with continuous channel or corner fittings at the top and bottom, as desired. Custom fittings furnished by others will be applied by L.O.F, provided they are approved. Concealed door holders can be applied only where continuous top channels are used. Tuf-flex Doors are ideal for operation by photoelectric control.

Doors are furnished complete with fittings only, which are designed to receive pivot hinges and other builders' hardware. Installed like any pivot-hinged door. Frames or jambs of aluminum, bronze, stainless steel or other metal are preferable.

**Standard sizes:**

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<thead>
<tr>
<th>Door Dimensions</th>
<th>Product Code</th>
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<tr>
<td>30&quot; x 84&quot;</td>
<td>29-13/16&quot; x 83-1/16&quot;</td>
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<td>36&quot; x 84&quot;</td>
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<td>42&quot; x 84&quot;</td>
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Facts You Should Know About Masonry Reinforcement

By Edwin L. Saxer: Professor and Chairman, Civil Engineering Department, University of Toledo

For some time, there has been a growing tendency to rely on steel reinforcing in mortar joints to improve the capacity of masonry walls to resist the stresses which develop.

The usage of joint reinforcement has often proven unsuccessful in the past. The chief reason for this has been the failure to use reinforcement in more than every third or fourth joint—a practice which provides little or no benefit to the intermediate joints.

A contributing factor in many cases has been the inability of some forms of reinforcing to develop adequate bond strength.

As a result of research at the University of Toledo, and at other laboratories, the principles of effective joint reinforcement are now well understood. All indications point to the fact that reinforcement should be used in every joint, or at least in every other joint, to insure reasonable effectiveness.

Our research on the effectiveness of Key-Wall leads us to the following conclusions: (1) The design of Key-Wall results in a highly efficient distribution of steel. (2) The use of Key-Wall can reduce significantly the cracks resulting from shrinkage of the masonry; and (3) Key-Wall is effective in improving the lateral strength characteristics of masonry walls.
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EXCERPTS cont'd.

The architect's office

Excerpts from an article on the US architect's relationship to the US building business by Martin Pilch in The Architectural Review of Britain

The building industry in America is one of the highest paid industries, and one of the most competitive. It commands the best technical skill available and is very cost-conscious. It has to deal with well-organized labor unions and pays very high wages. Only a well-above-average architectural employee in New York City commands a salary equivalent to that of a bricklayer. The average tradesman is well educated and highly skilled. Large contractors have a tendency to become brokers, as they may only do one trade themselves and subcontract all else. They comprise a small, very efficient organization of specialists in planning and organizing building operations.

The normal practice in large jobs where the clients are private individuals or corporations as contrasted with public bodies, is to employ a contractor almost at the same time as the architect. In fact the client may approach the contractor, and, in consultation with him, appoint the architect, or vice-versa. The contractor then acts as a consultant, and is paid either by a fixed fee, a percentage of the cost of the job upon completion, or in any other mutually agreed way. Subcontracts are then sent out to tender in the usual way.

The American client has long ago accepted modern mechanical services, and demands the best in heating, lighting, air conditioning, lifts, etc. The American architect, therefore, employs consultants early, and much more frequently than is the case in Britain—in fact they are employed universally. Certain states will not grant permission to erect any building regardless of size, unless structural and mechanical drawings are accompanied by calculations, and the drawings are stamped by a licensed engineer. Large architectural offices at one time employed their own specialists, but that method is being superseded in favor of outside consultants as this gives the architect freedom to choose the most appropriate firm for the job. The consultants used for an average job are: heating and ventilating, plumbing, electrical, structural. These consultants are usually paid by the architect either by a fixed fee or a mutually agreed percentage of the cost. This service is included in the architect's fee from his client, and the client is only asked to pay separately for special services, if required, i.e., town planning consultants, grading or foundation specialists, etc.

continued on p. 92
Phelps Dodge Armo-Lok cable with Habirite (butyl rubber) insulation—a companion to Phelps Dodge Varnished Cambric insulated interlocked armor cable—is more than "just another interlocked armor cable."

Habirite—developed through years of Phelps Dodge experience in the design and manufacture of high voltage cables—is a specially engineered butyl rubber compound. It far surpasses any other type of rubber insulation for dependable service.

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See your Phelps Dodge distributor for information on a complete Armo-Lok system. For catalogue and specification data on Habirite or Varnished Cambric insulated Armo-Lok cable, write: Dept. M-6, Phelps Dodge Copper Products Corporation, 300 Park Avenue, New York 22, N.Y.
This is another example of the many design patterns possible with Cupples’ versatile curtain wall construction. By intermixing gray aluminum and vari-colored porcelain panels on the facade, an unusually pleasing, colorful effect is obtained. A series of horizontal and vertical tubular aluminum mullions supports the panels and the fixed, double-weatherstripped lights.

Cupples’ dominance in curtain wall design, construction, and erection keeps pace with its leadership in the manufacture of aluminum windows, doors and other aluminum products. Our catalogs are filed in Sweet’s.

The ALUMI-COUSTIC Grid System—exposed aluminum tees—was used to support the acoustical metal ceiling panels, as well as the lighting fixtures. Cupples ALUMI-COUSTIC Grid Systems for Suspended Ceilings permit complete accessibility and flexibility by easy removal and interchange of ceiling panels and lights. Add beauty and washability...at an extremely low cost.

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needs no acoustical treatment

In addition, it has high thermal insulative qualities ... offers many decorative possibilities ... it is low in cost ... fire-safe

A large number of schools are being built these days of Waylite concrete masonry units.

The fact that the exposed surface of Waylite is one of the most efficient acoustical treatments known is in part responsible. Rooms that are comfortable to the ear are equally important in churches, auditoriums, offices, and many other structures.

Exposed Waylite is not only comfortable to the ear, but it is pleasing to the eye. The unit patterns shown give some idea of the varied decorative effects that can be easily achieved. The natural surface of Waylite units is attractive in color and texture. Units may be painted—or pigmented during manufacture.

Waylite concrete masonry units are structurally adequate and give a combination of four important factors: (1) high thermal insulative qualities; (2) excellent acoustical values; (3) a wide range of decorative possibilities; (4) low in cost—and fire-safe.

You will find 24 pages of engineering data on Waylite in Sweet's Catalog. Additional information is available on request. Address the Waylite Company, 20 North Wacker Drive, Chicago, Illinois or Box 30, Bethlehem, Pennsylvania.
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New insulation for liquid cooling lines stops dangerous condensation

Now you can stop condensation for good on liquid cooling, chilled water, and other cold lines. Armstrong Armaflex®, a flexible new pipe insulation, completely seals out moisture and air. Armaflex is made of foamed plastic, with a closed cellular composition that provides an exceptionally efficient vapor barrier. In ½” thickness, Armaflex prevents condensation under normal design conditions on indoor lines operating as low as 32° F. Insulating efficiency always stays high because Armaflex stays dry. Flexible enough to tie in knots, Armaflex can cut application costs by as much as 50% when compared with wrap-on or rigid type pipe coverings. It fits easily over pipe or tubing, follows contours without cutting or fitting. If lines are already in operation, Armaflex can be slit lengthwise, snapped into place, and sealed with Armstrong 520 Adhesive. Armaflex is clean to work with, too. It is soft, odorless, and will not rub off, crumble or chip. There’s practically no waste. Self-extinguishing, Armaflex can be safely installed before sweat fittings are made. Armaflex comes in 6’ lengths, for pipes and tubing to 3½” i.d. It can be used on lines operating from 32° to 200° F.

New RCA buildings brighten the landscape with

Curtain walls of Porcelain-enameled and Stainless Steel

RCA's Cherry Hill Offices and Laboratories near Camden, N. J. are an important outpost in the field of industrial building design. 1400 people work here; and some 320,000 square feet of floor area are encased by the richly colored steel wall panels, which in turn are supported by a bright grid of durable Stainless Steel mullions.

The porcelain fused to the surface of steel enameling sheets is highly resistant to abrasion. The panels reflect radiant heat and lower the air-conditioning load. Total wall thickness is only 2\(\frac{1}{2}\)\(\text{"}\), so thousands of square feet of floor area are added beyond the area provided in masonry construction. The panels wash themselves every time it rains, and the Stainless Steel framing and porcelain panels will last as long as the projected life of the building. The curtain wall weighs only 6\(\frac{1}{2}\) psf, so there is a notable saving in structural framing. The panels also serve another purpose: they are resistant to radioactive contamination.

No other curtain wall system can offer such rich color and durability at anywhere near the low price of Porcelain-enameled and Stainless Steel. For more information, write to United States Steel, Room 5347, William Penn Place, Pittsburgh 30, Pennsylvania.

General Contractor: Turner Construction Company, New York, N. Y.
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GENERAL ELECTRIC
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Equipped with time-tested hermetically sealed compressor for long life and trouble-free operation.

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Simple, modern styling with louvered front. Hammered soft gray finish lends itself to every interior.

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Take up to 30% less floor space. Fit easily in shallow corners. Over-all depth is up to 5” less than other makes.

and thrifty
General Electric engineering for maximum efficiency cuts water and electricity bills. Operating cost is only pennies a day.

WATER COOLERS
for offices, stores, institutions and factories

Whenever you include water coolers in your floor plans, specify General Electric Water Coolers...not only for quality and special features, but because there's a General Electric model to fit your particular requirements. They range in capacity from 2.85 to 21.5 gallons per hour. The standard General Electric 5-year protection plan backs up famous General Electric quality. Call your local General Electric Water Cooler dealer or write to General Electric, Commercial and Industrial Air Conditioning Department, 5 Lawrence Street, Bloomfield, N. J.

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These features make the big difference:
1. Full-width foot pedal for easier water control.
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6. Snap-off front panel for easy maintenance.
It's all fused into one unit for a combination of rich, permanent color, pleasing surface texture and reflective insulation.

The uniformly textured surface of the patterned glass subdues bright reflections.

It's Tempered. Huetex is tempered to a mechanical strength of 3 to 5 times that of regular glass of the same thickness; 6 to 8 times the impact strength. 

Huetex can be used with a variety of framing systems and insulation of your choice. For further information, write to Libbey-Owens-Ford Glass Co., 608 Madison Avenue, Toledo 3, Ohio.

HUETEX GLASS by Blue Ridge

IN 12 BEAUTIFUL STANDARD COLORS OR CUSTOM-MADE TO YOUR COLOR SAMPLE

SPRING GREEN  EVERGREEN  GARNET RED  HORIZON BLUE  NIGHT BLUE  BLUE SPRUCE

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Gold Bond Roof Insulation Board is quickly installed; available in natural or asphalt coated finish; square, shiplap or offset edges.

Gold Bond Roof Insulation Board resists compression... retains insulating efficiency

Make sure that construction traffic can't squeeze insulation value out of the roof board you specify. Gold Bond Roof Insulation Board stands up under loaded wheelbarrows, heavy workmen's footprints, sharp-rimmed buckets of asphalt. It delivers the insulation value you specified for the job. And that's only one of its advantages:

It is moisture-resistant. Each fibre is impregnated with water-resistant resin. It is also available with full asphalt coating... further protection of full insulating value for your job.

Gold Bond Roof Board has low absorption of hot pitch or asphalt—another safety factor for insulation values. Its smooth surface can be mopped quickly and easily to give maximum coverage of the bonding material and to hold down application costs, too!

See Sweet's Catalog under index 10a/Na for further data, or write National Gypsum Company, Dept. AF-76, Buffalo 2, N.Y.

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To help create a warm functional kitchen, Architect Huson Jackson used ceramic tile... and captured this rare combination for work-free convenience and relaxed living.

The semi-separation of the breakfast area—to the right of the ceramic tiled cooking island—affords a pleasant place for eating and relaxation. In the kitchen section an aqua tone ceramic tile wall from floor to ceiling keynotes an easily cleaned, colorful work center. The tiled counter tops and drainboards guarantee lifelong service and economy because ceramic tile won't burn, scratch or stain.

To answer the rugged demands of family living, a ceramic tile floor is used throughout—linking kitchen and outdoor patio into a single attractive living space when the sliding window wall is open. Specify a ceramic tile floor and you give your client an easily cleaned floor that lasts the life of his home.

Ceramic tile helps you offer your clients unique benefits: custom designs from standard tiles, minimum maintenance and lifetime economy. This is true whether you specialize in residential, commercial or institutional projects. You choose from a broad range of colors, surface textures and sizes. And don't forget to explore the savings made possible by adhesive installations. This type of installation is ideal for many dry wall surfaces.
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OF ARCHITECTURE
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The Alcoa Building overlooking Pittsburgh's new Mellon Park
Memo to architects

The adjoining advertisement appears in the July issue of Fortune magazine. It is addressed to men with whom you may be doing business. Alcoa wants to seat the thought that aluminum is a tested, practical, economical building material. Since the completion of the Alcoa Building, great strides have been taken in the use of aluminum in building. Ingenuity of the architect, pioneering of the contractor and fabricator, Alcoa research and development...all have made this enormous progress possible.

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New literature on Alcoa Architectural Color Finishes and a wealth of material on aluminum in building is available to you. Or, if you have a new problem, the Alcoa Architectural Development Division is ready to assist you. Call your nearest Alcoa sales office or write ALUMINUM COMPANY OF AMERICA, 1887-G Alcoa Building, Pittsburgh 19, Pennsylvania.
Before selecting an installation method, the type of acoustical material specified, construction details, and often budget restrictions must all be considered.

Where an existing ceiling is level and in good condition, cementing is usually the best way to put up acoustical tiles like Armstrong Cushion-tone, Travertone, Minatone, Crestone, and Corkoustic. A fast, economical technique, cementing requires fewer installation materials and less labor than any other method.

If overhead pipes and wiring must be concealed, mechanical suspension systems are generally specified and can be used with any Armstrong Acoustical Material. This method simplifies the installation of recessed ceiling fixtures. And when kept as low as practical in corridors, suspended ceilings minimize the conduction of sound throughout this area.

In frame construction, the most economical installation method is to apply Armstrong Cushion-tone to wood furring strips by nailing or screwing. Where an incombustible material is required, Armstrong Minatone can be screwed to a gypsum sheathing base.

Because every job has its own requirements, Armstrong provides a wide variety of sound-conditioning materials in many styles and with varying characteristics. These materials are put up by Armstrong Acoustical Contractors, men thoroughly familiar with all installation techniques. Your Armstrong Acoustical Contractor will be glad to give you full details on the entire line of Armstrong sound-conditioning materials.

To hide unsightly pipes, duct, and wiring, a suspended ceiling of Arrestone has been used in this cafeteria. Besides soaking up 85% of the sound that hits it, Arrestone is incombustible and easy to clean.

... Metropolitan Museum of Art, New York, N. Y.

To quiet noise in homes, Full Random Cushiontone can be installed by either stapling, nailing, or cementing. The attractive Cushiontone ceiling blends with the décor and adds relaxing quiet to this modern kitchen.

... House Beautiful’s Pace Setter, Dallas, Texas

To satisfy fire-safety codes, the noise-quieting ceiling of Armstrong Travertone in this new bank building was cemented to a plaster base.

... The Seamen’s Bank for Savings, New York, N. Y.

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*TRADE MARK

architectural FORUM / July 1956
ACRES of Pittsburgh Glass

brighten this dramatic new school

It's the San Gabriel High School, near the home of the famous San Gabriel Mission in California. The architectural theme was inspired by Plato: "Knowledge which is acquired by compulsion has no hold on the mind."

What an important place glass plays in this design concept! In the words of architects Smith, Powell & Morgridge, Los Angeles, the acres of Pittsburgh Plate Glass "create their own environment and seasonal displays." Most of the glass used to achieve this end was 3/8" Pittsburgh Polished Plate Glass and Pennvernon Window Glass.

There are some interesting design ideas here. "Borrowed light" is one. The upper part of partitions between classrooms and hallways is glazed, so that classroom light is diffused into the halls. Also, the area above the lockers (which are located outside, on balconies) is glazed to make use of that light, too.

See what the skillful use of glass can do to a school!
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Gym. Clerestory windows get rid of the gloom.

Cafeteria. Plate glass doors roll back for outdoor eating.

Outside lockers. Notice glazing above them.

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architectural FORUM / July 1956
Here is a big factor often overlooked by cost-minded business and industry: The floor and wall space... the time and labor... the upkeep and repair costs you can save with Kinnear Rolling Doors.

Opening straight upward, they coil out of the way. Their rugged, all-metal, heavily galvanized construction withstands hardest use... toughest weather conditions. Built any size, with manual or electric operation. Ideal for old or new buildings of any type.

Write for details on Kinnear Rolling Doors—the big value in door efficiency.

Architectural jobs are obtained in the usual manner but greater attention is paid to public relations, particularly by large offices, where lack of continuity of jobs might throw the whole organization out of gear. Public relations are to a large extent helped by the press. The real estate pages of the New York Times, for instance, constantly feature new buildings and the names of the architects responsible for them. Some architectural magazines are designed not only to serve the architect but to a large extent the contractor and the layman. The general public is very much more aware of contemporary architecture and the work of individual architects. Time and Life magazines feature buildings frequently. Modern architecture is not only accepted, but is used as an advertisement to convince the public that a particular firm is very much to the fore because of its use of well-designed buildings and the most up-to-date services.

Americans are brought up with the idea that increase of efficiency and productivity will result in higher standards of living. This is reflected in architectural offices. Standards of lighting (100 lumens on the board), equipment, and comfort are very high indeed, and result in an excellent standard of craftsmanship and speed.

Most offices are in large modern buildings with high rents. This permits the most efficient layout and good standards of daylighting. It is usual to have an administrative section, a plan room, a specification room, a conference room, the partners' rooms and the main office in which all drafting is done. The overheads of an average office are very high, and an architect in America must be an efficient organizer to survive. This is usually achieved by either combining the necessary qualities in partnerships, or by employing an efficient office manager.

Preliminaries and working drawings are produced by a group who stay on the same job from beginning to end. Each person in the group is given a task for which he is wholly responsible. The person in charge of the group is responsible for the whole job, and makes sure that all the points are settled, so that no one has to stop and wait for decisions, and the drawing may proceed with very little obstruction. In general, there is very large delegation of responsibility and this makes not only for greater efficiency in the office but also for a spirit of cooperation and a sense of achievement.

The quality of architectural design will depend on the general outlook of an office and the talent of the designers, but under the American system good coordination between design and construction is taken for granted.
Anybody for tennis... or hockey?

Dual rink-court freezes ice fast with 10 miles of steel pipe

What is in summer a court for tennis and other sports and in winter an artificial ice rink -- the first in Vermont -- is the proud acquisition of Middlebury College. In the huge memorial Field House and Gymnasium, about 52,000 ft. of 1-inch steel pipe assures rapid, solid freezing of the 85' x 185' rink when the asphalt topping of the sport court is flooded with water.

As at Middlebury, most of the collegiate and professional ice rinks of the country depend on steel pipe to carry the refrigerant... additional demonstration that steel pipe is first choice for plumbing, radiant heating, fire sprinkler systems, snow melting, structural applications, oil, gas and water lines. In fact, steel pipe is the most widely used pipe in the world!

Several interesting booklets are available for the asking... "Steel Pipe in American Life," "Radiant Panel Heating with Steel Pipe" "Steel Pipe Snow and Ice Removal Systems."

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How Invisible Beams of Westinghouse Traffic Sentinel Hold Operatorless Elevator Doors Open Until Entrance is Clear

TEST BY BETTY FURNESS — (see photo of delicately balanced eggs on spoons showing how doors are held motionless until entrance is clear.)

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How new heating and ventilating system

Dunham VARI-AIR designed to help the "hard pressed" budget... and save valuable floor space

School construction costs can't go anywhere but down when Dunham VARI-AIR heats and ventilates classrooms. This new and simple system satisfies all health and comfort standards... does it at a cost that meets with the full approval of any school board member.

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Lower Costs: Dunham VARI-AIR eliminates need for in-the-room cabinet ventilators... provides greater savings in classroom heating construction costs. Total absence of complex controls saves both first and maintenance costs.

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Dunham VARI-AIR Unit, concealed in mixing flue behind blackboard, mixes fresh and recirculated air—silently diffuses it to classroom through overhead grille.
cuts schoolroom construction costs

How VARI-AIR Operates

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THINK what it means to you to have a steel framing member that is not only lighter and therefore less expensive but STRONGER than other steel framing members for floors and roofs.

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How to Lend Added Lure to Today's Cars Effectively yet Unobtrusively with Lighting by LITECONTROL

In this automobile showroom, LITECONTROL'S 5100 series fixtures were employed to accent the natural glamor of the cars. The low brightness lenses provide a high level of illumination while reducing glare to a minimum, and the fixtures blend quietly into the ceiling yet assure quality illumination.

Thanks to Litecontrol's exclusive trigger catches, fixture doors are easy to open, easy to close and easy to remove — hence very easy to clean and service. Gentle fingertip pressure on easily accessible levers opens the doors — to close, just push them back in place. To remove — door is easily lifted out of the housing enclosure. Fixture finish is long-wearing baked white enamel.

Whether you are planning a lighting installation for a showroom, office, store or library, consider LITECONTROL. You will obtain superior lighting at standard fixture costs.

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About this month's Forum

Behind stories like "The Lender's Influence on Architecture" (which begins on p. 140) there is quite an adventure for Forum's research staff, because they have to ask people of one occupation questions relating to another occupation.

Lenders are quite obviously used to being asked questions about banking and mortgages but not about architecture, just as architects are used to being asked about anything but banking. On the first round the lenders denied exerting any influence at all on architectural planning or design, and the architects tended to agree that there had been none, at least none on their own jobs.

Yet this answer did not satisfy the editors. They remembered many an individual episode in which the question of lender influence had indeed come up, sometimes forcefully. Based on these episodes they framed new questions, more closely pointed and detailed, for further research. And thereby they gradually penetrated into the situation which you find reported: a situation as complex as one might expect, and of intrinsic interest to anybody engaged in building.

Once again this illustrated how things are in the building field. It is full of people of different occupations, each minding his own business, but all necessary to the total outcome. Rarely does any of these pros have time to explain himself fully to the others. Yet correlated action is needed for a fine result, so understanding each other is a big advantage.

This is true not only of the relationships between architecture and finance but between architecture and technological advances.

Into Forum's office, for example, there strode one day Mr. Adrian TerLouw, Eastman Kodak Co.'s educational consultant. He asked the editors what they thought "audiovisual education" was. Obligingly they muttered something about the use of "audiovisual aids" such as TV, slide films, movies and the like.

"That's just what I thought you would say," countered Ade, and settled down to showing us just how narrow our conception was. The upshot was that the editors understood they were talking with a rare man—the kind that sees across from his own interest and his own occupation to the field as a whole. And the further upshot was a panel discussion with everybody in—architects and teachers, engineers and industry representatives—to swap views. By the time they were through, 13 common misconceptions had been nailed to the door, most of them the result of narrow thinking by those who stick too closely to their own craft (p. 120).

We think you will be interested in that report, too. The fact that you as reader may come from any one of these different professions means that the report has to stand up against many different kinds of experience. It is the architect's job—and ours—to meet them all.

The Editors
A new New England accent runs through the many schools of The Architects Collaborative—and through their many parts:

Some of the best new schools being built in the US are coming out of the Cambridge, Mass. office of a firm called The Architects Collaborative.* With over two dozen bright, modern schools completed or underway around New England, TAC is gradually persuading a region steeped in architectural traditions that there are much better ways of teaching children than putting them in a big new Georgian box with a cupola on top.

TAC members, like many good designers, approach each school job with two thoughts uppermost: 1) how to build more teaching space for less money, and 2) how to turn it into an environment in which children can enjoy learning. As the following pages show, they are willing to explore almost any avenue that promises to lead toward these twin objectives.

In analyzing their own and other architects’ schools, TAC members sometimes play “dominoes” with different colored paper cutouts representing classrooms, utilities, assembly rooms, administrative spaces, covered walkways. These cutouts are first used to help determine the best grouping of these elements for a particular school. The cutouts also form colorful patterns in themselves and have a lighthearted way of turning up in the school itself as decoration: in a checkerboard tile mural near the entrance, in little random compositions of colored tile sprinkled along corridor walls, or in the colorful geometry of a porcelain enamel curtain wall (p. 112).

Between preliminary floor planning and final touches, however, come strict cost studies and a search for the most economical methods of construction. As each design develops, its project captain meets periodically with an advisory board of his associates, who come in fresh from other kinds of work to ask pointed questions. Is the site being used to best advantage? Are landscaped outdoor areas introduced into the heart of the plan as visual relief, and as useful centers of school life? Is the character informal, the scale appropriate to the size of the pupils? Are colors gay and harmonious? In short, is it a place children will like?

*JEAN B. FLETCHER
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WITOLD von HENNEBERG

Left: Frank C. Havens School by Architect John Warnetke; photo by Rondal Partridge (see p. 117)
**TAC’s PLANS: blocks, clusters and courts**

**Block plans** of a junior high at S. Attleboro, Mass. and a high school under construction at Littleton, Mass. show compact grouping for economy, zoning of special or noisy functions as separate wings, and the introduction of landscaped courtyards for light and visual interest where most needed. Photo (left) shows a butterfly canopy for bicycles in front of S. Attleboro.

**Cluster plans** for elementary schools include an adaptation in W. Bridgewater, Mass, of TAC's expandible school designed for Collier's Magazine. Here younger and older children will have “villages” of child-scaled huts: classrooms with low outside walls, single 6' x 6' skylights. Multipurpose room is at left.

**Two-story clusters** at Waltham, Mass. were economically executed in lift-slab.

Split-level stairs and bridges link the classrooms with the main building.
S. Attleboro's court by The Architects Collaborative provides between-class views from walkways linking the main building with the classroom cluster at the left and gymnasium in background.
Covered play space and storage (above and right) are tucked under the administration wing of Waltham’s Northeast Elementary School where it bridges a gully to the site of a future junior high.

**TAC’s COURTS:**

Pleasant breaks in the middle of school

Waltham’s court is seen through the main entrance (upper right) and from the classroom wing (lower right). Bridge leads to split-level classroom stairs, right.
Three systems are used on Waltham school by The Architects Collaborative (plan left): lift-slab for two-story classroom wing and one-story administration wing (which is sized for addition of a junior high); wood-arch framing for assembly rooms, steel bridging for connecting walks. Total cost of 420-pupil school came to $440,638, or $13.13 per sq. ft. (incl. landscaping, built-ins, excl. fees).

Steel beams welded to exterior pipe columns form bridges linking main building to classrooms (background). Children pass display tackboards and ascend or descend only half a flight to class.

Concrete lift-slabs 9" thick on 26'-3" x 24'-6" bays were used for Waltham classrooms, seen here from rear. Slabs extend 4'-6" for sun and rain protection.
TAC's STRUCTURE:
Different systems for different purposes

Post-and-beam system in S. Attleboro classrooms recesses pipe columns, cuts beams back from glass at an angle. Outside, this permits a true “curtain wall” of slim white hollow-metal sash and blue porcelain panels held between a sharp black roof edge and a black shadow line below.

Acoustical umbrella of hard plaster is hung from 3'-6" deep transverse steel beam and purlins in S. Attleboro auditorium. Following splayed roof and walls, this canopy distributes sound back to rear seats. Dark-painted ceiling above is lined with slotted acoustical board; side walls have acoustical batts behind decorative patterns bored into the wood siding.

Laminated wood arches rising from 10'-9" to 15'-9" at ridge give high, clear spans in Waltham playroom and adjoining 180-seat assembly room. Glass runs clear of arches as a curtain wall and is warmed by fin-tube radiators below.
Grid pattern of two-story curtain wall at Mulcahey School in Taunton, Mass. by The Architects Collaborative is brightened with colorful porcelain enamel spandrels. Blue and green color scheme of the wall is by Artist Gyorgy Kepes. Stair wells and corridors are sprinkled with colored tiles.

Outside mural on porch of assembly hall at W. Bridgewater faces main entrance court. Artist Herbert Bayer calls his glazed-brick compositions “Five Signs.”

Inside mural at S. Attleboro greets arrivals with gaily colored tiles set in white. By Amy Myers of TAC, it reflects the firm's floor-plan and elevation patterns.
Clock mural by Juliet Kepes combines time and loudspeaker in colorful porcelain enamel panel above doors at Taunton. Each classroom panel has different animals and colors. Built-in storage unit at right has full-length mirror to teach neatness, glazed cabinet for children's exhibits.

**TAC's DECORATION:**

Bright modern art built into school life

Children's mural in entrance of Taunton school is made of tiles painted by the pupils, arranged in pattern by TAC.
Fitting badly needed new schools and play yards into the middle of crowded cities is one of the most drastic problems facing any school board. New Orleans has come up with an equally drastic solution: schools in the air. To get a site for an elementary school in one of the worst-crowded sections of the city, the Orleans Parish school board had to buy up a fully built block at a total cost of $250,000—$125,000 an acre. This left Architect Charles Colbert only $250,000 to build with, and two acres on which to cram a 770-pupil school and community recreation facilities (for this size school, national councils ask nearly 13 acres). How Colbert did it is shown in plan (right): classrooms are compactly grouped around a court and raised on 12 cantilevered trusses. Colbert figures he saved 28,000 sq. ft. of land, worth $88,000, for sheltered play. "We're pleased to hear people call the school a 'treehouse' or a 'box kite.' Why shouldn't it be every bit as exciting as these?"
Flying trusses hold classrooms up from dampness, give added play space below sheltered from frequent rains. Cantilevering out from two rows of piers and clustered pilings avoids a forest of piers that would limit use of the yard underneath, as in older raised schools in New Orleans; lower excavation and piling costs helped offset a 12% increase in steel tonnage. Under the cantilever to the right can be seen the administration-assembly building with its bright-patterned porcelain enamel panels. Photo below: sandboxes under the kindergartens.
Kindergartens extend across the south end of the elevated classroom building and can be thrown together by pulling back a folding partition (right background).

North end of building is open; stairs with cantilevered concrete steps and bright painted handrails carry out the lacy character of the trussed structure.

Central court has lively patterns of checkers and number games, a small spray pool. Second-story walkways around the court connect classrooms, give varied down-views.
SKYLIGHT SCHOOL
FITS ON TIGHT CITY LOT

Like the New Orleans school on the preceding pages, this California school was cleverly squeezed onto a city lot apparently too small for it. Complicating the problem was the fact that the old 1909 school building, built smack in the middle of the lot, had to be kept in use while the new one was under construction. Further, a five-classroom wing and assembly hall at the rear, built during the thirties, had to be retained to work together with the new addition. Architect Warnecke wanted to keep his new school down to the one-story height felt desirable for modern elementary schools, but he soon found he would have to group his classrooms on either side of double-loaded corridors to get them all on the site. To make such a compact scheme bright and workable, he introduced two long landscaped courts between classroom wings (plan below) and spread a great roof of light across both corridors and classrooms flanking them. The sequence of photos at the right shows how Warnecke shoehorned his new school into a corner playground, notching his roof around the old buildings only inches away.

1. Boxy old Spanish-style school occupied middle of city lot

2. New wings on three levels are squeezed in, connected by ramps

3. Old building is removed; not a school day has been lost
ARCHITECT: John Carl Warnecke
LANDSCAPE ARCHITECTS: Eckbo, Royston & Williams
ENGINEERS: Hall, Pregnoff & Matheu, structural;
G. M. Simonson, mechanical-electrical
GENERAL CONTRACTOR: John E. Branagh & Sons

Linked gables of classroom wings make a low double sweep at bottom corner of site. Deep overhangs protect walks, act with blank walls to keep out west sun.

Skylight over one third the depth of each classroom brings in ample natural or electric light through plastic panels. Glass strip borrows light from hall.

Court gives inside classrooms light and pleasant views, places to stroll or sit. Low lines mold the school into its sloping site; pink gravel roof, stained redwood and buff brick walls lend a warm California character welcome in residential area.
FRANK C. HAVENS ELEMENTARY SCHOOL, Piedmont, Calif.  
A 12-classroom addition.  A 400 pupils.

CONSTRUCTION: Slab on grade.  

COST: $413,000 (incl. fees, excl. landscaping and furnishings); $13.38 per sq. ft.
The art of instructing goes on in many places: not only in schools but in industry, business and churches. A panel of experts deflates thirteen common misconceptions about all kinds of rooms used for instruction and suggests ways of placing audiovisual planning on a more rational basis.

HEARING, SEEING AND LEARNING

THE PANEL

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GERHARD BAST
Superintendent of Schools, Westport, Conn.

Nearly all learning is by eye and ear. Every part of an instruction room sooner or later becomes involved with light and sound control. The experts on FORUM's panel brought up these truisms to emphasize a fundamental point:

Great damage is done the over-all art of instructional light and sound control by the notion that audiovisual planning somehow becomes very special when mechanical aids come into the instruction room. Conversely, great damage is done the art of teaching by considering the mechanical aids as a special class of supplementary gimmicks, a luxury, something outside the normal routine. Hence the panel directed its first discussion to—

MISCONCEPTION NO. 1:
"Mechanical audiovisual aids make instruction room planning much more difficult?"

What the mechanical aids do is give us a fresh look at mistakes we are used to. But that does not make the mistakes more excusable without the mechanical aids than with them. For instance, writing may be on the chalkboard or may be projected from a lighted acetate sheet. In either case it is hard to read if there is anything close by which is thousands of times brighter than what we are trying to see. We may have taken for granted the unshielded brilliant window abutting the chalkboard, but are newly aware of the mistake when it interferes with filmstrips. Similarly, the ear wants clarity in the sounds we attend to regardless of whether the sounds are produced by people or machines. However, of all sounds that are not wanted, the clear and intelligible ones are the worst, no
Background noise answering these criteria is frequently better than quiet because it blankets individual irrelevant noises; it is sometimes purposely introduced into offices and reading rooms under the name of "acoustic perfume." This satisfactory random buzz often occurs in the isolated instruction room when its students are broken into small working groups. Open planners have reasoned that clusters of open rooms would simply spread a similar buzz. Why, then, complaints about open plans?

**NEW INSIGHT:** As long as speaking and hearing are done in small groups (as in offices, or in many Sunday schools for instance) the open plan is not a difficult acoustic problem. Trouble enters the school open plan because entire classes of 30 students unify and are addressed either by the teacher or a mechanical voice. Speech on this scale is apt to carry above the "acoustic perfume" and to be heard intelligibly or at least insistently by the neighbors. Stepping up the "acoustic perfume" to drown out exhortation or 30 people laughing explosively in unison is not practical because then the hum itself becomes so loud it interferes with wanted sounds. (The larger a listening group, the lower a tolerable noise background. It is easy to converse with one person in a noisy subway, impossible to hold a meeting.) The problem of the mechanical voice that must speak to 30 students could be solved (expensively) with several low-voiced speakers, each for a group of half-a-dozen listeners, instead of a single speaker for all. But the problem of the teacher's own voice can be disposed of only by modifying her methods so she never or seldom addresses the unified class, or by giving her a walkie-talkie. The panel considered whether there could not be special rooms for talk addressed to the total group (such a room might possibly be central to a ring of activity rooms around it) and concluded that open plans could profit from more fundamental study of instruction room activities, possible team teaching systems, and perhaps from inventing radically new categories of workrooms and instruction rooms.

**MISCONCEPTION NO. 3:**
"An open plan will work better if the ceiling has thorough sound-absorbing treatment."

Over-all ceiling sound absorption is usually precisely the wrong thing for the open plan because it absorbs the random background hum. Unwanted noises that continue to come through from the neighbors—and plenty will—are therefore of maximum intelligibility, insistent as to their source, and in sharp contrast to the quiet background.

**MISCONCEPTION NO. 4:**
"Mechanical speakers at table height are quieter than speakers placed high."

An audience, at least one wearing clothing, is sound-deadening. A speaker must be tuned relatively high for sound issuing from the height of the audience to get to rear listeners. Sound from a speaker close to the ceiling does not meet this interference, can play more softly. Many complaints about mechanical voices penetrating partitions are owing to low speaker height. Teachers need no training to tune a speaker lower when it is installed high; they automatically tune it lower. Unfortunately conflict: open-top partitions vs. high-up speakers; there is no conflict between glazed-top partitions and high-up speakers. It must be remembered that mechanical speakers include phonographs, radios, tape recorders and sound tracks, as well as public address systems.

**MISCONCEPTION NO. 5:**
"The only way of knowing whether an experimental open plan will work acoustically is to try it and see."

If the activities to take place in the space are known, there need be no guesswork about acoustic results. The extent to which loudness, distribution and intelligibility of sound can be controlled is predictable in
advance. The point at which background hum will interfere with various speaking and hearing tasks is predictable; so are the sounds that will not be blanketed by background hum. Judgment then enters when advantages are balanced against disadvantages, but today this can be informed judgment with the acoustic disadvantages known. For this we may thank both pioneering open-plan school architects and acoustics researchers.

MISCONCEPTION NO. 6:
"An instruction room with good hearing conditions will have good recording conditions."

The eye can be equally well suited by daylight, electric light or the two in combination. There is nothing inherently superior about either source of light for learning tasks, and either can be handled well or badly. As for electric light, the panel agreed it is only prudent to do a complete night lighting job in most schools—especially high schools—and that this would constitute a complete job of adequate daytime lighting also. Electric lighting is usually cheaper and easier to direct accurately toward areas needing higher illumination, such as chalkboards. Some panelists reasoned that since electric light, once installed, is left burning most of the time anyway, instruction rooms might as well be designed for it in the first place, without the redundancy of elaborate daylighting measures. Proponents of daylighting emphasized "living" qualities in schools, the importance of having generous views out of instructional rooms, a sense of nature, a sense of changing times of day and changing weather. They contended that even in northern areas a generous daylighting job should be able to take care of all kinds of sky conditions. All agree that the question of best balance entails a careful economic computation, balancing initial construction costs with operating and maintenance costs. Chief sins: in electric lighting, too great monotony; in daylighting, extreme brightness contrasts and insufficient control.

MISCONCEPTION NO. 9:
"Foot-candles are a good index of visibility."

Foot-candles measure the quantity of light falling on a surface. But we do not see the light falling on a surface; we see the light that is reflected back from the surface. This is true even of the sky. What we see is measured in foot-lamberts (foot-candles x reflection factor; e.g., 30 foot-candles on a desk with a 50% reflection factor yields 15 foot-lamberts). In planning illumination, it makes no difference whether we begin computations with foot-lamberts and work back through the reflection factor to foot-candles, or whether we start with foot-candles and compute in the reflection factor to arrive at foot-lamberts; in either case the foot-lambert figure of the task is the significant result figure.

MISCONCEPTION NO. 10:
"Give an instruction room proper lighting at desktops and work counters, and the entire work area lighting is taken care of."

Demonstrations and objects—often held in a speaker's hands—must be seen too; a little drama in lighting can go a long way here. More important, the walls must be seen well; they are vital teaching areas,
often slighted in lighting. Very commonly, students with perfect vision, at the rear of the room, cannot see the chalkboard material because of poor lighting or too-small writing! Wall lighting should never be considered a supplementary or extra item; it should come into the primary budget and stay there.

One of the important uses of the teaching wall today is to show projected data such as maps, graphs, tables, mathematical materials, plans and outlines, because projection affords solutions to storage, convenience, size and visibility problems. One ironic reason for projected material's greater visibility: it is produced by throwing additional light on a teaching surface often otherwise inadequately lighted.

MISCONCEPTION NO. 11:
"If there are sufficient foot-lamberts at all seeing surfaces, including walls, the light problem is under control."

Seeing is affected by two factors that are not the same: level of illumination, and the brightness differences in the visual field. For instance, a student might have a satisfactory task brightness of 15 foot-lamberts. But if there are a couple of thousand foot-lamberts in his peripheral window view toward open sky, there will be a sensation of glare, distraction and fatigue.

MISCONCEPTION NO. 12:
"Mechanical visual aids require a room completely dark."

Some manufacturers of audiovisual aids and some standards committees have confused instruction rooms with theaters and recommended standards of light exclusion that are not only expensive and difficult but undesirable. There are three main classes of projections:

1. Bold, simple black-and-white images (graphs, mathematics problems, etc.) which, with a 300-w. projector, require no room light control beyond normal desirable control of glare and sun.

2. Film strips and black-and-white motion pictures; for these the projector beam must be 20 to 25 times as bright as the screen surface; going beyond that yields no educational advantage. This can be accomplished by a combination of screen darkening and room dimming; often ordinary Venetian blinds are sufficient as general dimmers. Pervading darkness, an aid to drama in the theater, is a soporific in the classroom.

3. Motion picture or still color, which demands a projector beam 100 times as bright as the seeing surface. It is in this category that severe problems of darkening arise; light-excluding Venetian blinds are sufficient. (No school should be built today without provision for hanging blinds or curtains, and in the absence of mechanical ventilation, thought must be given as to how the air will be kept stirring.)

For the first two classes of projections, students and teacher should see each other well. Light for taking notes is also often important. Even for the third class, light from above, shielded so it does not spill to the screen, is not only permissible, but desirable. There are usually one or two best room arrangements for projection; flexibility is needed for moving seating into the best arrangement quickly.

MISCONCEPTION NO. 13:
"The pushbutton instruction room, with the seeing and hearing environment automatically controlled, would be ideal if cost were no object."

When teachers have been given such rooms experimentally, Panelist TerLouw reported, they have at first been delighted by the gadgetry; later they have cooled to it because it leaves so little responsibility and practical participation to students. The educator members of the panel were emphatic that "one of the great mistakes we make in education is to try to make everything too automatic, and learning does not go on in an automatic situation. Solving some of these very problems of how to provide conditions under which learning can best take place is a very valuable experience for young people."
IS COOLING COMING FOR SCHOOLS?

Obviously it is, for some schools. San Angelo, Tex., site of round, cooled Belaire elementary school (photo opp. p. and overleaf), is planning a $3 million cooled high school. Schools elsewhere in west Texas, in southern California, Arizona, New Mexico, Denver, the Chicago area, and even in Schenectady, N.Y., are being at least partially equipped with cooling equipment or provision for future cooling in classrooms. Considerably more common are schools with cooling in such limited spaces as administration or auditorium.

Thus far, the decision to cool teaching space has been based on one or a combination of the following situations:
1. Temperatures rising into the high nineties during the normal school year.
2. Dust storms (full air conditioning, including cooling, partly pays for itself in this case by reducing abnormal maintenance costs).  
3. Need for sound control where a severe problem exists, as at Belaire with the airfield hard by.
4. Summer use of the building, usually for remedial teaching or adult education.

In Denver, for instance, a cooled addition to the downtown Vocational High School (Architects Jamieson & Williams and M. E. Ken Murray) will be used for an intensive adult education program operating through the summer. At Schenectady's Linton High School (Architects Perkins & Will and Ryder & Link), the area to be cooled is the technical building, housing shops, laboratories and administration, with the initial refrigeration equipment serving the auditorium when it is not used in technical classrooms. Niles Township High School (Architects Holabird & Root & Burgee) near Chicago will have provision for a future refrigerating cycle because in this area summer enrollments both for remedial work and curriculum enrichment have been rising. In the southwest, reasons for cooling are obvious.

The situations listed above will probably continue to be the main reasons for installing classroom cooling. Periodically there is a spate of talk about running schools all year for economy, the idea being that since the plant is there anyhow, a staggered school year, running regularly through the summer, could increase "production" 25% to 331/3% with no additional capital outlay. At least seven cities—Bluffton, Ind., Amarillo, Tex., Omaha, Neb., Aliquippa and Ambridge, Pa., Newark, N.J. and Nashville, Tenn.—have given this theory extensive trial in the past, and half a dozen others have experimented with it more gingerly. Every school system that has tried the staggered year-round plan has abandoned it because of chaotic vacation conditions, disintegration of extracurricular activities, class scheduling difficulties, havoc with the maintenance budget (repairs normally made while the plant idles have to be done on overtime), higher payroll costs. Summarizing these disappointing experiences, Kiplinger Magazine reports educators with first-hand experience have concluded that "year-round use of schools as a means of avoiding the cost of constructing new schools is a delusion."  

Use of schools for remedial and voluntary summer attendance is another matter. Summer remedial work does make a saving because it drastically decreases grade repeating. With a fourth of its elementary schools equipped for summer use, San Angelo's superintendent of schools estimates the present repeater rate of 10% could be cut to 2%, for instance. Voluntary summer enrichment programs, enrolling about a third of the student population where they are most successful, are working very well in a few cities and return educational dividends year-round. These are not money savers; they can be expected to add about 20% to the school operating budget. A community enlightened enough to value—and pay for—the amply demonstrated advantages of these sessions might well consider school cooling for them too if climate makes this an important factor in success.

Initial costs for school air conditioning including cooling range from 98¢ per sq. ft. at Belaire to a more usual 82¢. Belaire's low costs are due largely to its compact, centered core design and thorough window shading; ductwork was reduced an estimated 50% by the design, tonnage an estimated 20%, compared with an orthodox double-loaded corridor plan.

A school administration which prefers to use natural ventilation part of the time and mechanical ventilation with cooling part of the time has a special problem; good design for natural ventilation is at odds with good design for cooling. Belaire could not have its extraordinarily economical cooling scheme if it had part-time natural ventilation also; in its case there was no conflict in the choice because the noise problem created by the airfield was constantly present, no matter what the time of year.

Operating costs are impossible to compute as an average because demands put
on the equipment vary so widely with building design, climate and length of school year. At Belaire, however, annual operation is estimated at $500 or slightly more than $2 per student.

One method of reducing operating costs is “night purging,” a feature especially devised for school cooling units. As the outdoor air cools at night, the chilled water cycle is shut off and 100% outdoor air introduced. The heat built up in the building walls and roof during the day is thus dissipated at an operating cost about one thirtieth that of running the cooling equipment. The manufacturer claims the “night purging” system saves as much as 35% of operating costs.

Meantime, architects continue also to bend stubborn nature to their purposes in attempts at greater hot-weather comfort. Among the most ingenious of such proposals is one, as yet untested, by New Orleans' Architects Curtis & Davis. The drawing at the left shows how they would plan to get natural ventilation and breeze through a quadruple-loaded corridor plan.

**THIS IS ONE OF THE FIRST SCHOOLS DESIGNED FOR AIR CONDITIONING**

In fact, the 240-student Belaire elementary school in San Angelo, Tex., is one of the first buildings of any kind really to be designed specifically and carefully for air conditioning.

Belaire's compact round form, its literally central system, its easily balanced distribution with all duct runs short and similar, and its wall shading are so economically sound that in this case air conditioning has been taken out of the luxury class as far as price is concerned. Total sq. ft. cost of Belaire school, including fees, was $9.55 per sq. ft. Of this, the full air conditioning, both heating and cooling, accounts for an estimated 98c.

Note: horizontal shading, usually a futile gesture against east-west sun, works here only because: 1) the overhangs are a phenomenal 45' wide at the critical south-east-southwest points; 2) San Angelo is far enough south for the sun's rays to ride relatively high in the sky; 3) the school is not used in early morning or after 5:30 P.M., times when even southern latitude and 45' eaves do not protect the wall.

Designing closely around a mechanical feature would be a very questionable practice if it compromised the school's essential and first function: the education of children. But Belaire is also unusually nice simply from the viewpoint of its design as a school. Asked what has proved to be the building's outstanding feature, G. B. Wadzeck, schools superintendent, names its over-all flexibility for educational needs.

This is not chance; both architects and client were repelled by the idea of designing around a mechanical core instead of around children. Superintendent Wadzeck describes a fruitful conference which Architect Donald Goss opened by stating the economic case for a compact central heating, plumbing and air-conditioning core; Architect William Caudill then threw in the thought that the core space must not be wasted as school space; Dr. W. B. Rountree, a school board member, suggested the mechanical equipment be lowered into a central basement; Superintendent Wadzeck proposed a minimum basement with the ceiling above ground and a stage over part of the mechanical core; Caudill said the stage could serve...
Air Conditioning

by itself as a small assembly room and dining area, and could become a stage proper if some of the walls dividing classrooms were moveable so several rooms could be thrown together for auditorium seating (see plan). "This one development," says Wadzeck, "can be attributed to the thinking of four to six people. The board, administrative personnel and architects really worked as a team on this project."

The reason for fully air conditioning Belaire was its location close to the flight pattern of a nearby air base, a site forced by tremendous residential building in the area in spite of the noise. Besides eliminating the roar of aircraft from the classroom, the full air conditioning has brought other dividends such as dust elimination in a dust storm area, eagerness of substitute teachers to fill in at Belaire, and a generally chipper, unwilted atmosphere after the thermometer began hitting the high nineties in April and May. It is too soon to determine whether the cooling has any effect on children's health or achievement.

Each of the school's ten spaces—classrooms, kitchen, office—is separately zoned with room thermostats actuating ten dampers on the air handler. The central package consists of one fan, one 40-ton compressor and a boiler. The cooling tower is forced draft, placed on the roof directly above the core. Average temperature is held at 76°; regulation is controlled by the principal. Comfortable conditions are established within 15 minutes from start-up, so continuous operation is unnecessary. When expansion is needed, a similar second school unit of ten classrooms will be built.

The enclosed ground floor area is 13,650 sq. ft.; the basement 800 sq. ft. Outdoor covered area, which serves as shaded play space as well as wall protection, is 5,572 sq. ft., which was figured at one half in computing sq. ft. costs. Construction cost, including fees, kitchen equipment, and paving, was $191,122. Of this sum, air conditioning costs came to $19,800. Costs per ton were $495 against an average of $660 for the area.


Equipment is centralized in basement under core. Round-the-compass orientation requires separate zoning for each room.

Raised stage has dining tables stored in wall behind curtain. Return air has very short run, through stair risers.
**Overhangs** around building give 45' of horizontal protection at critical solar points, create necessary shaded play space. In more northerly latitude, vertical east-west shading or screening would be mandatory for equal "operating economy."

**Classroom view** shows interior supply duct. Flanking acoustic baffles and cabinets protect doorless rooms at "corridor."

**Planting boxes** formed by concrete seats flank each classroom exterior door, make knots of sociability in shaded play space.

**Windows** and exterior doors are all deeply shaded. Most equipment is movable; at first teachers shifted it almost daily.
"We wanted to design a high school that would get away from sameness to other high schools and allow its students a possessive feeling they could express by saying 'I come from Headland High, the one with the round library and the bridge.'"

Architect Richard Aeck, discussing the school design shown below, has also indirectly summed up one of the most important functions of school meeting places. For general meeting places, more than any other school spaces, can best express visibly the individuality everyone pridefully wants in his organization; these are the places that do most to set the tone of a school and that tell students whether the place is really theirs, not as educable statistics but as people who count. These spaces are the scene of that surge and flow of gregariousness that is at least half the meaning of "school."

NEW SHAPES FOR SCHOOL MEETING PLACES

ROUND CAFETERIA, library and informal milling ground at Atlanta's Headland High School make the most of a dramatic (and difficult) site. They are also shrewdly designed for expansion of a 500-student body to 1,000: the library by absorption of extra lounge space, the cafeteria by addition of a balcony. Now under construction, this is part of a building that, including fees, will cost only $10.90 per sq. ft. Aeck Associates, architects.
FLUTED CAFETERIA is designed as focal point of 500-student campus high school in Kirksville Mo. Roof framing in wood or steel could be with simple ridge and valley beams but architects prefer more economical system illustrated—light, tilted prefabricated steel trusses which bear at the center on masonry panels, at the edge on concrete-incased tube sections. Insulated deck would span between main chord members, in plane of the truss, avoiding combined stresses in web members and keeping thickness of entire framing, decking and roofing under 6". Framing with folded concrete plates instead of trusses, to save steel, would be similar in erection method; for delicacy, steel columns would still be used. Hellmuth, Obata & Kassabaum, architects.
MULTIPURPOSE "HIVE" was designed to be used for a wide range of activities, 12 hours a day, six days a week, all year, at eight Pontiac, Mich., elementary schools previously lacking activities areas. They were to serve also as community centers. Bids last spring came in too high ($155,000 each) however, and units are to be built as rectangular, laminated wood truss structures. Architect attributes high bids to contractors' unfamiliarity with concrete dome structure, still thinks hive design is potentially very economical. Deck over perimeter rooms would be poured concrete, forming tension ring; dome would be sprayed concrete over "bird cage" reinforcing, with thickness shading from 10" to 3" at central (shutter equipped) sky-dome. Interior height of 24' would accommodate basketball trajectory. Area of 7,234 sq. ft. is very efficiently planned. H. E. Beyster & Assoc., architects.

DOMED GYM and shops building for Marlow, Okla. high school is poured thin-shell concrete. Although similar to "hive" shown above, its area (18,507 sq. ft.) is more than twice as great. Now under construction, cost is $116,897 including fees; $6.25 per sq. ft. Similar 15,665-sq. ft. gym-cafeteria by same architect for Amber, Okla., bid in by same contractor, reaped $5,000 saving on formwork reuse; $5.27 per sq. ft. Extraordinarily low costs are result not only of basic system but economy finishes and careful detailing; for instance, concrete bleachers at $3.50 per seat instead of usual $10 to $12. Domes are notoriously difficult acoustically; on this point, optimism of architects both for this structure and "hive" remains to be proved. R. Duane Conner, architect.
DUG-DOWN GYM with framing exposed above achieves great elegance in combined elementary-secondary school at Green River, Utah. It also helped achieve great economy. Wall repetition, lightness of structure and factory fabrication brought cost of school to $10.42 per sq. ft. in desert site far from materials sources and labor market. The gym-assembly interior also looks refreshingly clean with roof framing kept outside where it makes a fine landmark and clearly separates elementary and secondary wings. Dean L. Gustavson & John W. Sugden, architects.

SPLIT-LEVEL WING in elementary school at Northport, L. I. has playroom on low side of slope and cafeteria-assembly room on high side, the two fitted together like a jigsaw puzzle. Space under assembly stage accommodates gym instructor’s office and storage rooms. There is fold-up bleacher rear seating in assembly. Ketchum, Gina & Sharp, architects.

INDOOR-OUTDOOR GYM at Scottsdale, Ariz., with stadium bleachers at building wall, is arranged so same ticket booths handle crowds for indoor or outdoor games and so locker rooms are equally convenient to field or gym. Even the press box, at gable, views either way. Lobby divides to make two classrooms. Integrated bleachers cost $4,500, a third the estimated cost of a separate grandstand. Gym and bleachers cost $9.60 per sq. ft. excluding fees. Mel C. Ensign, architect.
**INDOOR-OUTDOOR ASSEMBLY** and cafeteria addition unit for elementary schools in Los Angeles is splendid example of typification without standardization. Same materials, construction, detailing and basic planning are adapted to differing sites and plants, bringing repetition economy without sacrificing specific needs. Note delightful outdoor lunch provisions. Photo shows indoor-outdoor stage by same architects at Los Angeles park department’s Eagle Rock clubhouse; school units will have similar feeling. Richard J. Neutra & Robert E. Alexander, architects.

**GLASS GYM** at Tyler, Tex. junior high is next thing to covered open space. This is beloved building. Students use it as chief social hangout of school. It is left open week ends (nothing has ever been stolen or broken), is also favorite place for banquets, dances, shows. School principal reports it is cool and breezy in summer (windows open on four sides). Low sun usually gives enough heat in winter; warm-air suspended units give good evening heat. Big end panes are ¼" tempered plate; in year of use none has broken. Principal is enthusiastic about asphalt tile floor because it permits all activities, even roller skating. Canvas curtain dividing boys’ and girls’ side has been used only few times; experience showed division was unnecessary during simultaneous physical education classes. Caudill, Rowlett, Scott & Associates and Bruce & Russell, architects.

**OPEN PLAYROOM** at elementary school in Darien, Conn. (AF, Dec. ’54), was experimental with provision for future closure if necessary. After two years of use, school officials would not enclose it—even if cost of $8,000 (without heating and lighting) were not a factor. Only ten days a year have been too bitter for use. Physical education teacher says it is sometimes tough on him in winter but worthwhile because children enjoy it so much and it seems so obviously good for them. Any effect on health has been to the good. Ketchum, Gina & Sharp architects.
CANTED CORRIDOR WALLS, formed of tilt-up concrete slabs, yield interesting exhibit space at junior-senior high school in Amityville, L. I. Same slabs form acoustic and lighting baffles in adjoining auditorium. Fletcher-Thompson, architects.

CORRIDOR LOUNGES for students at Edsel Ford high school in Dearborn, Mich. are scaled to conversational groups. This is thoughtful large-school refinement of the corridor lounge idea first used in famous Crow Island elementary school. Student common rooms, as school versions of "living room" are called, seem to be especially appreciated and used along corridor main streets. Eberle M. Smith Associates, architects.

OUTDOOR CORRIDOR ACOVES at San Jacinto elementary school in Liberty, Tex., serve much the same vital function of providing for spontaneous get-togethers as indoor corridor lounges. School is in hot, rainy area. Note how roof spouts drop their waterfalls into stone-filled boxes, a nice example of sensitivity to what children will enjoy. Caudill, Rowlett, Scott & Associates, architects.

MAIN ENTRANCE HALL at Baker junior high in Tacoma, Wash., is extra wide for noonday square dancing, which is usually more enthusiastically engaged in than photo would indicate. Robert Billsbrough Price, architect.
It is no easier to wed painting, sculpture and the other fine arts with European architecture than with US architecture, although the tradition is closer at hand in Europe.

**ART IN ARCHITECTURE**

**A BOOK REVIEW BY WALTER McQUADE**

In the three photographs to the left are works of two sophisticated European architects, Horta (1) and Gaudi (3), and one very unsophisticated African architect, a native in the Transvaal who built himself a hut, then painted the walls in vivid, gutty patterns (2). All three examples are anything but functional architecture; they are eccentric, delightful—perhaps great—art. At any rate, they are buildings which are considerably more than merely efficient unto the day's activities within.

Are these the pictures that clients and the general public have in their minds, when they mutter in the public press and consumers' magazines for something more satisfying in modern architecture? Are they calling not for bread, but for cake, not for stripped functionalism but for a return to deliberate visual excitement in the new buildings which surround them, a return to "artistic" architecture?

If this is so (and it should be pointed out that sighs of "It works, but it looks dull" are coming not only from clients but from budget-bound architects themselves), the logical place for American professionals to look for leadership is Europe. In America, art and architecture were married briefly, but that broke up in the twenties, and the estranged pair now meet only occasionally at cocktail parties and symposiums. But European artists became architects in the fifteenth century and European architects became artists in the succeeding four centuries, so the tradition of "synthesis" might still survive somewhere under today's functional cloak.

A search in Europe for ways to bring art back to architecture evidently is what has inspired Paul Damaz to produce this handsome, profusely illustrated book. But the result will help American readers only a little, and the basic message of the book is ironic. In the only examples of "synthesis" of art and architecture shown which come close to matching the gigantic achievements of the European past, there is very little real partnership indicated between artists and architects. In Lurçat's tapestry in the Church at Assy (4) or in the chapel Matisse designed at

*"Art in European Architecture." By Paul Damaz. Published by Reinhold Publishing Corp., 496 Park Ave., New York 22, N.Y. 228 pp. 8½" x 10½". Illus. $12.50
Vence (AF, May '52) the architecture is nothing special; the art is overwhelming. These artists did not share a conception equally with an architect, but took over. They are overriding geniuses, to whom any recent tradition of a new architecture is merely a minor detail. The question of integration is unanswered; Architect-Artist Le Corbusier's statement in the book's foreword, "Painters and sculptors live their own lives," is emphasized.

On a lesser plane there is some excellent work done by other artists and architects together for European exhibits and shows, but most of it seems as transitory as the shows themselves. And even the best examples of art in European architecture today, such as those shown on these pages, are rather easy to classify.

AMERICA'S FIRST ARCHITECT

Talbot Hamlin's great book about Benjamin Henry Latrobe, a master of all building trades, wins the first Pulitzer Prize for architecture

by FREDERICK GUTHEIM

Talbot Hamlin's Pulitzer-prize-winning biography* of America's first professional architect, Benjamin Henry Latrobe, is the perfect matching of author and subject. The enthusiasm which is displayed on every page for Latrobe's efforts is needed, for his story "is the tragedy of a man devoted to the ideals of imaginative planning in a country where mere improvisation was still the rule." It is still the rule, and the relevance of the book is up to the minute.

Latrobe was not only a creative genius in architecture. He was in himself a virtual one-man building team. He earned by far the greater part of his livelihood as an engineer of waterworks, canals and steam pumps and machinery; as a master builder and shipyard manager; as a city planner. He was a prolific reporter of the American scene who left thousands of sketches and water colors, a medalist, a sensitive painter. He moved in the most practical and powerful circles of his day, the friend of presidents, bankers, merchants, bishops, industrialists, inventors. To recreate this great personality, and to trace his career in the morning of America, neglecting none of it, is an immense literary accomplishment in which interest has been sustained and clarity preserved with no sacrifice of scholarship.

Latrobe's most significant contributions to the developing new world, however, were in the field of architecture. His work on the US Capitol and the White House; the Bank of Pennsylvania; the Baltimore Cathedral and the Exchange—these are his monuments. To these should be added his many outstanding private houses, especially those for Van Ness, Taylor and Pennock—the last, in Norfolk, being the architect's first design in America and the one in which he stated with great force his major contribution to residential planning. But with these brilliant accomplishments, Latrobe died "nearly destitute and almost forgotten." That tragedy, and what caused it, and how it illuminates this rare individual and the life of his times, is Talbot Hamlin's theme.

* * *

The Latrobe who arrived in Hampton Roads in the early spring of 1796 was a fully trained, experienced, mature architect and engineer in his early thirties, a widower and the father of two children. His family background and education were exceptionally broad, and included Germany, France and Italy as well as Latrobe's native England. "Original, accomplished and thoroughly prepared for larger and more

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Sketchbook pages show Latrobe's suggestions for the library of Baltimore (left) and for a naval engine (right). Note his practical comments on his alternate designs for the library cupola and his calculation of the square yardage of wall space available for books (905 sq. yd. for 90,500 books).
THE LENDER'S INFLUENCE

For himself, he may like his buildings modern but for his borrowers, he prefers a cautious mediocrity. What is this strange power he has over architects, product development and cityscape?

Some 25 years ago, Frank Lloyd Wright, in talking about boldness in architecture, remarked that there was nothing more timid than $1 million. Then he paused, thought a bit, and amended the statement. “Except $2 million,” he said.

Far from quipping, Wright could hardly have been more serious when he turned the phrase. As a working practitioner in the age of the “genius architect,” he had lived to see the near extinction of the bold, self-financed client who had first given him his head on the prairies of the Midwest in the early 1900s. The captains of industry, whose fortunes had thrived on risk, had all but vanished—victims of the income tax, the growth of group action, and the other leveling winds that had blown through the economy. In their place, Wright found a new class of client, one that now borrowed its money and depended on a breed of lenders that had little but suspicion for artistic genius.

For many people concerned with architecture, Wright’s judgment has long been a convincing one. Nodding in agreement, they will say that capital does, indeed, breed caution, and they will point to selected samples to prove it. They have heard money talk and, to them, its institutionalized voice has droned incessantly of boats that mustn’t rock and of looks before you leap. No, they will say, capital is no kin to architectural innovation. Given its stake in the status quo, how could it be?

It’s a convenient thesis, to be sure. But it happens to have one flaw: it is only partly true.

To anyone who looks closely at US building today,
it is soon apparent that building money and its assigned pigeonhole can't possibly make the fit they're supposed to. The role of the lender—and it is the lender who overwhelmingly controls construction capital now—shows annoying inconsistencies. True, the lender has helped to smother architectural progress and to heap mediocrity upon our cityscape. But it is also true that he has been willing to finance good design and, indeed, to build it for himself. The pat thesis doesn't even try to make sense of this; it simply ignores it. Yet the thesis survives. Why?

The answer probably lies in the fact that the hand of construction capital is not only unseen most of the time, but is unknown as well. The role of the lender is obscured by a cloud of fiscal complexities. The public sees him, at best, as an anonymous force; the architect, buffered by the client, finds him remote. What the lenders' policies are, how he implements them, how he decides what will and won't be built, are for most people questions without answers—or, at least, valid answers.

Which is strange. For in setting out to see precisely how the lender does affect architecture today, inquiry ran headlong into one unavoidable fact: no other part of the building industry can exert the influence on design that the lender can. No other part can even come close.

The power of the dollar

There are roughly 20,000 lenders in the US today who make it their business to lend on the real estate market (there are countless others which finance from time to time—individuals, philanthropic organizations, pension funds, government—but the holdings of each are relatively small). Together, these mortgagees split up a total of $130 billion in real estate debt as of the end of last year.

Leaving to the economists the volatile question of whether this debt is out of line, the fact remains that it is huge. Last year alone, it shot up by more than $16 billion. At today's level, it is four and a half times the fast-rising total of consumer installment credit, equal to a hefty 45% of the nation's disposable income (compared with 27% in 1951), and nearly 19% of the estimated $700 billion that the US has invested in buildings.

Traced to its holders, this debt shows a surprising degree of concentration. Of the $121 billion in loans on nonfarm property ($89 billion of it on one-to-four-family residences), close to four fifths of the total is owed to one group—the so-called institutional lenders (see box, p. 142). And of these only three—life insurance companies, commercial banks, and mutual savings banks—are important in the nonresidential field. (Savings and loan associations, the biggest of all lenders with about $31 billion in mortgages, channel their funds into the residential market, mainly into single-family houses.)

Since the commercial banks are still primarily interested in shorter-term commitments—construction loans, and the like—most nonresidential builders have had just two groups of lenders to turn to for their long-term financing—life insurance companies and mutual savings banks. Out of their resources has come the bulk of the money to finance the 6,000 office buildings that have been going up each year, the 35,000-odd stores, the more than 70,000 multiple dwellings, and the 100 or so urban hotels.

The statistics alone show the results. Of the total $22 billion in mortgages on commercial and multifamily buildings that institutional lenders now have, almost half is in the hands of the life insurance companies. Four of these alone—Prudential, Metropolitan, Equitable and New York Life—have more than 10% of the total pot. Seldom have the few had so much power to influence the shape of America's architecture.

How, exactly, has that power been used?

The fact that lenders vary from man to man, and from one part of the country to another, makes a precise assessment of their role difficult at best. Nevertheless, certain broad findings seem justified. These are the most significant:

• The lender's influence on architecture, where it is felt at all, is primarily negative. It is not so much what the lender wants in design as what he doesn't want. This is particularly true now, and it represents a change from 15 years ago. Where the lender would once make positive "suggestions" for altering details, he now rarely does. In a tight-money market, he can afford to make flat rejections, and move on to something else.

• Whether positive or negative, lending influence seems to vary inversely with the price of the building. The higher the cost, the less the lender enters in.
As a result, homebuilding feels more of the impact of lenders' likes and dislikes than any other segment of building. Admittedly, the insurance appraisal practices of the Federal Housing Administration and the Veterans Administration—with their notorious aversion to any design innovation which the lowest-paid bureaucrat cannot understand—are a strong factor here. But a legitimate question seems to be whether it is now $10,000—or instead of $2 million—that's the most timid thing around.

Over-all, a lender's views on design tend to be only as conservative as his economics tell him to be. He will finance an "advanced" building—meaning one unfamiliar in planning and appearance—provided its location is good, its ownership gilt-edged, its income prospects strong. But he will turn down the same building if, on balance, the economic indications he goes by seem too weak to justify the experiment. In short, design seldom becomes an overriding consideration, except in the project that is already marginal.

Though lenders have rarely been accused of being overly candid with outsiders, even their guarded talk can be revealing. What comes through in their conversation today is hard to miss: the safety of the dollar is uppermost in their minds; architectural excellence rates a poor, poor second.

"Who cares what an office building looks like in New York City, if it has the site and the tenants," says a vice president of New York Life. A Chicago banker insists that all he is interested in is whether the building, as is, makes a sound investment. "If it doesn't, we don't finance it. Anything other than that—trying to make changes—gets you in trouble." An executive of Metropolitan Life makes the point that they avoid setting architectural standards. "We don't want our name tied that closely to the success or failure of any project," he says. And a Boston mortgage officer puts it bluntly: "It's not our business to pioneer or to innovate. Our con-

WHERE THE MONEY COMES FROM

Of the $121 billion owed on nonfarm mortgages today, almost all of it (nearly 80%) is owed to institutional lenders: life insurance companies, commercial banks, mutual savings banks, savings and loan associations. This is how they split up the tab:

**Life insurance companies** hold over 22% of the total urban mortgage paper and almost half of all off-the-farm loans now out on commercial buildings and multifamily dwellings. They are the basic source of financing for the blue chip projects, i.e. those running above the $3-million mark; in sale-leasebacks, too, they control the market (New York Life alone has made 94 of these deals since 1946 and has industrial and business buildings worth more than $110 million on its books). Biggest lenders among the insurance companies: Prudential with more than $5 billion in mortgages; Metropolitan; Equitable; and New York Life. All operate nation-wide.

**Commercial banks** have a good-sized $21 billion in mortgages on their books and account for about 16% of the overall nonfarm total. These banks have been edging more and more into the mortgage field over the past few years; New York's First National City Bank, for instance, is one that has just started a home mortgage department. But the bulk of commercial bank real estate lending is still short term, mainly confined to: 1) construction loans and other interim financing, and 2) "warehousing" the mortgage paper of savings banks and other holders at a discount.

**Mutual savings banks**, with over $17 billion in mortgages, have about 14% of the nonfarm total. All the mutuals—527 of them—are based east of the Mississippi River, but many operate nation-wide through a network of regional correspondents or brokers. Mutual savings banks prefer residential properties or small industrial buildings, tend to lend on shorter terms (ten years, say, with possible renewal) than insurance companies. Their commercial loans, which are the exception, may top $1 million. New York's Bowery Savings Bank, biggest of all the mutuels, has about 65% of its $1.4 billion of assets in real estate.

**Savings and loan associations**, of which there are about 6,000, constitute the biggest single mortgagee today. With $31.6 billion outstanding, they have a shade better than 20% of the nonfarm total. Lending principally on single-family homes, the associations stick pretty much to higher-interest conventional mortgages (though they did most of the GI financing after World War II), and now have less than one third of their holdings in FHA or VA paper.

The intermediaries. In between these institutional lenders and would-be borrowers is a highly influential and diverse group whose functions range from middlemen (straight mortgage brokers) to participants in the loan itself (mortgage bankers). In practice these people often have as much to do with what gets built, where, and how, as the final mortgagee himself. Mortgage bankers usually work with one or another bank or insurance company and as such are called correspondents or agents. Their job: to find, screen and evaluate local projects, place the mortgage (the banker may take the commitment himself but will usually pass it on to another lender), and to service the loan for its duration (for a fee of 0.5% of the outstanding amount). There are some 2,200 of these mortgage bankers operating now, and the big ones—like Houston's T. J. Bette and New York's George Warnecke—service close to $1 billion in loans each year.

The mortgage broker generally moves in and out much more quickly. Time was when the broker simply lined up the borrower with a willing lender, collected his fee (ranging up to 5%, depending on the size of the transaction) and then moved on to something else. Some brokers still operate this way, but more of them are now reaching out to take a hand in all stages of the lending process, from planning through to finished project. For instance: New York's big Brooks-Harvey ($150 million worth of real estate deals a year) specializes in initiating complex package deals and will, at times, involve itself in the whole building sequence from helping pick a site to finding the main equity holder. However, the broker still backs out once the project is done; he doesn't stay around to service the mortgage.

The other lenders. The remaining 18.6% of the nonfarm mortgage total, the amount outside of institutional vaults, is spread among an array of lenders: the federal government, pension trusts, labor unions, fire insurance companies, endowment funds, real estate companies, individuals. Taken singly none is important in terms of the over-all total. But many of these mortgagees will lend on risks and types of property that conventional institutional lenders won't touch.
cern is to protect the policyholders' investment."

Applied to cases, this dollar philosophy shows unmistakably in what the lender considers in making his loan decisions. For commercial buildings, there are four factors that he takes into account today: 1) location, which is by far the most important; 2) reputation and financial standing of the promoters and occupants; 3) size of the loan; and 4) a bad fourth, type of building, its architecture, space use and layout. When he goes a step farther, and makes a specific, rule-book appraisal of the property (the appraiser is actually the key man in all mortgage decisions), the safety of the investment again takes priority. Here the lender is projecting forward—trying to predict what the selling or renting market for the property will be X number of years in the future. He may use one or all three appraisal methods—an estimate of the value of the land (improved), plus the cost of the building; a comparison with nearby real estate and similar properties; or a capitalization of the estimated income from the structure. Whatever yardstick he applies, however, he has one aim in mind: to minimize the possibility of loss.

In all this, the lender's concern for architecture is, at best, incidental. Design takes a back seat to the known economic considerations. If it moves up front at all, it is only because the lender feels it may tip the scales of an otherwise worthwhile project, turn it into a doubtful one.

This, theoretically, could happen with almost any building. The fact that it doesn't—that design seldom becomes consciously a crucial factor—is simply proof of how pervasive negativism can be.

A mental blacklist

Any entrepreneur worth his keep today knows almost down to the penstroke what will, and won't, go for the sort of mortgage he wants. If by chance he doesn't, his tutoring will start early. Long before an architect even enters the picture, he will have had "sounding-out" chats, probably with several mortgage brokers or correspondents. Out of these, he will carry a pretty firm idea of what the building should avoid to get the financing he needs. (Actually, the architect may never find out how much the lender turned down at the beginning, which could explain why so many of them feel it's solely the entrepreneur—not the lender at all—who keeps the fresh air out of design.)

No lender likes to admit it, but the truth is most of them do keep a mental blacklist, one that makes an item-by-item rundown of their tabus. And almost without exception, these lists will start with a common proscription: the ban against innovation.

The lender is not interested, generally, in any building that looks "strange." Innovation in style will, hands down, draw more hostility than change in any continues on p. 166
Students take on a task-force survey of the growth and traffic problems of a whole metropolitan region. The twofold result: invaluable training for 70 young planners and architects, new impetus for urban redevelopment.

HOW TO START CITY RENEWAL

Not always does city rebuilding start off with the Texas-size bang of a Fort Worth plan, commissioned by a farsighted utilities president and unveiled with nationwide fanfare (AF, May '56). Sometimes the idea grows slowly, broadly and painfully as more and more citizens recognize the need.

In Springfield, Mass., the seeds of redevelopment have been planted, not by a leading businessman and the architect he hired, but by an alert teacher and a task force of Harvard students, who offered to spend the better part of a school year analyzing the city. Now that their fieldwork is over, these students are moving on better equipped for the projects badly needed by other US cities. And behind them they have left some immediate contributions to one city's future: a wealth of regional information, a new citizen organization, and a climate in which the seeds may grow.

Harvard's "invasion" of Springfield actually got started through the back door—a good place for other architects and planners to explore if they hope to get a professional foothold in the continuing process of urban renewal. Reginald Isaacs, planner of the Michael Reese Hospital area in south-side Chicago (AF, Sept. '46) and now head of city planning and landscape architecture at Harvard's Graduate School of Design, had been called in by the new administration of Springfield College to study its proposed campus expansion (p. 146). But as Isaacs went to work he found the city had no clear master plan into which a long-range campus plan could fit with any certainty. The very lack of a plan gave Teacher Isaacs an idea: why not give his students a chance to gain some practical experience in the field while gathering information of value to both college and community? After talking with local civic leaders, Isaacs made his proposal to a city-hall meeting called by the mayor and the chairman of the planning board: Harvard would like to collaborate with Springfield's civic organizations on a comprehensive study of the metropolitan region, and later on specific design projects within the city. The basic purpose, Isaacs explained, was to give graduate students realistic experience in gathering and evaluating all kinds of data, in developing goals and the detailed plans for carrying them out, and in presenting their ideas effectively in written and graphic form. As the city's part of the joint project, Isaacs suggested the formation of a Metropolitan Planning Council to bring together the efforts of Springfield's myriad civic and fraternal organizations, and to help raise the $2,500 his students would have to spend for travel, maps and materials.

The civic leaders present replied by forming a committee which wrote to no less than 110 organizations in the area, asking them to name a representative to the new council and to contribute $25, $50, $100 or $200 toward the expenses.

The money was raised and Springfield made the major course for Harvard planning and landscape students who started to come down in teams assigned to the city itself and to eight outlying towns. Faculty leaders were Isaacs, William Goodman, Hideo Sasaki and Charles Elliot. Local planning boards and civic groups cooperated with information, and with work space in city hall or firehouse. Toward the end teams of architectural students from Harvard's urban design class came in to concentrate on Springfield's central business district (photo right).

After all the studies were in, a public exhibition and meeting of civic leaders was held in the auditorium of Springfield's Museum of Fine Arts, where the graphics of some 70 student reports covered all four walls from floor to ceiling. The Junior Chamber of Commerce took on the job of bundling up all the material, sorting it out and getting it to the various planning boards involved.

So far, there are some encouraging results. The city planning board has completed its own master plan report, started slightly before the Harvard program. Significantly, the citizens' Metropolitan Planning Council is still going, has 360 members, and has joined with three other important civic groups to form the Hampden Council (named after the county), with its own full-time, paid staff.

For its part, the city has made a real contribution to education—lack of which today is one reason much redevelopment never gets moving properly. Other cities will be watching Springfield to see what happens next.
Downtown Springfield north of city hall (tower at right in photo) was the specific target of one student project. Three teams built models of this area “25 years from now”; one is shown at right. The planning principle is a valid one: a shopping-business-entertainment center unified by pedestrian plazas, with cars routed around, underneath and to peripheral parking. But as the students learned, it looked to their experienced professor more like Springfield “100 years from now”—too ambitious to be a working solution.
City renewal at Springfield began with this new campus plan for the local college.

The project that started the chain of city-wide thinking in Springfield is itself a typical urban problem, not unlike Springfield's own downtown area: a group of related buildings that have grown up haphazardly along existing streets. Today heavy automobile traffic is literally cutting Springfield College to pieces. Students walking from the men's dormitory to the gym, for instance, must navigate an inner street-loop full of moving and parked cars. To get to the infirmary, student center or field house, they must cross Alden St., a hazardous sub-artery.

The college, which presently trains 1,100 young men and women for service with the YMCA and other youth groups, badly needs new class, meeting and housing facilities. Under a $3 million expansion plan drawn up by Planner Isaacs, Landscape Architect Hideo Sasaki, and The Architects Collaborative, a campus now divided for the convenience of the motorist would be given back to the student on foot. Gradually new buildings would be added to the old to make an informal quadrangle that would become the heart of a newly unified college life. The inner loop-street and unsightly parking would be removed, Alden St. dead-ended in two turnarounds so the green could extend across to new chapel, auditorium and administration buildings. Like Harvard Yard, which the planners knew and restudied closely, it would be intimate, walkable, full of a pleasing variety of spaces and views—not overextended or rigidly symmetrical like some other college schemes. Buildings would not be sentimental imitations of existing ones, but would be closely related to them in scale.

At latest reports it was not yet certain that the TAC architecture would be used. The college was tinkering with second-string solutions, of the sort that promise to be "just as good." It began to look as if the college as well as the town might not make real progress until younger thinking took complete control.
Tomorrow: the college would be united around a pleasant open green laced by footpaths. Cars have been put back in their proper place as a service, now come to the campus instead of through it.

New academic group, the most urgent need, would be placed on the front campus, completing a quadrangle with older buildings. Classroom building is divided into science and humanities, linked to back-to-back auditoria building.
BUILDINGS IN BRIEF

In this department FORUM takes an around-the-map look at new buildings, each with some claim to design excellence or a contribution to the proving ground of ideas. The department has only one aim: to keep FORUM's busy readers briefed on designs and ideas that might otherwise be lost in today's surge of construction.

DENVER'S DEBATED CURTAIN WALL

People think it's either "terrible or terrific," says Architect Theodore J. Moore Jr. about the reaction to this Denver office building. Moore designed it (for real estate investors Redding-Miller Corp.) on a site 3 mi. from downtown and took delight in the contrast it made with a bricky, next-door shopping center. His dash of color—porcelain enamel spandrels in red, yellow, blue and white scattered across the glass-and-aluminum facade—is the admitted eye-catcher. But Moore feels the building's outstanding features are its air conditioning, a low-velocity baseboard system with special diffusers integrated into the curtain walls, and its cost. Price for the finished job, including all tenant improvements, worked out to a low $15.10 per sq. ft.
A CLINICAL APPROACH TO OFFICE SPACE

There's not a doctor in the house, but this little office building at Shipbottom, N.J., could almost pass for one of medicine's group clinics. Architect Leo S. Wou laid it out that way to tie together a real estate and insurance agency (the owner) with offices for a builder, a lawyer, and a loan association. Wou used the center of the building, lit by a clerestory, as a common area for the public and for clerical help; the outer walls he gave over to individual offices. Sited on sandy Long Beach Island, the building needed 20-ton piles for support. It is built on concrete slab with nonbearing walls, cost about $30,000.

SO QUIET YOU CAN HEAR A PIN DROP

Hardly the place to expect serenity, this bowling alley in Covina, Calif., manages to achieve a good bit of it with its clear-span, uncluttered sweep. The work of Architects Powers, Daly & DeRosa, the building stretches 180' in length over the alley area, was built at a cost of about $1 million, including equipment. The 30 bowling lanes are equipped with automatic pin-spotting machines and a system of underlane ball return, which keeps the floor clear of the usual trackage. The ceiling is acoustical tile.
FRATERNITY HOUSE TAKES TO WINGS

For this Phi Delta Theta fraternity house at the University of Texas, Architects Page, Southerland & Page created, in effect, two zones of activity: a single-story living and social area for 90 members; a two-story dormitory wing for 28 students. To link the two, they designed a service corridor, allotted the space on either side of it to the pleasantries of enclosed gardens. Built at a cost of $12.34 a sq. ft. (excluding landscaping, kitchen equipment and fees), the house has brick-cavity walls, a redwood post-and-beam structural system.

WHAT A BRICK CAN DO, A FLUE CAN, TOO

Clay flue lining may be one thing to a chimney sweep. But to Architects Curtis & Davis it was a way to get the honeycombed look they wanted for this six-story Pan American Motel near New Orleans. In all, they used 15,000 of the linings to pipe air and light directly into the motel corridors. Each one—measuring 8½" x 8½"—was ordered in 6" lengths, which became the wall thickness. The linings, laid in a steel angle at the top and bottom of each floor, were set in mortar about ½" thick. The end product, the designers say, has about the same structural strength as an 8" solid brick wall.
These architectural outcroppings in the mountains of Colorado are the latest phase in the building adventure that has been going on in Aspen at the Institute for Humanistic Studies (AF, July '54). Part of Industrialist Walter Paepcke's campaign to make Aspen a major cultural and resort center, the new construction adds a recreation area, is the first of an expanded program. Shown above and below are two of the three lodges at Aspen Meadows by Herbert Bayer and Fritz Benedict, which, all told, provide 40 apartments. At upper right is a figure-eight pool, topped by Buckminster Fuller's geodesic dome of vinyl-coated nylon skin to protect winter swimmers. The detail at lower right is from the wall of one of the lodges; flagstone set in poured concrete creates the effect. Less obvious is the landscaped mound in front of the lodge above. Its function: "It may be used to sit on," says Designer Bayer.
ARCHITECTURE OF EAST GERMANY

“If West German architecture is bad, it is by default; in East Germany, it is so by decree”—a critical appraisal of the Communists’ fanatical but narrow rebuilding program by a recent visitor behind the Iron Curtain who prefers to remain anonymous.

Numerous Americans have visited the East Sector of Berlin. They all have experienced the peculiar feeling of shock that comes from the contrast between the prosperous normal appearance of the western half of the city and the pauperism, depopulation and acres of ruins in the East Sector.

In proportion to its scant rebuilding ratio, the East Sector of Berlin (97% destroyed) has far fewer domestic buildings than the West. Inquiries about new living quarters are answered with monotonous reference to “our Stalin Allee.” This development in the heart of the old slum district, which was wiped clean by bombs, is a mile and a half ribbon building, containing shops and apartments for party functionaries (photo 1). Its main characteristic is a startling resemblance to the Mietskaseren der Gründerzeit—speculation tenements of the expansion wave after the Franco-Prussian War of 1870. The elevations are uniform eclectic clichés, hiding apartment layouts that repeat all the worst speculation sins of the 19th century (2). There is the pitch-dark Berliner Zimmer or foyer, narrow uniform rooms with insufficient ventilation, giving in the rear on the famous Hinterhof or rear yard, and there are inside bathrooms and kitchens and narrow stair halls.

West Berliners are profuse in their scorn of the Stalin Allee, aiming their criticism mainly at the ridiculously outmoded monumentality of the façades. The foreign visitor would like to join in their often very funny quips, but he feels bewildered. Is this official architecture really so different from the official architecture of the Free West? A juxtaposition of, say, the new home of the President of The Republic in Bonn (3) and the Sports Hall, terminating the Stalin Allee (4), shows an embarrassing likeness. West German architecture in general is heavy, unproportioned and without design imagination—as evident in Stuttgart (5). The difference lies in the rare exceptions that are possible in the West but unthinkable in the East: the superbly designed Volkswagen repair shop in Braunschweig by F. W. Kraemer, for instance (6) or the multiple dwelling units for Siemens by Freimuth in Munich (7). But the handwriting of the typical postwar architect on both sides of the Iron Curtain is a heavy gothic script. The difference that permeates the air one breathes, originates, as everything else in Germany, from an ideological contrast: if West German architecture is bad, it is so by default; in the East it is so by decree.

Big Brother’s loudspeaker

The train to Dresden, racing at a smart clip through the new “Workers and Peasants Republic,” could have run unchanged in the Weimar Republic. The third-class wood bench compartments are still overcrowded and full; the second-class compartments are still overstuffed and empty. The difference from 25 years ago is the loudspeaker, that all-pervading voice of the “Big Brother,” accompanying the East German citizen from waking to retiring, and from nursery school to crematorium. On this particular trip the broadcast elaborated on the promised return of the famous art collection of the Zwinger Gallery in Dresden, which had been perfectly safe in Castle Pillnitz before the Russians liberated it and took it to Moscow. The broadcaster thanked the valorous Soviet Army for having protected these priceless treasures against the ruthless hordes of the massed capitalist armies, and he thanked in even more obsequious terms the glorious Soviet Volk for their gift to the humbly indebted German Volk. There was a wildly irrational note in this abject gratitude for the return of German State property.

The landscape between Prussia and Saxony is flat and dull. What made it interesting for me now were the low-cost worker settlements near factories and trade centers. In West Germany the keenest disappointment of the overseas visitor had been the defacement of vast amounts of farmland by slums of single family boxes, ugly, impractical and without the slightest trace of site orientation (8). In the homeland of the most progressive prewar settlements, this wanton destruction of the banlieu of the finest old towns had hurt.

Now, in traveling through the East Zone these same mass housing efforts became evident. But they were of a different type. Here the state had built row houses, three or four stories high, and of completely uniform design in widely separated towns (9). In spite of their aesthetic monotony and their lack of landscaping or of town planning, the sober multiple dwelling was less depressing than the miserable little Eigenheim—less even than the Long Island speculative house.
An open city

To arrive in Dresden is an amazing experience—as if one were to step out of Grand Central Station in New York, to discover that one could look clear through to the Battery on one end of the island and to the Harlem River on the other. The rubble had been cleared away, but this is about all. There are very few islands of reconstruction. The famous Baroque Zwinger has been rebuilt stone by stone through labor conscription and public fund raising. The form composition and every detail of the profuse ornamentation have been repeated with historical accuracy. But the end effect is lifeless and mechanical.

This is something the Dresden Zwinger does not owe to the political climate. It shares its lifelessness with such widely separated historical conservation jobs as the fifteenth-century Ford Hospital in Coventry and the Agora in Athens, being reconstructed with Ford Foundation money. One cannot help but look for the First National Bank sign on those brand-new colonnades in Greece, no matter how scholarly correct their proportions. And the brand-new Gothic of Coventry looks like a Rathskeller under new management.

The natural aging of buildings is obviously more than structural survival, more even than the patina of weathered materials. It is a settling into environment, and a fusion of compatible building elements, that age as harmoniously as a good husband and wife. Here Europe could furnish a lesson for our builders—if they only cared.

Stalin Allee Jr.

Each major East German town has its own Stalin Allee, differing from the famous Berlin prototype mainly in size. The poor taste and fake Medievalism of these provincial town centers had been pointed out beforehand by a knowledgeable West Berlin colleague. But as in the case of Western and Eastern Public buildings, the ridicule sounded oddly inappropriate. The difference between the standard concrete half-timber imitations in such towns as Ulm and Frankfurt (19)—jokingly called "Bauhaus Biedermeier" and the modified Tudor Bay in a small East German Town (19)—seems rather slight.

Life in Dresden is a nightmare for anyone except workers and party officials. The tragic accent comes from the yet unforgotten centuries when this city was a capital with the greatest opera and the finest artists, who within 100 years created the two most important German art movements: German Romanticism through the Nazarenes, and German Expressionism through the Brücke. There had been magnificent villas, an international Spa along the Elbe mountain range, famous Parks, and—so the proverb said—the most beautiful women in all of Germany. Not a trace of all this seems to remain. Those above the day laborer status who could leave, have left. Of the 271,000 East Germans, a majority were from Dresden. But flight means not only breaking all family ties, it means walking across the border with nothing but the clothes on one's back. All refugee property is confiscated. Many businessmen, artisans, professionals must remain. Their children are barred from higher education, which for Germans with their idolatry of Bildung is perhaps the most cruel blow. Higher education is strictly reserved for the offspring of the proletariat.

The gray masses of people, who, early in the morning and late in the day (there is no eight-hour day for anybody) streamed in and out of the ruined town into the suburbs, were easily explained as to their mode of survival. But what had become of the architects? There were no more than eight buildings under construction while I was in Dresden, and yet, I was told that the famous old Beaux-Arts Academy, and the Technical University, were turning out architects at top speed. It was at the Technical University, rebuilt monumentally in its old location at the south end of town, that I got my most decisive insight into the actual status of architecture behind the Iron Curtain. My informant was a youthful professor of architecture, one of the generation who had been reared during the depression, had matured in the Hitler Jugend, and had—a great exception—survived five years of active combat. Between 1946 and 1951 he had been trained on a state scholarship. He was a serious dedicated man, the ideal prototype of the New Professional of the East German Republic.

Where are the architects?

To my opening wedge: "What on earth are all you architects doing?" he replied: "We rationalize and we educate." The term "rationalizing" means in German something very different from the English. It stands for rational standardization of all products, parts and working processes. But I could not help grinning about the unintended double meaning. With great zeal and enthusiasm he explained to me that Typenprojektion—type projection—was the new task of German architecture, and that they could devote little time to actual building until this new architectural system had been fully developed. (It was the old German obsession to have a theory first and then—perhaps—an application. How different from the US.)

He had a clipping with a quotation by Comrade Khruschev, first secretary of the Communist Party: "The industrialization of building demands that the working methods of the planning offices be changed. Type projection and the wide use of already existing type plans must be the main concern of all designers." Using charts he elaborated on this basic need
BUILDING ABROAD

for total industrialization and standardization of all building materials and parts up to the complete façade of each building type as developed in Russia (12). He had harsh words for the social Romanticism of those among his colleagues who secretly yearned for individual design.

"Individual taste can no longer cater to the personal demand but must transcend the environment of the specific building. The architect must never lose sight of the fact that each line he draws and each calculation he makes or each saving he achieves, but also each mistake he makes and each negligence he tolerates, will have a thousand reverberations on the collective building sites of East Germany (Grossbaustelle Ostdeutschland). He showed me about a dozen standardized façades and plans for student dormitories which have priority over all other building projects. He lovingly compared two already built (13 b and e) with the Stalin Allee (13 a) and concluded: "When I came here, there were dozens and dozens of stairs, windows, doors, cornices, moldings, ornaments. Now there are only five types of stairs possible, and in the Soviet Union, they have pared down ceilings of nine types for the whole country. Nine ceilings for the whole Soviet Union, imagine."

Later I read a long long speech by Walter Ulbricht, the First Party secretary, delivered at the building conference in April '55. He referred to the just completed First Five Year Plan: "It symbolizes the bright life of the future under the decisions decreed by the Volkswirtschaft." There it was again: the imperishable carrot that is dangled day and night before the nose of each citizen to make him run. There isn't a broadcast, speech or article that doesn't start with "Eure Zukunft liegt . . ."—your future lies, and ends its paragraphs with "Der Tag wird kommen . . ."—the day will come.

Considering that Hitler had lived for 15 years on the same trick, the confidence of the German people in providence seemed amazing.

"Type Projection for Berlin has been worked out until 1970," Ulbricht had written, "A unique example of precise scientific work." The Dresden professor went into great detail, explaining to me how a state sponsored system of frequent competitions had brought magnificent results. From his detailed description it seemed that everybody was incessantly competing with everybody else. Trümmerfrauen (the women who clear away the bomb rubble) against Trümmerfrauen; the cement mixers against cement mixers; the "shock brigades" of construction workers on two different building projects, and the designers in the planning offices. "There are great personal advantages in belonging to a winning team," my informant concluded, "but also severe disadvantages if a team loses once too often. If a precalculated project runs short of building material or oversteps its budget, the names of those responsible are posted on the half-ready building and left there till amendments have been made by them."

No more geniuses

"Research for prestressed concrete must be concluded by June 30, '56," he read me from an official circular. "In Leipzig an opera and a post office have to be erected by 1957; a hotel in Magdeburg, a sailor's hostel in Rostock," etc. He pointed out the severe self-criticism that is the backbone of the Socialist Republic. After a brief reminder to me about the magnificent results this self-incrimination has produced in Russia, the professor showed me plates with plans for workers' apartment buildings (14). The margins were crowded with critical remarks by various "Cadre leaders" which would be published in the official architectural magazine.

"There will be no more precious geniuses with individual dreams," the teacher of architecture concluded. "Art, science and technology will be the three great unified forces from which to build a unified disciplined industrially fabricated new architecture."

As I was walking back through Dresden, past its miniature Stalin Allee on the Grüner Strasse, past student dormitories that seemed familiar because I had just been explained each detail, past shops with identical merchandise and past billboards with identical slogans, it all seemed nightmarishly logical. No matter how fervently the professor had invoked the Russian master mind, or had tried to emulate the foreign example, what I had heard from him and had seen during the preceding week in the East, was purely German history. Type projection? The horse whip discipline of Collectivism? In 1911 Herman Muthesius, co-founder of the Werkbund, had opened the convention of the Werkbund leaders with these words: "If any art, it is architecture which aspires to type. Only through type can it find perfection. . . . Modern social and economic organization is based on a sharp tendency of submission under leading viewpoints, severe (straffe) subordination of individual elements and undeviating emphasis on main principle as against minor issues. . . . Proudly Germany acknowledges her reputation of having achieved the strictest (die strengste) and most precise organization among all nations in her commercial enterprises, her heavy industry, and her state institutions. It is our military discipline that can be pointed out as the original inspiration" (15, an administration building).
This is the norm

The gentle, gifted Henri van der Velde had bitterly opposed Muthesius and the Werkbund principle: "As long as there are artistas among architects, they will protest against any proposed canon and any standardization. The artist is essentially a spontaneous creator. Never will he of his own free will submit to a disciplining force—a norm, a standard."

But his protest had failed, together with his Art-Nouveau movement. The next step had been the creation of the Din Format movement in 1917. Originally intended for industrial products, the influence of the German Industrial Norm Committee had soon become something of a Weltanschauung and had greatly influenced architectural design. Normablaetter (norm sheets) very similar to those the Dresden professor had shown to me, fixed uniform measurements for all industrial products and all building materials. The term DIN came to stand for Das ist Norm! (this is the norm) with the drive and exclusiveness of an Eleventh Commandment. The DIN idea had prepared the ground for the final step in German-type projection: Bauhaus architecture.

In 1924 Adolf Meyer published in the Bauhaus Book Series a volume: Ein Versuchshaus des Bauhauses (An experimental House of the Bauhaus) in which type projection for the first time was systematically presented. The caption under a photo in the Meyer book reads: "Building block sets in life size, from which various 'machines for living' can be assembled from prepared assembly plans, according to number of heads and requirements of the inhabitants."

And the text of the book had expounded: "The human habitation is a matter of mass production. Technology today would be capable of doing this, but the building trade is still tied by obsolete crafts methods. ... A basic transformation of building toward industrialization is therefore a powerful demand. ... This problem must be attacked simultaneously from three points: the economic-organizational, the technological and the formal. ...

The wealth of problems can no longer be mastered by the individual architect, but only by the collective teamwork of numerous experts."

A new mental intoxicant

Like pollen-carrying insects, Mart Stam, Meyer, May and other architects of this generation had carried the type projection idea into Russia when they were hired in the twenties to create a Soviet architecture. Remembering the climate of those years after World War I, it occurred to me how all revolutions turn for salvation from the chaos they have created to a form concept of excessive purity and excessive regimentation. It was no coincidence that the only historical architects quoted in the official East German architectural magazine were Gilly and Schinkel, who had tried to establish a Roman discipline in building after the unsettling years of the French Revolution and the Napoleonic invasion. Jefferson had tried to align the leadership American colonies with classical discipline after 1776, and Wren had expounded Palladio after 1688.

The West has sloughed off the disastrous heritage of earlier type projection fallacies, as shown by the huge and multi-accented project for the West Berlin Hansa Viertel (17). But the East Germans have been forced by a tragic political fate to sell their soul to overlords who are latecomers in the development of Western Civilization. Infected by the last symptoms of the growing diseases of the industrial age, they are selling them now back to the originators, exploiting two German character defects: servility and fanaticism. In 1888 Bismarck said in a parliamentary speech: "If the evil art of acknowledging that which is foreign as superior over that which is native—even at the detriment and expense of one's own welfare and leadership—still flourishes among peoples, it certainly does so among the Germans ...

And Nietzsche, at exactly the same time, had summed up what I had experienced east of the Iron Curtain, crystallized, as it were, in the new religion of type projection: "The Germans" he had said in his Will to Power, "are a dangerous people. They are experts at inventing mental intoxicants."
TECHNOLOGY

New materials and methods in painting (right) ... technical notes on air ducts buried in the slab . . .
175' hydraulic elevator . . . electric heating . . . new low-nickel stainless . . . paper forms for precast concrete . . . electronic brain center controls air conditioning . . . tapered steel beams (pp. 160, 161)
NEW PAINTS FOR BUILDING PROTECTION

Besides many new plastic materials, the industry has some new means of application and some new ideas about thickness

A couple of decades ago, almost everybody in the building industry had the facts about painting at their fingertips; there just wasn’t much to know. Now, however, paints have become an esoteric mystery, akin to New Year’s punch, whose ingredients are known to but a few initiates. These initiates are a group of smock-clad chemists and corrosion engineers who, with the nice accuracy of the scientifically inclined, even want to change the name “paint” to “coating.” Moreover they are also trying to remove the ancient touchstone of quality paint jobs and eliminate the “one, two or three coat” specifications of yore and substitute actual thicknesses of paint film instead.

As a result, paint technology is now handmaiden to plastics and it takes a wise architect, builder, engineer or building owner to know what is available and what a specific coating can do to solve problems in corrosion, heat, humidity and wear resistance. Incidentally, the paint manufacturers seem reluctant to shed light on the mystery. Too often the basic ingredient of a coating is hidden behind a trickily spelled name and label which implies (without naming a substance) that the liquid within is more magical than chemical.

New materials

According to the manufacturers, a coating has been, or will soon be made from every one of the 14 major basic plastics. This doesn’t mean that the new paints are limited to 14, since each of the 14 basic plastics proliferates innumerable compounds, to say nothing of the endless cross-compounds made by combining two or more basic plastics. The possibilities for confusion are almost infinite.

So far, these are the basic ingredients which have been used most successfully in construction paints: phenolic resins, vinyl resins, epoxy resins, chlorinated rubber, high styrene-butadiene copolymer resins, alkyl resins and fluorocarbon resins. To a lesser extent such plastics as silicone, urea, cellulosic, acrylic and polyester have been tried—usually for specialized purposes. This leaves only melamine and polyamide still in the test-tube or laboratory stage of experiment.

However, it should be a comfort to remember that the addition of these substances to paint technology has not changed the basic constitution of most paints. Paint, in the main, still consists of 1) pigment, dry powdery particles to provide color and opacity, 2) vehicle, the non-volatile portion (or binder) which dries out to form the film holding the pigment together and a volatile portion (or thinner) which evaporates after permitting easy flow, and 3) a drier, which speedily converts the liquid paint into a solid film by catalytic action.

The plastics are used mostly as binders, although advances in pigment and driers have kept pace and are much improved too. The new coatings get their characteristics from the basic plastic from which they are compounded. To find a way through the alchemic morass of jaw-breaking names, it is necessary to cling to a number of guiding strings. The following strings are the basic characteristics of the most popular synthetics:

- Phenolic resins. These coatings are a sort of middle road in the transition from the older oil-based (tung, castor and linseed) coatings to the newer synthetics. They are a good compromise or all-round paint having a wide variety of desirable properties without being superlative in any category. They have excellent weatherability, dry swiftly, are easy to apply by all the usual methods, are low in cost and have relatively good chemical and corrosion resistance. However, they have relatively poor gloss retention on exposure.

- Vinyl resins. These coatings are among the best in properties of durability, chemical, corrosion and abrasion resistance, and color and gloss retention. But vinyls, too, have their drawbacks. They lack resistance to some solvents, are thermoplastic and usually must be sprayed on rather than brushed.

- Epoxy resins. These are the new glamor coatings, the laboratory darlings of today. They show outstanding chemical resistance and excellent hardness plus good durability. But so far they are somewhat lacking in gloss and color retention and resistance to high humidity.

- Chlorinated rubber and styrene-butadiene. Both of these rate high in alkali resistance (they are widely used for concrete and masonry coverage) and in other chemical resistance but low in resisting some solvents.

- Alkyd resins. The "wonder paints" of a few years ago, these coatings are still considered excellent because of their gloss and color retention, ease of application and good atmospheric weathering. One of their drawbacks, in industrial use, is their relatively poor chemical and solvent resistance.

- Fluorcarbon resins. Here is a material which the chemists and corrosion engineers would dearly love to get on the market. Of all organic coatings, these have the best chemical resistance. However, they are limited at the present time for construction use by high cost and the necessity for baking the finish on.

- Emulsions. A lot of attention is now being paid to polyvinyl acetate emulsions. Coatings based on this compound have given excellent service on masonry and very satisfactory service on exterior woods. However, the exposure experience has not been long enough for a final decision. The coatings are also useful for interior use.

- Acrylic and polystyrene emulsions have about the same properties as ordinary latex paints. (Some authorities believe that the latex paints have an advantage in being easier to clean up.) Other new materials. A lot of development and experimental work is being done with silicone resins. Such coatings are interesting because of their extremely high heat resistance and their good chemical and corrosion resistance. They also show good gloss and color retention.

- Copolymers to modify alkyds continue to appear in experiments seeking to combine the generally good qualities of alkyds with other plastics. For instance, an alkyd and acrylic copolymer has shown interesting properties including rapid drying, good adhesion and retention of flexibility. Some efforts have been made to develop a polyester resin as a 100% solids varnish.

New combinations appear almost every day, such as a water-thinned mixture of latex and acrylics, and silicone additives to enhance the properties of the older synthetic mixtures and the newer epoxy and polyester finishes. A still unsolved problem for the epoxy and polyester coatings is the necessity for catalysts to ensure rapid drying. The use of such a catalyst means a batching operation to control waste of material and some catalysts react so fast that unless the material is out of the paint pot and on the wall in a hurry, it "sets" in the pot.

Special paints. For some time paint producers have been trying to expand their market in masonry, concrete and stucco finishes. The choice today is between solvent-thinned materials such as styrene-butadiene and chlorinated rubber, and the water thinned or emulsion products made with acrylics, polyvinyl acetate and styrene-butadiene (changing the ratio of styrene to butadiene enables this raw material to be thinned with either water or a solvent).

There has always been a demand for
NEW PAINTS cont’d.

paints which perform functions other than decoration and corrosion control. Modern paint technology has been steadily improving these special service paints and many are on the threshold of wide distribution.

Sparked by some building codes which require their use, fire-retardant paints are under intensive laboratory investigation. Some manufacturers now put out a paint which fluffs up and provides an insulating barrier when scorched by a flame. So far, most of these paints rate low in scrub resistance, but new compounds are overcoming this deficiency.

Intumescent coatings (paints which swell up when a catalyst is added) are being used for insulation and sound deadening. This demand has not yet been answered satisfactorily because adding the catalyst to the paint makes for troublesome batching problems.

The use of paint as a vehicle for applying insecticides to walls has been greatly improved. The former objectionable appearance of DDT crystals on the surface after the insecticidal paint had been applied has been mitigated by using a urea resin as a vehicle.

Paints which incorporate abrasive substances such as carborundum are available to provide slip-proof surfaces. Strippable coatings which may be peeled from the walls like the skin of a banana have been made from both chlorinated rubber and vinyl resins. Electrically conductive paints for printed or painted-on electric circuits may someday be used in building. They already exist in the laboratory.

New thickness ideas

Aside from ship's hulls, chemical plants and oil refineries put paint to its severest tests. It is not surprising, therefore, that from the engineers and maintenance men of these industries has come one of the latest advances in paint technology—a more specific description of the necessary thickness of a coating; more specific at least than today's measure of "one, two, or three coats."

So far no complete agreement has been reached on precisely how thick a coating should be. The best rule, and one which is followed by many of these maintenance men, is that the film thickness (dry-film) should be about three times the profile depth of the surface roughness (see sketch). That is, if the profile depth of the material to be covered is 2 mils, then the dry-film thickness should be at least 6 mils. However, some authorities believe that in no case should a film thickness be less than 5 mils for outdoor surfacing.

To make specifying coatings in mil thicknesses practical it was necessary to provide proper instruments. Instrument makers have now made available both dry-film gauges (a magnetic type, which gives a direct reading in mils) and a wet film thickness gauge.

In conjunction with controlled mil thickness pressure tape is often used as auxiliary protection. In severe service where as many as four coats of paint might be required to obtain sufficient thickness (over the sharp edges of structural members, for example) tape is used to reinforce the paint at the edges. This can reduce the number of coats to two over the plane surfaces. Savings of up to 25% may thus be obtained.

New techniques

One of the most exciting new developments in paint application is the hot-spray technique. Because heat makes paint thinner, it permits the use of those coatings with a very high concentration of solids (with consequent vast improvement in the opacity of single coats), and it permits the use of more viscous coatings than can be applied by brush, roller or cold spray. This method can be used to apply mastic coatings which lighthorro required smear and buttering techniques.

The hot spray not only reduces the pinholes which occasionally appear in sprayed-on films, but it gives a better and thicker build-up of film coating per pass with the spray gun. Even sharp edges get a thicker coat when this technique is used. Some field applications can thus be reduced to two or three coats from the normal three or four.

Naturally, since the paint is heated to 120° to 150°, it may be sprayed outdoors in fairly cold weather and in unheated buildings in wintertime.

Some industrial maintenance users have also found that the hose line can be reduced from the normal 1" to ¼", thus lightening the weight of the painter's equipment—a morale factor which cannot be overlooked.

Besides the hot spray technique, there are other new application techniques. The double-nozzle spray gun sprays vehicle and binder out of one nozzle and the drier or catalyst out of the other. Equipment is also available which mixes resin and catalyst just as they leave a single nozzle gun. By either means, a very rapid drier or catalyst may be used to produce almost instantaneous drying. In fact, the catalyst may be so fast that the overspray will be as dry as dust before it hits the ground. This means that, besides the advantage of high speed drying to make the newly painted area available for use almost immediately, protective scaffolding and drop cloths can often be eliminated.

Another advance in spray technique is the combination of hydraulic spray with hot spray. The hydraulic spray (pumping the paint itself under pressure) requires a fairly thin-bodied paint to be successful. But combining hydraulic pressure with the vapor pressure obtained by heating the paint up to 200° F. (close to boiling for most solvents) raises the pressure up to about 450 lb. per sq. in. Upon release from the restrictive nozzle of the spray gun, the paint atomizes without the use of compressed air.

Besides lighter equipment (the air hose is eliminated), the combination system is said to lose less paint to overspray and to be safer because of less rebound. As in other hot-spray systems, the paint can have a heavier body with a higher percentage of solids and heavier film thicknesses can be laid on in one pass of the spray gun.

In the developmental stage is a system which uses superheated dry steam instead of air to atomize the paint. Such a system would reduce the overspray still further.

Still in the experimental stage, but now considered a likelihood for the future, is an electronic spray which will eliminate all overspray and possibly use electrostatic attraction to spread the paint.
### OUTDOOR COATING THICKNESSES

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Film thickness (mils)</th>
<th>Average life (years)</th>
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<td>Rural atmosphere</td>
<td>4 to 6</td>
<td>6</td>
</tr>
<tr>
<td>Fume contaminated atmosphere</td>
<td>6 to 8</td>
<td>4</td>
</tr>
<tr>
<td>Heavy fumes</td>
<td>8 to 20</td>
<td>varies</td>
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<tr>
<td>Splash or spillage</td>
<td>60 to 250</td>
<td>5 to 10</td>
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**HOT SPRAY** painting apartments is practical with portable equipment. Heat, fast catalyst and odorless paint cut down number of coats, drying time and nuisance.

**FIRE RETARDANT** paint swells up and forms insulating layer when touched by flame. Required by some codes, paint of this kind does not offer much "scrub resistance."

**MASONRY** painting now can call on paints which resist alkali action of concrete, mortar and stucco. Here malt silos are being coated against moisture infiltration.

**INTUMESCENT** paints form an insulating layer by foaming under catalytic action. They can also be used as sound deadening agent on metal curtain walls and roofs.
TECHNICAL NOTES

BURIED AIR DUCTS

To save the space and cost of a hung ceiling ducts are cast in slab

A novel principle in the design of big-building high velocity air conditioning was introduced in the exhibit area of New York's massive four-level Coliseum, where about 75% of the branch ductwork is embedded in concrete floor slabs. Another innovation: ceiling air diffusers are the core of 8' square fluorescent lighting fixtures.

The principle of burying air ducts (sometimes used in homebuilding) was adopted to fit the Coliseum's need for a ceiling without the conventional use of acoustical paneling or a hung ceiling. Such a hung ceiling would have cost an extra $100,000 and would have lowered the ceiling without the conventional use of acoustical paneling or a hung ceiling. Such a hung ceiling would have cost an extra $100,000 and would have lowered the ceilings which must be high to accommodate many of the Coliseum exhibits.

The embedded ducts were fabricated in the early stages of construction, waterproofed and anchored to the structural steel before concrete was poured. The ducts are made of 1" thick marine-type plywood paneling. To prevent the ducts from being crushed during pouring of concrete, sheet metal shields were placed around them and removed as the concrete was poured.

The ducts taper down from 15" wide x 5" deep at the end which is connected to mixing boxes (where hot and cold air is delivered in vertical risers) to 8" wide x 5" deep at the far end of the run. Each branch duct serves from one to four outlets.

Flexible conduit connections (5" diameter) carry the high velocity air to sound attenuator boxes which, in turn, are connected to circular ceiling diffusers.


OUTSIDE ELEVATOR

Clinging to a hotel, plastic cab provides sightseeing ride to roof-top bar

A $100,000 outside elevator will enable hotel guests of the remodeled Hotel El Cortez to see the sights of San Diego as they travel up from the lobby to the 12th-and 15th-floor restaurants and bars. The 16-passenger elevator cab is clear acrylic plastic on three sides, rides on a 175' long hydraulic ram of 16" diameter steel which, to ground observers, is nearly invisible and creates the illusion of the cab moving up and down without a visible means of support. The cab has a two-way communication system, a heating and cooling system, is soundproofed and has piped-in music. At the lobby level, it comes to rest in an all-glass hatchway.

To install the system a well-drilling rig was assembled in the hotel basement to drill the 175' shaft for the ram and cylinder. The ram itself was welded together section by section and turned in a special lathe at the jobsite to smooth it down before being lowered into the cylinder.

The manufacturers say that the lift is not limited to hydraulic rams and, indeed, can be adapted to a cable support concealed in the side of a building of up to 50 stories.

Architects: Paderewski, Mitchell & Dean.

ELECTRIC HEATING

Radiant panels are economical for temporary buildings in north

Most people dismiss electric heating for northern climates without study after a few preliminary calculations, but sometimes circumstances make it economical. Here, in the case of two temporary buildings at Fairleigh Dickinson College, Teaneck, N.J., is an example of the successful use of electric radiant heating.

The commons building was assembled by moving and combining several small frame buildings. It was to have a useful life of only about ten years. A conventional steam heating system would have cost about $20,000—or $2,000 per year—without maintenance. The installed cost of radiant ceramic system was about $4,000, or $400 per year. Electric fuel costs were twice that of oil, but over the ten-year period, the total initial and operating cost advantage lay with electric heaters. Even if the difference in fuel costs were $1,500 per year—based on $1,500 for oil and $3,000 for power—the electric system would still be cheaper.

To maintain a design temperature of 72° F. at an outside temperature of 10° F. required, besides careful insulation of the building, a power input of 28.2 kw.

The heating units in the commons building were placed beneath the windows. In the chemistry building ceramic radiant heating panels were hung from the ceiling above the benches in such a way that radiation was beamed on the students as they worked at their benches.

NEW STAINLESS STEEL

"200 series" uses relatively little short-supply nickel

New low-nickel, austenitic stainless steels, the "200 series," have excellent potentials for architectural use, according to the American Iron & Steel Institute. Skidmore, Owings & Merrill's Inland Steel building, under construction in Chicago, will use this type of steel instead of the older "300 series," and the architects of other buildings now in design stages have tentatively specified it.

The "200 series" is the result of years of research on low-nickel, high manganese types of stainless steel which go back to World War II when nickel supplies were very low.

The physical and mechanical properties of the new series are very similar to those of the higher nickel types (types 301 and 302, for instance). Yield strength, ultimate tensile strength and hardness in the annealed condition are higher, but not enough to affect fabrication or erection. Welding techniques used for the 300 series can be used for the 200 series. Costs are also comparable.

INLAND CONTAINER CORP.

FIBERBOARD FORMS

Labor costs are cut 66% by use of corrugated paper forms

Substantial reductions in labor and material costs have been made by the use of corrugated fiberboard forms for cast-in-place concrete (AF, May '53, April '54).

Here's a case involving precast concrete. The building is a 25,000 sq. ft., one-story fireproof structure in Crawfordsville, Ind. The design required over 350 identical unit roof panels of reinforced concrete, each 18' long, 4' wide. They would have necessitated a rather complex wood form. Inland Container Corp., which ordinarily makes corrugated boxes, devised a corrugated form which met the specifications and could be assembled by unskilled labor.

An analysis showed that while costs for the forms themselves were comparable with other forming materials, a 66% reduction in labor costs was achieved. The saving was made possible because of: easy handling and storage; accurate forming because each form was new; fast stripping; and, since the corrugated form was expendable, cleaning, repairing and storage after use were eliminated. (Wood forms would have been used only three times each; metal forms would have been very costly.)


CLIMATE CONTROL

Central panel provides fingertip control over heating and conditioning

Engineers have completed installation of a master panel that applies the principles of electronic automation to the heating and ventilating of Prudential Insurance Co.'s Chicago skyscraper. At the dial-studded control panel, the building's engineer can singlehandedly monitor and control the heating and air-conditioning system in the 41-story structure. The panel is linked to 180 high-sensitivity electronic thermostats and 1,200 pneumatic and electric thermostats. These thermostats are integrated into a network of more than 20 mi. of copper tubing and 30 mi. of wiring.

The master control panel is patterned after the "nerve centers" of modern chemical, refining and processing industries. It automatically adjusts for the different heating or cooling needs posed by outdoor conditions. It also compensates for changes in temperature that occur in the morning when the building suddenly fills with people and in the evening when they leave, and it adjusts automatically for the heat produced by lights, by office machinery and by large numbers of people in conference rooms, auditoriums and central working spaces. The master panel also gives the building engineer supervision over all of the automatic processes. By the flick of a switch, he can shift the building's air-conditioning plant from day to night operation or to summer or winter schedule. The system is designed so that it can be supplemented later, if desired, with such new electronic developments as wind direction indicators, wind velocity indicators, sun intensity meters and electronic "people counters" which would keep tab of the number of persons entering or leaving a floor via the elevators. (Nothing has been devised so far for keeping track of those leaving via stairways...or windows.) Another future possibility is an electronic scanner to check thermostats every five minutes and automatically record the temperatures for the engineer. At present, the engineer must perforce use his index finger to push a control panel check button.

Architects: Naess & Murphy; engineers: Minneapolis-Honeywell Regulator Co.

TAPERED GIRDERS

Built-up from plate, these long span girders save steel

To provide maximum headroom while using a minimum of steel, these welded girders were built up from steel plate 190' in length. The six-ton transverse girders provide extra headroom between supporting columns by tailoring the shape of the girders to their stress patterns and thus eliminating much of the depth required with rolled beams. The shape also eliminates much of the weight and cost of rolled beams (AF, Aug '55).

The double-tapered cross members, similarly built up from plate, provide increased headroom between the transverse beams. The double taper is produced from wide plates by making a single diagonal cut with little or no waste of material. The halves are then rotated and spliced to give maximum depth at midspan.

CAPITOL BOTCHERY

The Great Capitol Boondoggle — tearing down the historic east front of the Capitol and rebuilding it further forward to new ideas — can now be prevented only by a sensible report from a committee of architects. The factual story of this remarkable episode (see News) explains better than any editorial FORUM's reasons for joining LIFE and a clear majority of the press in the belief that this is a highly dubious undertaking.

MISSING INDUSTRY

In the city of Chicago there is a remarkable institution — the Museum of Science and Industry — which boasts what is perhaps the heaviest museum attendance in the world, 2.5 million a year. Most of it is kids, boys and girls of high school age, happily satisfying their curiosity through exhibits "of which they can be a part." They push buttons, pedal bicycles, listen to phones, ascend a complete mine shaft.

Major Lohr, director of the museum, says that the installations represent an astonishing cost. The minimum for a successful one has to be $250,000, or one quarter of a million cold. Of such exhibits the radio industry, the telephone industry, the hardwood association and others have been happy to supply more than enough to run the museum and keep the directors happy as their flooring wears steadily down under millions of inquisitive feet. Floor wear is used as a measure of interest.

Lohr asks, however, who there is in the building industry that he might approach to get his exhibits rounded out with the biggest industry of all. Up until now he has found nobody who could give him a responsive answer. No single organization seems to be big enough, and nobody can speak for the industry as a whole.

This, we submit, is trenchant though oblique evidence of something the industry must cure. This biggest industry of all is small in its individual units, which moreover fall into many different types: the producers are both manufacturers and builders; the directive forces are architects and engineers.

We might suggest the various building congresses or the Producers Council or the Building Research Institute as a set of organizations that come nearest to presenting a potent and united building industry front: but there would be immediate protest from architects and engineers if they were to be left out.

So FORUM asks its readers how Major Lohr's dilemma might be solved. If we can get the answer it may have value for us all.

HUMANE TECHNOLOGY

On p. 152 appears a rather discouraging description of building in Germany behind the Iron Curtain. The anonymous author is obviously well acquainted with the German scene; but we do not agree with his thesis that the Communist regimentation of East Germany today is quite so closely connected with exclusively German history. In the twenties fervor for mechanization was everywhere, not only in Germany but in France, England and America, and usually in proportion as the Industrial Revolution was beginning to permeate the building industry. Germany, high in the industrial scale, carried the development far.

By now, as the author concedes, in the West the exaggerations have been toned down. Le Corbusier, who once exulted in the machine à habiter, now designs in a manner almost the reverse, and Gropius, whose Bauhaus carried out similar experiments, can be counted on (with his associates) to design schools and other kinds of buildings which are outstanding for their humane use of art and also their human scale and not only for technical competence. Meanwhile the need of an industrial society for standardized elements and closer teamwork cannot be reversed, even though the outcome must transcend them.

* * *

Frank Lloyd Wright celebrated his 87th birthday on June 8 with his Guggenheim Museum project in New York firmly under way at last. Courage is something that Wright unfailingly injects into this timid world, and we thank him for it more fervently every year.

Douglas Haskell

162
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other area. The lender may look suspiciously at innovations in equipment, but he is aware of the field, keeps very close tabs on building materials and equipment and is generally alert to what is truly an improvement. So, too, with new planning approaches—drive-in banks, country office buildings and the like. As long as the approach is flexible, the lender will show it tolerance. But if a building deviates markedly from the appearance of others around it, there is only one thing to do—avoid it.

Style is the big reason why Webb & Knapp’s helix apartment house—a circular building with pie-shaped apartments pointing in toward a central utilities stack—remains unfinanced after five years of trying. It was one of the reasons why Herbert Greenwald, Chicago promoter of Ludwig Mies van der Rohe’s Lake Shore apartments, collected a pocketful of lenders’ rejections when he set out to build the first of the glass-walled structures. (Greenwald eventually got backing from a relatively small mortgagee, but had to make compromises on the interior layout to get it.)

Taught to behave

By singling out what he doesn’t like—and coupling this with a policy of flat rejection—the lender accomplishes two things: 1) He assures himself of a supply of buildings to lend on, most of which will conform before they even get to him; 2) he kicks away the props from any real reason for having to make positive suggestions for altering design. The mortgagee rarely needs to have any contact at all with the architect today. And the result is the architect can point to building after building on which he can swear there has been no lender’s influence.

Denver Architect Raymond Harry Ervin states the case about as candidly as anyone can. Ervin feels he has had almost no interference in his work from lenders. But this, he concedes, is probably because he has learned what the businessman wants in his buildings.

“Years ago, I got over the adage that architecture is 90% beauty and 10% business,” Ervin says. “It’s been a compromise, I admit, but not so hard as some people would like to make out... The architect comes to realize the lender is risking the policy-holders’ money. ... With me, it’s about 40% beauty and 60% business.”

To say that negativism and rejection are the rules the lender applies to commercial buildings is simply to say that there are exceptions to these rules. The pat description of the lender’s role conveniently overlooks them. But it is just these deviations that expose the oversimplification for what it is.

It really doesn’t count much to a lender what a New York office building looks like, or for that matter, any other building, well located, where the demand for space is great. Presented with a set of lease commitments from space-hungry tenants and a black-ink bank statement from the promoter, he can afford to be indifferent to the building’s artistry or lack of it. An office tower by Architect William Lescaze will cause no more qualms than an assembly-line wedding-cake creation. Neither will he fret if he buys the owner bonds of a Rockefeller Center, or the paper of a Lever House, a Seagram building, or a Socony Mobil building. In each case, his money is riding on the gold-plated backer or tenant; the building can be anything the owner wants it to be. (A recent example of this: Frank Lloyd Wright’s Bartlesville, Okla., apartment-office structure for H. C. Price Co. Several mortgage bankers say flatly that the building would never have been financed without the name of the company to back it.)

Architect I. M. Pei, who has done many of the Webb & Knapp buildings, feels certain that the bigger the client is and the bigger the job is, the less the lender bothers about the architecture. Pei, for instance, had almost no contact at all with Equitable Life when he did the Mile High Center in Denver. He didn’t even take over the plans himself.

Equitable did query Pei about the floor-level air conditioning for the building. He called them about it, he remembers, explained his reasons for the system, promised to demonstrate when the steel structure was up. But that was the end of it, he says. He’s not even sure the company came around to look at the demonstration when it was set up.

This relative indifference to the look of blue-chip projects shows up even more strongly in the industrial sale-leaseback deals. This is an area dominated by the insurance companies, and is just about the most profitable form of real estate investment today (net returns run 4½% to 5%, and there is the strong chance of a built-in buyer at the end of 20 or 25 years). Here the lender probably has the least to say about the eventual shape and use of the property. But he has the least chance to say it, if the long-term tenant is a General Motors, a Minneapolis-Honeywell, or the like. One happy result to date: sale-leaseback has produced some of the best functional architecture in all of the nonresidential field.

The pride of ownership

Strangely enough, the lender may show neither indifference nor reaction when it comes to building for himself. Lender-owned real estate is at times far more imaginative and forward-looking than the projects they just finance. Prudential can point to its office building in Los Angeles, New York Life to Manhattan House in New York City, Manufacturers Trust to its Fifth Avenue bank, all better-than-average efforts. Here the lender has recognized that planning and design are pow-

continued on p. 168
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erful economic forces in themselves, sometimes subtle, and sometimes direct, in their effect on cold, long-range dollar income. The trouble is that relatively few of the money merchants sense this; if they did, there would be a more consistent standard of architectural quality in the building projects they produce for themselves.

There is real reason for the lender to care about what he builds for himself, and, perhaps, it's best explained by Henri Bourneuf, an executive of New England Mutual. Bourneuf points out that when a company holds a mortgage on a property, it runs the risk of participating in any losses on it. But it doesn't share in the future profits. If the company owns the property, however, it not only risks the losses, but can take a bite from the profits, too. So the investment is made with an eye to increasing the long-term value and dependable income.

In the case of one outstanding architectural investment by New England Mutual, the East Gate apartments at Cambridge, Mass., the company set its sights well above run-of-the-mill construction. "We didn't see any point," Bourneuf says, "in building and owning apartment buildings which would not be better than average and carry a degree of prestige for the future, as well as the present." He admits that had they just been lending on the same apartments, they would have thought only in terms of the next 20 years and would have preferred lower costs, lower rents, and accepted lower-grade architecture.

The unrecognized force

Yet such cases of good architectural judgment, even in the name of self-interest, are far from universal. Just what is good architecture, and just how radically it may affect long-term demands (thus becoming in itself an economic force) many lenders have been unable to recognize.

An interesting example is the experience of life insurance companies in building tall apartments in Los Angeles and San Francisco. Occupancy has never been as high as was hoped for. This gets into questions of sheer taste, questions of architectural form and plan arrangement. These are tall buildings, and a great many Californians dislike living in tall buildings. Some say the apartments have an unwanted "New York look." Chances are, a great many local architects could have warned the insurance companies that their neighbors had a different architectural standard. This taste factor, however, was the kind of factor that belongs with the intangibles, for which there are no open-and-shut economic indexes.

Or take a contrary case. The outstanding success of Rockefeller Center in New York has undoubtedly been strongly affected by the architectural concept of the whole. It is virtually impossible to imagine an equal financial success for any other equal area of space without the center's cohesive and impressive architectural character. Yet, how to measure this?

The fact is that the degree of alertness and sensitivity of large lending institutions to the quality of architectural planning and design, even in their own holdings, has wavered all over the lot. There is no evidence that the less-than-perfect architectural character of the individual towers at Pittsburgh's Gateway Center swayed the judgment of the lender-owner (Equitable) in any way, and it must have an effect on long-term desirability. In Philadelphia, qualified architectural opinion already predicts a less-assured future for the Penn Center because the handsome scheme first suggested by Architect-Planner Bacon and his associates was replaced by an architecturally barren scheme at the command of lenders and investors. Local architects are still battling for greater pleasantness in the details of the project, and this is a battle against the obliviousness of lenders to the fact that a loss of pleasantness can result in a loss of hard-won money.

What every lender should know

To set up a recognized financial measuring stick for such intangible factors is really impossible, but a degree of sophistication could be a help. Architectural criticism is a form of literature that lenders might very well read. For example, any architectural critic of ordinary competence could tell the banking fraternity that some of the wildest googie aberrations in architecture are being built in startling numbers now for highly respected banks. The chance such buildings have of commanding respect day-after-tomorrow is very low. Over any long period, it is reason, not unreason, that is likely to prevail. Consequently, bad investment results from jazzy architecture are easy to predict. And lest the uncultivated banker rise too fast to declare such judgments of taste unreliable, it may be pertinent to recount that heavy money returns have been earned by those whose good taste was unique—thus Architect Mies van der Rohe of Chicago points out that his early investment in Paul Klee (then a painter totally unknown) has earned him a rate of financial increment that many a banker might envy.

The preference for perpetuating the present—or at worst, looking backward and financing the kind of buildings that used to be good mortgage risks—is, in many ways, the full flowering of negativism. It is what Frank Lloyd Wright talked about in 1927 when he said: "It needs no argument to convince anyone that new and constructive ideas in art and life cannot take place by appealing to the banker or broker. The banker is a banker because he hangs to the old order and is doomed to hang with it."

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Beau's summary of him at the beginning of his career in the US. In support of this, Hamlin recreates the architect's eleven London years, his work with Samuel Pepys Cockrell (in the design of the Admiralty Building, especially), his independently designed small public buildings, his residential alterations and two new houses: Ashdown House, and Hammerwood Lodge. He also demonstrates that Latrobe's engineering competence had progressed far enough, while still in England, for him to have submitted proposals for the Chelmsford Canal. This strengthening and deepening of our knowledge of Latrobe's earlier career leaves no doubt that most of the main lines of its development had been established in England, and that he was a fully formed and experienced professional man.

In his encounters with American conditions, Latrobe's life thus reveals the opportunities and the difficulties which faced a man of creative ability and maturity, not those met by “an untrained bungler”—as Latrobe's enemies later asserted. That it was impossible in America to build the architectural designs of contemporary England without major changes requires little demonstration. The specific conditions of climate, the different living habits and standards, the changed availability of materials and craftsmen, the organization of the building business—all demanded and received recognition in design. Early in his career on this continent Latrobe found that the climate obliged him to locate “the inhabited apartments” on the south side of his buildings, leaving on the north stairs, lobbies, halls and other elements of communication. American manners required house designs emphasizing compactness, convenience and—above all—comfort, though with relatively moderate means for entertaining company. Latrobe's plans were carefully studied to separate living and service activities, to assure privacy. Care was taken to develop the function of each room, designing it for its own special use. These characteristics, evidenced in Latrobe's first design for the Pennock house in Norfolk, within a few weeks after his arrival in the US, were brought to their finest expression in the Van Ness house, his residential masterpiece in Washington 20 years later. As Hamlin observes, not only “was he a cultivated gentleman bringing to the new country the riches of an unusual background; also in less than a month he became an American architect, an American engineer.”

Within five years after his arrival in the US, Latrobe had reached the top of his profession with his appointment by President Thomas Jefferson as surveyor of the public buildings, a position in which he completed the design for the Capitol at Washington and the White House, in each case having to make good the technical ignorance of such amateur architect predecessors as Thornton and Hoban. But first he proved his abilities with engineering and architectural projects in Virginia, and the two great landmarks of his early career—the Bank of Pennsylvania, and the Philadelphia water supply system.

The full and authoritative treatment Hamlin gives each of these major building projects reclaims them from the historical ambiguity into which they had, for the most part, sunk. He shows what an advance they represented over the regional aspirations toward a national architecture which in New England were being advanced by Bulfinch, McIntire and Asher Benjamin; the amateur neoclassicism of Jefferson and his followers in the National Capital area; or the vernacular architecture of the carpenters' companies and local builders everywhere. Though Latrobe might have been credited with the establishment

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continued on p. 182
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of a federal style of architecture, Hamlin chooses to regard his major accomplish­
ment as the creation of an American archi­
tectural profession and his training of
Mills, Strickland, and many of its leaders;
Latrobe's other major accomplishment was
the technical advancement of construction
which followed the liberation of building
from the ignorance and handbook dogma­
tism of carpenters and masons. The basic
issue of Hamlin's biography of Latrobe
thus becomes the story of how this archi­
tect-engineer faced the carpenters of Vir­
ginia with their little handbooks of Adam
details and their narrow conception of how
men should live, and how he won out with
his larger scale, his more appropriate
plans, his more imaginative construction.
It is the story of how he faced the organ­
ized building crafts of Philadelphia, with
their brick traditions and their post-and-
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Building achievements no less important
were Latrobe's masonry vaults (traced in
great detail by Hamlin) and their use as
controlling elements in design. This was
the key to the Baltimore Cathedral, the
Exchange, many parts of the US Capitol,
the Richmond Penitentiary and many of
his other buildings. His contributions were
also great in the development of quarries,
built materials, and machine-powered,
mass-production building methods; and he
was not inferior to Jefferson in his inven­tion
of mechanical gadgets and services for
the home, and the exploration of such
novel architectural decorations as the corn
and tobacco capitals he used in Washing­
ton. As Hamlin shows, Latrobe's contribu­tions to the growing American profession
of engineering were hardly less decisive,
fertilizing with science, our already marked
gifts for intuitive design and improvisation
and developing modes of construction de­
sign for permanence and low mainte­
nance. Many were the conflicts between
these newer ideas and the established way,
and bitter were the struggles in which
Latrobe found himself embroiled. There
was "a general suspicion of theory as
theory, a fundamental doubt of the value
of professional advice. The Americans had
accomplished so much through their im­
provising that they were skeptical of any
other approach," Hamlin comments. In
winning out against these attitudes, Lat­
robe left the building art in the US in his
debt—perhaps more than to any other sin­
gle individual.

But this is, after all, a biography, not
an argument. And it is in handling the
more intimate aspects of his subject that
Hamlin has succeeded to the point of mak­
ing this book, of all his books, his master­
piece. His portrait of the immigrant, eager
to succeed in the American way, a backer
of lost causes, a sucker and easy mark, an
art lover, an egghead and associate of phi­
losophers and scientists, hot-headed and im­
petuous, a poet and journalist, portrait
in sketches, a man of many lovable char­
acteristics, deep personal tragedies, honor­
able and honest aspirations, founder of
a line of distinguished descendants, belongs
in the gallery with Henry Adams' biog­
raphy of Gallatin. Were it not for this vivid
portrayal, indeed, we would scarcely be
able to appreciate the significance of this
struggle in an America in which architec­
ture was still a luxury, and any building
venture a matter of guesswork and chance,
in a day when draftsmen were lacking,
contractors unable to read plans, craftsmen
unobtainable to execute anything but the
simplest conventional work. Those who take
pride in what building is today will find
here a compelling reminder of the road we
have traveled, and will lay down this book
with a new respect for a great designer
now restored to his rightful place in the
pantheon of American architecture.

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Niles, Michigan

Rush information on Tyler [ ] Color Compatibility System [ ] Supermarket Planning Assistance [ ] Com­plete line of Food Refrigeration equipment for [ ] food stores [ ] restaurants, hotels, etc.

NAME ___________________________
ADDRESS ________________________

182
Smooth, easy-cleaning, decorative — uses for melamine laminate panels are multiplying fast!

Among the most decorative and durable of all plastic materials are the laminates made by fusing resin-impregnated paper into solid panels under high heat and pressure.

For many years these melamine laminates* have been a preferred surfacing for counters and work areas, as well as for fine furniture. Now their functional and ornamental qualities are being utilized for wainscoting, wall paneling, toilet partitions, doors, shower stalls, elevator cabs, push and kick plates, store and bank fixtures.

Easy-to-care-for melamine laminates require a minimum of maintenance — never need painting or finishing. The smooth surface washes clean with a damp cloth, and resists scratching, denting, chipping, cracking, burns and stains. It withstands heat up to 275°F. It is unharmed by alcohol, most acids and alkalis or boiling water.

Building suppliers stock melamine laminates in a wide range of deep tones, pastels, mosaics, marbled and all-over designs. The panels are available in two thicknesses (1/10" and 1/16"), in widths from 30" to 48", and in lengths up to 16'. These sheets cut neatly with a saw, and cement permanently to smooth plaster walls (cured), gypsum lath, sheathing grade plywood and building blocks. Properly installed, melamine laminates do not swell or warp.

*Monsanto supplies melamine resins for decorative laminates sold under these trade names: Consoweld, Corzet, Decarlite, Farlite, Fiberein, Lamin-Art, Micarta, Nexamar, Panelite, Pemlite, Plastilight, Railite, Realite, Richelain, Textolite.

Present and future applications of plastics in construction are under constant study by Monsanto’s structural Plastics Engineering Group. You are invited to check them for expert technical counsel. Monsanto Chemical Company, Room 222, Springfield 2, Mass.
Giant Snow Melting System for Staten Island Ferry Building features “snowless” stairway

Architectural Designers & Engineers: Roberts & Schaefer, New York, N. Y.
Consulting Engineer: Mongitore & Moesel, New York, N. Y.
Mechanical Contractor: Raisler Corporation, New York, N. Y.
Pipe Fabricator: Atlantic Pipebending & Fabricating Corp., Wood-ridge, N. J.

Reconstruction of the Manhattan Terminal of the Staten Island Ferry, operated by New York City’s Dept. of Marine and Aviation, includes an extensive snow melting system. The long curving ramp, which starts at street level and expands into a semi-circular walkway on the second level, is completely fitted with snow-melting coils, as are the walkways.

A unique feature of the installation is that an open stairway from the street to the top of the ramp has also been equipped with snow-melting coils—one length of 1” pipe in the tread of each step.

Approximately 14 tons of 1” National Steel Pipe were used in the grids, and about 5 tons of sizes up to 3” were employed as headers, connecting pipes, etc.

Architects, engineers, and contractors have been specifying USS National Steel Pipe for over 60 years as the “standard” choice for conventional plumbing and heating systems.

The inherent characteristics of National Pipe are well known—smooth, uniform bending; sound, strong welding properties, and extra-long service life—characteristics that make National Pipe ideal for such applications as snow melting and radiant heating, and give it the reputation for dependability that it enjoys. Such a well-deserved reputation inspires confidence—a nationwide confidence that has made USS National Pipe the largest selling pipe in the world. Write for free descriptive literature.

NATIONAL TUBE DIVISION, UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

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UNITED STATES STEEL
"I always thought glass was glass"

"So did I until I used American Lustracryystal*"

Here's crystal sheet glass with benefits you can readily see. No scientific tests are necessary to point out Lustracryystal's greater whiteness, undistorted clarity and luster. You can tell it's best at a glance.

Lustracryystal also offers a big savings you can see. It is made heavy, large and strong enough to be used in place of plate glass for many glazing applications. Builders using Lustracryystal have reported saving 35% on glass costs.

Look in your Classified Phone Directory for the name of the American distributor in your territory.

Always specify and use American for:

- True Economy
- Dependable Strength
- Crystal Transparency
- Lustrous Beauty

MODERN GLASS
Best at a Glance
...Use American

AMERICAN WINDOW GLASS CO., PITTSBURGH, PA.
PLANTS: ARNOLD, PA. • ELLWOOD CITY, PA. • OKMULGEE, OKLA.
(1) **KEYED PARTITIONS** are elegant and movable wood walls

Client Ford Motor Co.'s request for substantial looking offices and Architect Skidmore, Owings & Merrill's penchant for factory fabricated components were both resolved in these comely partitions by US Plywood. Meticulously redetailed by SOM to fit the building's 4'-8" module and the firm's own brand of precise styling, the mineral-core walls are now a part of the **Weldivood** family and they have made an important impression on the manufacturer as they have on the customer and visitors who have seen the installation: US Plywood found that on an order of reasonable size, minor design modifications could be made to suit the job without increasing the selling price of the standard line—about $30 a lin. ft. In addition to the dimensional alterations, the changes called for by SOM which give the **Weldivood** partitions (AF, Jan. '56) their new sleekness included substitution of a black Micarta strip for the molded wood baseboard, an aluminum header instead of wood, and extruded aluminum sash to hold the glass. Because all wiring on the Ford job is in the floor, the width of the metal channels between panels (which ordinarily accommodate BX) was cut to a slim 1 3/8" strip. Basic **Weldwood** partition principles of construction and assembly were used, including the incombustible mineral core, 1/16" hardwood under ply, and slip-in metal connectors. Only change in internal structure: two 2'-4" core panels were doweled together to make up the 4'-8" x 8' and 9' heights and under ply and continuous Korina face veneers were applied over the joined panel. Weighing about 4 lb. per sq. ft., the panels can be removed and shifted when necessary. (The day after the Ford offices opened, two offices were changed on the second floor.)

*Manufacturer: US Plywood Corp.*

(2) **GLAZED SANDWICH** puts enameled skin over plywood core

A big, moderately priced porcelain panel, **Porc-Lin-Ply** is suitable for countless construction uses running from countertops and shower stalls to bulkheads and curtain walls. Front face of the weatherproof sandwich is porcelain fused at 1,600°F to 30-ga. steel. Its core is exterior grade ¼" three-ply hardwood which is said to assure a minimum grain raise telegraphing through the colored facing. The metal backup sheet which prevents warping is zinc coated for chemical and rust resistance. Weighing 1.75 lb. per sq. ft., stock **Porc-Lin-Ply** sheets are 3' x 8' and 5/16" thick. They can be cut continued on p. 190
Washtenaw County Building, Ann Arbor, Michigan
Architect: R. S. Gerganoff
Contractor: A. W. Kutsche & Co.
Equipped with Adlake Double Hung Windows

Another Adlake aluminum window installation

- Minimum air infiltration
- Finger-tip control
- No painting or maintenance
- No warp, rot, rattle, stick or swell
- Guaranteed non-metallic weatherstripping (patented serrated guides on double hung windows)

The Adams & Westlake Company
ELKHART, INDIANA • Chicago • New York • Established 1857
IN co-operation with General Motors' engineers, Eero Saarinen & Associates, architects, and Smith, Hinchman & Grylls, Inc., architect-engineers, Thermotank, Inc., helped design a new high-velocity, double-duct air conditioning system for seven of the buildings in the magnificent General Motors Technical Center. Using techniques developed through 30 years' experience in moving air at high speeds through tight spaces, Thermotank engineers provided a streamlined duct design with noiseless Thermo-Reg mixing boxes and high-velocity ejection ceiling diffusers, which incorporate sprinkler heads and are integrated with the ceiling acoustical treatment. Thermotank invites inquiries about further details of this advanced system of high-velocity, year-round air conditioning.
When these schools were in the planning stage, three different materials were considered for the roof deck. But architect Walter E. Schardt specified Permalite lightweight insulating concrete, after careful calculation showed that Permalite would give the best "U" factor.

On both buildings, Permalite lightweight insulating concrete was poured 3" thick over Steeltex to give a maintenance-free, 20-year bonded roof. The mix was 1:6, with a calculated dry density of 27 lbs. cu. ft. Permalite "K" factor was .59; "U" factor of completed roof .165. Compressive strength tests (28 day) showed a minimum of 141 psi.

Write for information on the many ways Permalite can aid you in your building design problems.
How to minimize the risk of **FIRE SPREAD**

with **Swartwout FIRE VALVE®**

If you must have a fire — and we sincerely hope you never do — damage will be least if fire fighters can limit **sidewise travel**. Authorities claim a fire can be held to a smaller area if heat and flames are released upward, through the roof. Fire Valve was designed as an "escape" unit. Excessive heat melts fusible links at the Fire Valve damper, causing two large dampers to drop open **instantly**. The open valve provides 46 square feet of free area for unobstructed vertical exhaust flow, protected from effects of wind currents by the side baffles. Smoke rises, instead of hiding the flame source. Fire fighting can be augmented from the roof. The Swartwout Fire Valve is a neat low unit which may be opened manually for extra ventilation in good weather. Learn more about this valuable aid for limiting fire spread — write for Bulletin FV-O.

The Swartwout Co., 18511 Euclid Ave., Cleveland 12, Ohio

**Swartwout**

**ROOF VENTILATORS AND VENTILATING LOUVERS**

AUTRONIC PROCESS CONTROL EQUIPMENT

(3) **INDUSTRIAL FLOOR** laid down in sheets over concrete or steel

Resilient, rugged Nu Flor is ready for traffic as soon as it is installed. The ¼"-thick asphalt and fiber reinforced felt composition comes in 2' x 3' black sheets which are laid side by side in a cement bed directly over new or worn masonry, wood or metal floors. The inexpensive surfacing can withstand heavy industrial loads including hand or power trucks. Nu Flor is springy underfoot, chip and crack resistant, and helps muffle wheel and heel noises. It can be cut and shaped with a linoleum knife to fit around machinery, pipes and wall projections. The sheets come eight in a pack—enough to cover 48 sq. ft.—for $18.25 FOB, or about 36¢ per sq. ft. Edge strips are available, but the sections can be used without them; the material feather edges itself under constant traffic.

Manufacturer: The Monroe Co., Inc.

(4) **PORTABLE GUN** can spray walls with acoustic plaster or stucco

Any material limp enough to flow through a hopper can be handled by the bantam size HG Plaster Master. Especially suited for spraying acoustical plaster, sand finish and exterior stucco, the $399 machine uses a 2 hp gasoline-powered compressor weighing 60 lb., a ¼" air hose, a 1/9 cu. ft. 

continued on p. 196
THE DOOR THAT MATCHES THE FLOOR!

BILCO FLUSH FLOOR DOORS BLEND WITH SURROUNDING FLOOR MATERIAL

For use in rooms, corridors or any place where surrounding floor area should be matched. Extruded aluminum moulding strips around leaf and frame hold floor covering of 1/8" or 3/16" thickness. Built-in lift springs give easy one-hand operation. Seven standard sizes in single and double leaf construction. Can be made in any practical size for special needs.

SEE OUR CATALOG IN SWEETS OR WRITE FOR CATALOG A.I.A. FILE 12P

THE BILCO COMPANY DEPT. 166A NEW HAVEN, CONN.

only the best is stamped

Bilco oldest and largest manufacturers of doors for special services
"This building will never grow old ...electrically!"

Architects Altenhof and Bown neatly summarized the big reason a National Electric Header Duct raceway system was installed in Pittsburgh's new ultra-modern State Office building... "to provide the most complete electrical flexibility."

The Header Duct raceway system permits easy access to the building's Fenestra cellular steel floor. The result: a combined electrical raceway system that provides for electrical, telephone and intercommunication outlets wherever and whenever they are needed.

Bright, new aluminum service fittings, less than three inches high, will bring power or telephone service directly to desk locations. Future office layout changes will be made easily at low cost due to the completeness of electrical availability. This building will never grow old... electrically.

Yes, clients get more for their money when plans for cellular steel floor construction include electrification by National Electric Header Duct. Why not write for complete information on Header Duct so you will be familiar with all its advantages.

Listed by Underwriters' Laboratories, Inc.

National Electric Products

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3 Plants • 10 Warehouses • 36 Sales Offices
She'll be safe with Sargent

...this exit device cannot jam!

After all is said and done...

the one big reason you specify exit devices is safety.

And when human lives are at stake, Sargent Exit Devices release doors at the slightest touch of a child's hand. Instantly and easily!

You know that just a \( \frac{1}{4} \)" movement of the bar makes the latch free floating. You know that this same easy, roll-fold action works in reverse to close doors smoothly, too.

You've also probably heard that stainless steel is used for crossbar bearings, latch bolt pins and springs to give your clients lasting protection. Another reason why you'll have peace of mind.

Our up-to-the-minute catalogue will show you a wide variety of designs and complete accessories. Send for a copy today.

Sargent & Company,
New Haven 9, Connecticut,
Dept. 8G.

Sargent Builders' Hardware
In today's concept of the ideal educational environment, cheerful brightness, for sound reasons, is swiftly supplanting the somber austerity of yesteryear's scholarly surroundings. Happily, architect and schoolman find, ready-to-hand, in abundance, Nature's most nearly perfect flooring material to help advance this concept... Northern Hard Maple, MFMA-certified. Its rich, bright lustre leaps into life under routine maintenance. It fights scuffs, scars and dents for generations. It adds "muscle" to the structure. It's versatile—meets every school area use admirably, sports and social, classroom and administrative. It is far from costly—cheap, in fact, when endurance and low upkeep are considered. Trust MFMA Northern Hard Maple, America's forever-modern flooring. For technical data, see SWEET'S (Arch. 13j-MA). Write for latest (1956) listing of MFMA-approved floor finishing products and methods.

MAPLE FLOORING MANUFACTURERS ASSOCIATION
Suite 564, Pure Oil Building, 35 East Wacker Drive, Chicago 1, Illinois

FLOOR WITH NORTHERN HARD MAPLE, BEECH AND BIRCH
To provide draftless air diffusion in the delivery room, All-Air High Velocity units are placed under the window. High velocity sound attenuation chambers with square diffusers are mounted in the ceiling. Turn page for detail.

In the nursery for premature infants, sound attenuation chambers with square air diffusers are mounted in the ceiling. Turn page for detail.

All-Air High Velocity under-the-window units are used in all private and semi-private patients' rooms. Turn page for detail.
Here are shown applications of the Anemostat All-Air High Velocity air distribution system in the new wing of the Abington Memorial Hospital.

The trend towards Anemostat All-Air High Velocity Systems is growing rapidly. The Anemostat All-Air High Velocity air distribution system can be used with smaller than conventional ducts. It can be installed faster and at less cost. It requires no coils, thus eliminates leakage, clogging and odors. These units save space when installed in hospitals, office buildings, department stores, banks, schools, factories and other structures.

ARCHITECTS—Attention Please:
Anemostat round, square and straightline diffusers with high velocity units complement a wide variety of architectural designs.

Write on your business letterhead for 1956 New Products Bulletin and Selection Manual 50

ANEMOSTAT®
DRAFTLESS Aspirating AIR DIFFUSERS
ANEMOSTAT CORPORATION OF AMERICA
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The Pioneer of All-Air High Velocity Systems
In fact, any angle. This moulding, like all Pittco Metal, has a pleasing way of blending with surroundings, of expressing light and shadow, serving as a sill, an awning facia or as a decorative band. For complete details, see your Pittco® Store Front Metal Representative.

PITTSBURGH PLATE GLASS COMPANY
IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED
ft. hopper made of seamless aluminum and a hand gun. Two snap-on covers come with the gun for patching work and ceiling applications. No cover is used for wall applications. The hand gun which can be plugged into larger model Plaster Masters can be purchased separately. It costs $135 with hose and covers.

Manufacturer: Santa Anita Manufacturing Corp.

---

All over the country, school construction is flourishing, due to the acute shortage of educational facilities. Usually wherever schools are built, the byword is Halsey Taylor. Whether it's fountains or coolers, architects and their clients have learned that Halsey Taylor is a safe, trouble-free specification. The Halsey W. Taylor Co., Warren, Ohio.

---

(5) ROOF DECKING has tough baked epoxy coat over bonderized base

To resist the scrapes and scuffs that mar roof deck finishes during shipping and handling, Inland Steel is applying a hard epoxy resin to its steel deck. Resilient as well as tough, the electrically baked finish is the final step of a ten-part process which keeps surface breaks to a minimum. Where any minor damage does take place, the deck's bonderized undercoat prevents corrosion from spreading or undermining the enamel. The new prime coat is available on Milcor type A deck (picted top right) as well as Milcor closed rib type B and wide ribbed type C deck. Type C can carry normal roof loads over spans up to 20'. In-place costs for the bonderized and epoxy coated decking run about 25¢ per sq. ft. for the 22-ga. up to 30¢ for 18-ga.

Manufacturer: Inland Steel Products Co.

(6) WASHER-DRIER takes on 40 lb. of laundry in one automatic cycle

Developed for use in hotels, motels, clubs and institutions, the Triomat automatically washes, rinses and bone-dries 25 lb. of dry weight laundry in a single 1 hour cycle—quadruple the capacity of most home size washers. It will carry a 40-lb. load through to damp-dry for ironing. The 6'3" tumble action machine needs an attendant only to load it up, turn it on and

continued on p. 202
The Johns-Manville Permacoustic ceiling in the Penn Fruit Co. supermarket in Cynwood, Pa., is handsome, acoustically functional and inexpensive.

Sales soar when Johns-Manville Acoustical Materials Quiet busy stores

Business and industry depend on modern materials to achieve maximum efficiency. That's why practically all new building and modernization specifications include acoustical ceilings to reduce disturbing noise.

Johns-Manville offers a complete choice of highly efficient sound absorbing materials for every acoustical need.

- J-M Permacoustic® Units—combine maximum acoustical efficiency with architectural beauty. Has attractive fissured surface. Made of mineral wool, Permacoustic meets all building code fire-safety requirements.

- J-M Fibretone® Units—provide high acoustical efficiency at modest cost. Hundreds of small holes, drilled in a Uniform or Variety pattern, act as "noise traps." Fibretone has a white paint finish. Available with flame-resistant finish.

- J-M Sanacoustic® Units—perforated metal panels backed with a fireproof, highly sound-absorbent element. Noncombustible and sanitary. The white baked-enamel finish is easy to keep clean, and may be repainted.

- J-M Transite® Acoustical Panels—perforated asbestos-cement facings backed with a mineral wool sound absorbing element. Suitable in areas with high humidity (dishwashing rooms, kitchens, swimming pools, etc.).

Send for your free copy of the new brochure entitled "Sound Control." Write Johns-Manville, Box 158, Department AF, New York 16, New York. In Canada, write 565 Lakeshore Road East, Port Credit, Ontario.

See "MEET THE PRESS" on NBC-TV, sponsored alternate Sundays by Johns-Manville

Johns-Manville

45 years of leadership in the manufacture of acoustical materials
Cut costs
— with multi-use Milcor Celluflor instead of wet-mass construction

Because it serves both as a structural element and as a means for electrification, Milcor Celluflor was specified for use in the Transportation Center now under construction on the “Chinese Wall” site of the old Broad Street Station in Philadelphia’s new Penn Center Development.

Although the building was originally designed for bar-joist and reinforced-concrete construction, plans were changed when cost comparisons showed that a “blend” of Milcor Celluflor and Floor Sections would do two important jobs in one installation — and for less money. The Celluflor “blend” design was specified for 15 of the building’s 18 floors.

Other costs dropped, too. The Celluflor and Floor Sections were erected on beams set 1 1/2 inches below the girder elevations, reducing the height of the building 2 1/2 feet — a substantial saving in building materials.

These factors also influenced the change:

a. Speed of erection. Milcor Celluflor goes up fast, provides working and storage areas for all trades, accelerates the entire job.

b. More electrification. The grouping of four cells on 6-ft. centers is a Celluflor exclusive not available in any standard underfloor duct system used with reinforced concrete. This means greater electrical capacity, wider latitude for changes in office layouts.

c. Low maintenance costs. Simplicity and economy of changes in electrical outlets is attractive to owners and tenants alike.

This Celluflor “blend” idea can be applied to a wide range of conditions. Call on us. Write for Catalog 270.

Milcor® Celluflor

Cross-section of Celluflor installation in Transportation Center, Penn Center, Philadelphia, Pennsylvania

Milcor Celluflor provides variable capacities to handle any type of electrical need. Cells can be spaced on 6-inch centers to permit the installation of service outlets at virtually any point on the floor.
Sprayed "Limpet" Asbestos on the ceiling of the main dining room of the Engineers' Club in Dayton, Ohio, provides a quiet atmosphere for dining. This job, applied over ten years ago, also affords thermal insulation, fire protection, and prevents condensation. Architects: Schenck & Williams, Dayton, Ohio. Applicator: Myron Cornish Company, Incorporated, Dayton, Ohio.

Keeps the ceiling design, gets rid of noise...

Sprayed "Limpet" Asbestos

SOUND CONDITIONING A CEILING that has many curves and recesses presents a problem for most acoustical materials. However, Sprayed "Limpet" Asbestos, while doing an excellent job in controlling sound, retains every design feature of a ceiling. The evenly textured, seamless blanket of asbestos fibers adheres to any clean ceiling surface, regardless of its shape or composition. It does a superior job in deadening sound waves and in preventing the passage of heat. Sprayed on, "Limpet" Asbestos needs no nailing, clipping, cutting. Special furring strips or other mechanical fastening devices are not required. There's no need to mask or disturb plaster mouldings. The natural color of the finished job blends with most colorschemes—yet "Limpet" can be spray-painted if desired, with no impairment of its noise-trapping efficiency. Skilled Local applicators, trained by K&M, can bring you all the advantages of this excellent acoustical material. Mail the coupon below for complete information.

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☐ Send literature about Sprayed "Limpet" Asbestos.
☐ Have applicator see me.

Name
Company
Address
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Pick Locks
for their good looks

"I'm an architect's decorator—

I'm style conscious. I get paid for my good taste in picking the right fabric, right tile design, right furniture. Locks, though, have been pretty dull for a long time. So when Yale* introduced the beautiful New 5300 Series Locksets... with their marvelous new trim designs, I quickly made many selections for our clients. I just naturally felt a new glow of inspiration. And now, with the new 5400 Series just announced, why, we decorators love everything—style plus rugged construction for really long service. What's more, I know that in Yale Locksets there is the most advanced engineering, most precise construction and real ruggedness. All of which assure me that Yale beauty will last for years."

YALE HARDWARE STYLING DEPT.
If you have any special design problem, already existing or still on the drawing board, we will be happy to help you work it out.
Write Yale Hardware Styling Dept., White Plains, N. Y.

YALE & TOWNE
The Yale & Towne Mfg. Co.,
Lock and Hardware Div., White Plains, N. Y.
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New Beverly Hilton air conditioned by Worthington

Each room in the magnificent new Beverly Hilton has its own individually controlled air conditioner, consisting of a fan and coil unit. These fan and coil units supply year-round heating and cooling.

The entire 1000-ton system was selected after rigid tests under supervision of architect Welton Becket's staff. A pair of Worthington 400-ton centrifugal compressors and two 100-ton Worthington Packaged Water Chillers provide refrigeration for the complete air conditioning system. Worthington Corporation, Air Conditioning and Refrigeration Division, Section HP, Harrison, New Jersey.
New Prudential Buildings Feature **QUIET**
with Acousti-Celotex Tile on Acousti-Line* Suspension System

Acousti-Celotex Sound Conditioning installations in the Prudential Buildings are models of engineered effectiveness.

- More than 1,000,000 square feet of incombustible Acousti-Celotex Perforated Mineral Tile,
- Celotone Tile, and Acousteel metal pan were applied.

The Acousti-Line Suspension System, on which Acousti-Celotex Tile was installed, offers two additional functional benefits:

- Complete flexibility of ceiling units...tile, lights, air diffusers, etc...permits interchanging for unlimited variety of office layouts and arrangements.
- And easy access is provided to above-ceiling areas for servicing of lights, wires, ducts, plumbing, other utilities.

This combination of beauty, functionalism, and acoustical efficiency represents modern sound conditioning and ceiling design at their best...well in keeping with the most advanced architectural achievements.

**FOR FULL DETAILS** on the complete line of Acousti-Celotex products, please write to the Celotex Corporation, Dept. A-76, 120 S. LaSalle Street, Chicago 3, Illinois, or consult Sweet's Catalog Service.
'WAY UP... because it's square!

CHASE® VENTILATED SQUARE COPPER TUBE BUS CONDUCTOR

Power-carrying backbones of tall buildings must do their job in limited space. Just the place for compact, higher-capacity Chase ventilated square bus! You see, this bus is beam-rigid. Can withstand mechanical stresses imposed by great heights better than any other bus shape. Strong, electrically efficient joints are no problem either.

The four flat sides of Chase bus have plenty of surface area for making rugged, highly conductive connections. And the ventilating holes on Chase bus enable it to carry 20% more current than unventilated square bus with identical dimensions!

Get all the facts—write for free Chase Bus Conductor Brochure today!
There's no divided responsibility when your specification says: "Curtain walls by General Bronze".

General Bronze not only offers you the benefit of their many years of practical experience in designing and producing curtain wall systems but also is ready to take full responsibility for their erection.

As a pioneer in the field of curtain wall we have learned from 10 years experience with more than 24 major jobs—including the United Nations Buildings, and Lever House, New York City, the Alcoa Buildings at Pittsburgh, Atlanta and Cincinnati, the Connecticut General Life Insurance Building, Hartford, Conn., the Equitable Life Assurance Building, Milwaukee, Wisc., the R.C.A. Cherry Hill Offices, Camden, N. J., the Commercial Credit Building, Baltimore, Md., and others—how to solve the many intricate and detailed problems that are a part of this highly specialized business. For instance, we have learned how to take care of expansion and contraction while assuring weather tightness at all times—when and where flashings are necessary—how to design for trouble-free horizontal and vertical joints,—the control of moisture migration, etc.

If you are thinking of curtain walls in terms of aluminum, bronze or stainless steel skins, grids with aluminum windows and insulating panels of either colored alumilite or porcelain enamel, or stainless steel grids with glass panels, we offer you the benefits of our vast experience in designing, engineering, fabricating and erection of curtain walls. Call in the General Bronze representative today. He is ready and anxious to serve you. Our catalogs are filed in Sweet's, Section 17a/Ge.

Another CURTAIN WALL by GENERAL BRONZE

The Bank of the Southwest, Houston, Texas
Architect: Kenneth Franzheim
Contractor: W. S. Bellows Construction Co.
Built to take tomorrow's electrical

250,000 feet of Republic "Inch-Marked" E.M.T. provide electrical flexibility

APARTMENT BUILDINGS KEEP THAT MODERN LOOK with smartly styled Truscon Series 138 Double-Hung Steel Windows. The Campagna Construction Corporation of New York City, builders of the distinctive 530 Park Avenue Apartment (left), has used Truscon Windows for more than 15 years. Campagna likes the "fair prices, durability, smooth operation, ease of maintenance, weather protection, paintability and Truscon service." See your Sweets File or mail coupon for details.

LONG-LASTING BEAUTY AND FIRE PROTECTION in ceiling construction are a certainty with Truscon's Herringbone Lath and plaster. This durable double mesh lath and plaster provide a tested insulating membrane that effectively shields structural members from fire. And the surface is both durable and attractive. The complete Truscon line includes more than 40 different items of Metal Lath and Accessories. They're available everywhere.
The current drive for "Housepower"* carries the promise of more and more electrical conveniences for home and apartment. In turn, this dictates the need for electrical systems flexible enough to provide for increased loads.

Designers and builders of Chicago's magnificent Henry Horner Housing Project took this need into consideration when they specified conduits of ample size and installed Republic "Inch-Marked"™ E.M.T. Nearly 50 miles of this modern, electrical raceway was used in the eight beautiful apartment buildings (above)—providing unsurpassed protection and flexibility. Though present wiring will handle all foreseen loads, the addition of extra circuits—should they be needed—will be quite easy.

Wires are quickly replaced by pulling old wire out of tube and inserting new. Additional wires are easy to add. And to speed the job, "Inch-Marked" E.M.T. is "knurled" on the inside—an exclusive Republic feature that simplifies wire-pulling by 30 per cent.

Republic "Inch-Marked" E.M.T. provides positive protection from fire, moisture and insulation damage. Since connections are made with couplings and fittings, threading is unnecessary. Thus the tightly adhering, galvanized coating remains unbroken—assuring permanent, end-to-end circuit protection.

It will pay you to get the complete story on the many advantages of Republic "Inch-Marked" E.M.T. Exclusive installation features—"Inch-Marked" and "Guide-Lined"—will save construction dollars. And it's approved by the National Electrical Code for concealed, exposed, and concrete installations and carries the Underwriters' Laboratories Seal of Inspection. Send coupon for handy reference booklet giving complete facts.

*Adequate wiring
WIRED GLASS

Wired glass is the only material that lets in light but is strong enough to resist the progress of FIRE. Insurance companies take this factor into consideration when assessing a building. Pilkington's have fire retardent glass in four attractive styles... Polished Georgian Wired... Georgian Wired Cast... Polished Wired... Polished Wired Cast. These glasses also act as a safety barrier and give extra protection against burglary.

Please write for specifications. We also have explanatory pamphlets telling the story of fire retardent glass. These were specially designed for builders and architects to use in client discussions. Copies sent on request.

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to a very difficult problem"

Problem: Create attractive office area in unattractive storage space. Hide unsightly ceiling, plumbing, air conditioning ducts, sprinkler heads. Provide sound-deadening, illuminated ceiling.

Solution: A ceiling using sheets of corrugated BAKELITE Brand Rigid Vinyl Plastic. Fluorescent light fixtures suspended from the floor above, provided mounting for the translucent vinyl sheets. Small panels of sound-absorbing material were mounted in a vertical plane, combining with the corrugations to disperse the sound waves.

The fabricated sheets are listed by Underwriter Laboratories as suitable for installation below and as a decorative cover for sprinkler heads since the sheets will soften and fall away before the sprinklers operate. This gives a saving in plumbing and an improvement in appearance. The architect commented: "This ceiling provided an outstanding solution to a very difficult problem."

A ceiling like this will keep its beauty for years. BAKELITE Brand Rigid Vinyl Sheets won't warp, crack or discolor with aging. They resist moisture, oil, combustion, and are dimensionally stable. They remove readily for easy cleaning. For modern illuminated ceilings that offer all these advantages—specify BAKELITE Brand Rigid Vinyl Sheets. You can get complete data by writing today to Department RG-2.

BAKELITE COMPANY, A Division of Union Carbide and Carbon Corporation UCC 30 East 42nd Street, New York 17, N. Y.

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empty it. It has a 140,000 Btu gas burner for rapid drying. Measuring 45" across and 36" deep, the compact, self-contained washer-drier can reduce laundry sizes in commercial buildings considerably. Field tested for five years, the Triomat was engineered by John Chamberlain, inventor of the Bendix automatic washer. Its retail price is $2,375.

Manufacturer: Duplex Corp.

(7) **CORK COVERING for cold pipes jacketed in neat vapor barrier**

Precisely sliced chunks of corkboard are adhered to a backing of asbestos and aluminum foil in Armstrong's new LT Cork Insulation for low temperature pipe lines. Eliminating any pointing, banding, or separate vapor barrier, the new covering is wrapped around the pipe line and its lapped edges sealed with adhesive. It can be sawed to shape around fittings and its white asbestos jacket makes painting unnecessary on indoor applications. If lines are switched, the LT material can be taken off and reused elsewhere. Produced for all sizes of iron pipe and copper tubing from 1/8" up, the insulation comes in 3' lengths in three standard thicknesses: 8", 1 1/2" and 2 1/4" for temperature ranges from 30° F. down below —30° F.

Manufacturer: Armstrong Cork Co.

(8) **RUBBER PIPE cushions noise and vibration in metal water lines**

Knocking and other annoyingly audible manifestations of water systems at work often are transmitted undiminished through an entire building via the rigid metal water pipe. To offset these noises at the source, T. R. Finn & Co. suggests its

continued on p. 208
New concepts in custom-built schools, achieved with Luria standardized steel frames

CREATIVE SCHOOL ARCHITECTURE
AND LURIA BUILDINGS

THE WORK OF MAINE ARCHITECT
ALONZO J. HARRIMAN
The creative designs of Architect Alonzo J. Harriman, A.I.A., of Auburn, Maine, distinguish many types of structures. His schools, which are nationally known for their functionalism, handsome design and economical construction, are particularly good examples of his work.

Good school designing requires the individuality of custom-built structures. Yet, today's school shortage dictates economical construction and speedy erection. School architects from coast-to-coast are achieving both goals... with the use of Luria steel structures. More and more of today's handsome, custom-designed school buildings utilize the Luria system of standardization. To get the complete Luria story, write or telephone your nearest Luria office for a catalog or personal call.

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Send for Your copy, "Care and Use of 430 MicroRold Stainless Steel"

Washington Steel Corporation
7-Z WOODLAND AVENUE, WASHINGTON, PA.
rubber flange

steel flange

wire belts

reinforced rubber plies

For more data use coupon, p. 218

rubber hose treatment. Far from a bludgeoning weapon, the Soundzorber is a pipe fitting of wire reinforced rubber plies which is installed between a water pump, chiller or boiler and the standard pipe lines. (To avoid objectionable noises from the battery of chilled water pumps in New York City's Chrysler Building, Soundzorbers are used in the suction and discharge lines.) Having an acoustical impedance 550 times lower than steel pipe, the flexible rubber pipe sections can dampen up to 90% of all expansion and contraction noises and vibrations. Small units are equipped with male iron pipe thread fittings; large sizes have integral steel flanges encased in molded rubber to prevent any galvanic action. Standard operating temperature is up to 180° F. A 3" Soundzorber of 3" ID pipe with male fittings and a pressure rating of 150 lb. per sq. in. costs about $56; other units range up to $800.


(9) WATER CLOSET with optional built-in spray doubles as bidet

If any plumbing fixture breaks the US block against bidets, it very likely will be American-Standard's Neo Health. Current medical opinion and increased travel to other countries where the cleansing fixtures are in common use have both helped broaden the market here in custom-built homes and hospitals. (Some hotels such as the Fontainbleau in Miami include bidets in bathrooms of the luxury suites). But space conscious designers and building owners work so hard whittling down the size of most commercial and institutional bathrooms that there is no space for extra fixtures. The Neo Health, however, is not a supplementary piece of plumbing. Made of vitreous china with a contoured saddle seat, it can serve as the standard toilet. By depressing a handle at the rear of the bowl, the user releases a water spray from a compartmented tank. Prices, somewhat higher than regular water closets, are far below two separate fixtures. In white the Neo Health is $129.10; in green, ivory, gray, red or coral: $167.15.


continued on p. 212
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Contributions deductible for income tax purposes
Architect W. Frank Bower, Jr., of La Pierre, Litchfield & Partners, New York, has employed 130 tons of Junior Channels in the new two million dollar Wheatley School (East Williston, Long Island Junior-Senior High School). The 12”, 10.6# Junior Channels are boxed to make rigid bents forming the basic frame of the classroom buildings.

The bents were fabricated in two sections by De Voe Iron Works, Inc. of Long Island City, then trucked to the job. Erection went fast. Mr. Stephen J. De Voe, Jr. reported that it required only five hours to erect the 56 bents in one 232' x 71'4" building.

Mr. Bower summed up the advantages of using J&L Junior Channels in the school's unique design by saying:

"The exposed structural steel bents or rigid frames are the basic frame of the building. This was done to take advantage of insulating cement and wood fiber structural plank which has excellent acoustical properties. In addition we avoid the use of hung ceilings. As a result we estimate savings of $40,000 to $50,000 on this $2,000,000 building.

"This type of construction eliminates the confined air space between roof and hung ceiling which, unless mechanically ventilated, stores hot air to reflect heat on the classrooms in the warmer months. The rigid frames give a cleaner, fresher look than alternate materials. We prefer them as being more interesting than the usual flat hung ceiling. They also give us a chance to introduce more color into the classrooms."

If you're designing light occupancy buildings, ask us for complete information about J&L Junior Channels. Take advantage of the strength of these light weight hot rolled sections, and their adaptability to a wide range of architectural design.
(10) **NOISE ANALYZER** draws maps of sound contours to spot trouble

Because the ear is more sensitive to some sound frequencies than others, Soundscope was developed to help technicians find and isolate offending frequencies. The instrument combines in a single portable unit four functions necessary to measure and analyze noise accurately. It measures overall sound levels, operates as an analyzer, measures sound in each of eight octave bands to determine noise peaks, and checks sounds in narrower frequency bands.

Besides being useful in noise abatement programs, the instrument can help engineers to draw noise contour maps of industrial areas. The sound level readings and analyses of frequencies and intensities at different distances from noise sources can be used to plan a detailed map of an area indicating trouble areas. The engineers can then either eliminate noise at the source by redesigning machinery and equipment or isolate noise sources by insulation or devise some personal protection for exposed individuals.

Weighing 20 lb, the instrument is shielded from mechanical and electrical mishaps. All controls are on one panel and a single meter gives all the readings. Range is from 24 db, about that of a very quiet home (without TV, Hi-Fi, and small cowboys), to 150 db, considerably higher in sound pressure than an air-raid siren. Price: $985.

**Manufacturer:** Mine Safety Appliances, Pittsburgh, Pa.

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(11) **FLUSH PIN HINGE** eliminates face frames on cabinet doors

By using Washington flush pin hinges for door mounting, a large expanse of cabinet front can be cut from a single piece of plywood so that the grain runs in a continuous pattern over apron and doors. Eliminating the face frame usually required on wood cabinet doors, the neat little pin units feature a positive adjustment and are interchangeable for right and left sides. They are made of heavy gauge steel for partition thicknesses of \( \frac{1}{8} \)", \( \frac{1}{4} \)" and \( \frac{1}{4} \)" in chrome, brass, bronze, copper, prime coat and cadmium finishes. Prices run about 45¢ to 65¢ a pair.

**Manufacturer:** Washington Steel Products, Inc.

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**PRODUCT NOTES**

(12) **Cold galvanizing.**

Applied like paint with brush or spray gun, Drygalv galvanizing compound is reported to protect iron and steel surfaces.

continued on p. 218
AT GIMBELS
in the Southgate Shopping Center...
unobtrusive, dependable
GRINNELL SPRINKLERS

Distinctive, modern design, inside and out, plus effective store planning make Gimbels Southgate an attractive addition to Milwaukee's first suburban shopping center. The spacious, uncluttered interior was designed for shopping ease and comfort...as well as to make the most effective use of merchandising areas.

The Grinnell Sprinkler System, specified by the architects at the planning stage, also has been made a functional part of interiors. Notice particularly how the Grinnell Ceiling-Type Sprinklers are almost invisible; extend but a scant inch and a quarter from the ceiling—not marring the interior decor. The end-result is an unobtrusive, smartly planned fire protection system that fits so well into the store design.

Yet, should fire strike, Grinnell Sprinklers stand ready to operate quickly—effectively, day or night, to stop fire at its source.

Call in a Grinnell Fire Protection Engineer when you design your next project. He can advise you on the best system to suit your requirements. There is a Grinnell System for every type of fire hazard. Write for literature.

Grinnell Company, Inc., 292 West Exchange Street, Providence, Rhode Island.

Architects: Grassold-Johnson Associates
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Problem:
How to keep elevator pits, utility vaults and basements dry?

Solution:
Install the Kenco Model 110 Submersible Utility Pump here!

Big Capacity . . . pumps up to 5000 GPH.
Dependable . . . exclusive foolproof Kenco-GE Switchette control. Lifetime lubricated.
Can't Flood . . . submersible design.
Easy to Install . . . easily portable, fits any sump 13" x 9", adjustable for any turn-on height.
Useful . . . designed for automatic sump pump duty or continuous circulation of liquids.

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Your Kenco jobber or distributor will give you complete details. See him soon!

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Babylonian ... a range of medium rose tan
Palomino ... a range of ivory shades
Falcon Gray ... medium range of tan-gray
Oxford Gray ... range of gray
Summitville Red ... famous deep rich red

Because no advertisement can do full justice to these colors, we suggest that you consult your local ceramic tile contractor (yellow pages) for information and samples, or write direct for color brochure #13.

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Hands touch nothing but the clean spray of water, eliminating faucet contacts that may lead to spread of infectious diseases. Bradley bowls are self-flushing to prevent contaminating dirty water remaining in the bowl. Water consumption is reduced,—supply cut off automatically as washers leave. For complete specifications, write for latest Cat. 5601 . . . BRADLEY Washfountain Co., 2235 West Michigan St., Milwaukee 1, Wisconsin.

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Consult an engineering firm

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facts you should know about coal

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Increased production demanded additional steam in American Cyanamid’s plant at Bridgeville, Pa. Management decided to analyze its power system with an eye to improving operating economy and efficiency.

The decision was modernization, with emphasis on more efficient distribution of steam, generated by burning pulverized coal. New steam traps were installed, waste steam was utilized, condensate was recovered, piping was simplified, a thorough system of maintenance and repair was instituted. Thanks to the sound thinking behind this unusual program—unusual in that power system economies took place after steam generation—today American Cyanamid is rewarded with a savings of $100,000 a year!

For further information or additional case histories showing how other plants have saved money burning coal, write to the address below.

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Every year more of the world’s outstanding new buildings are being equipped with CORBIN Finishing Hardware. In schools, hospitals, office buildings — in the largest commercial and institutional buildings of every type, it has proved its quality time and again. The CORBIN Line is complete — provides all the finishing hardware for a building. Consult your dealer about the complete CORBIN Line . . .

... in outstanding buildings everywhere
against rust. It is especially practical for repairing damaged galvanized metals. Nontoxic, it dries in 30 minutes and can withstand temperatures up to 392° F.

(13) **Luminescent enamels.** Porcelain enamels that glow in the dark under exposure to ultraviolet light can now be applied and fired on building panels. Suitable for outdoor sign and dramatic interior effects the luminous enamels made by Chicago Vitreous Corp. come in eight standard colors.

(14) **Color coded cable.** Thermoplastic insulation on individual conductors in General Electric’s recently improved BX eliminates the braid, provides integral color coding and makes stripping quicker and easier.

(15) **Molten gold aluminum.** Kaiser Aluminum & Chemical Corp.’s new process of imparting sunfast gold color to aluminum starts in the pot. Alloys added during the molten stage make it possible for fabricators to anodize the lightweight metal without dyes or other coloring agents and accurately control the shade of gold from pale straw to deep bronze tones. Penetrating the surface slightly deeper than other anodized finishes, the Kaiser gold colors are somewhat more resistant to abrasion.

**PRODUCTS INFORMATION COUPON**

For additional information on any product reviewed in this issue check the corresponding key number below and mail this coupon to Architectural FORUM (Room 7-06) 9 Rockefeller Plaza, New York 20, N.Y.

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- 9. Neo-Health toilet-bidet
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- 14. G-E plastic insulated cable
- 15. Kaiser gold aluminum

Private homes, apartments, office buildings, motels... any kind of building can now be equipped with practical, low cost air conditioning that gives you complete freedom of design. The answer is the new Lewyt Built-In Wall Air Conditioner.

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The cost? Less than window units and about half that of a central system for the same cooling efficiency. For figures and complete details write: Lewyt Air Conditioner Corp., Long Island City 1, N.Y.

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• In the Pacific Northwest grows a species of Hemlock that is superior to Hemlocks grown elsewhere in its yield of high quality, multi-purpose lumber.

To the natural superiority of this West-grown species, extra values are added by Weyerhaeuser processing. Through careful selection and logging... forest products research... modern milling equipment... scientific seasoning... our mills produce a wide variety of fine Hemlock lumber items.

Weyerhaeuser 4-Square West Coast Hemlock dimension is excellent for framing because it is strong and stiff. The stress grades of dimension include 1600 f Select Structural, 1500 f Construction and 1200 f Standard.

Boards of Weyerhaeuser 4-Square West Coast Hemlock are good sheathing items and serve dependably and economically for a wide range of other uses.

Weyerhaeuser 4-Square Hemlock is easily worked. It is relatively light in weight. It saws cleanly, fits precisely... sands, drills, fastens and glues exceptionally well. It has unusual nail-holding power and nails securely with a minimum of splitting.

West Coast Hemlock is available in a broad choice of finish and common lumber items through Weyerhaeuser 4-Square Lumber Dealers. Descriptive literature will be mailed on request.

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