PROGRESSIVE ARCHITECTURE

newsletter

January 1950

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- Newsletter items for January 1900 included prediction that business would be good for the year; that the steelworkers' strike against the Amalgamated Association would be broken (which it was) and 300,000 tons of steel would be produced; that the new American Radiator Co. would push sales of cast-iron heating units; that less timber would be available from Appalachian sources, with builders turning to the northwest; that construction activity would include electric power plants and factories for electric motor production; that regulations might be expected to control urban building practices.

- Newsletter items for January 1950 include general prediction that the year ahead will see new construction volume reaching 1949's record-breaking figure of over $19 billion; that construction costs will remain about the same through the year; that large amounts of mortgage money will be available; that residential construction may nearly equal 1949's near-million units; that private non-residential building will decrease, except in case of commercial buildings; that industrial construction will drop about 25%, institutional and religious building somewhat less; that public structures will increase in activity.

- For architects and engineers this should mean a good year ahead. Most of the commissions will continue to be in shops and stores, new and altered (with emphasis on the shopping center), in the school and hospital fields, in large and small housing projects and the individual house. As ever, some good firms find themselves from time to time unexplainably shaky, but for the group as a whole things look not bad.

- From P/A's observations and surveys, it appears that the "specialist" is disappearing. More firms find that identification with one building type hurts them, and are consciously seeking different work.

- Carl Feiss, P/A columnist, is leaving his post as Director of School of Architecture at U. of Denver to become Chief of the Community Planning and Redevelopment Branch of the agency created under the Housing Act of 1949, a post which should be important and influential in development of new housing and redevelopment program.

- Alexander (Sandy) Knowlton, New York architect, has been named architectural editor of magazine "Living."

- Estimates on materials and equipment output during past year (final figures are not in yet) compared with preceding year, made by "Engineering News-Record," show 14% decline in lumber, almost 11% increases in structural clay tile, big drop in plumbing fixtures.

- Ten new companies have joined Producers' Council, including American Radiator and Standard Sanitary, Kewanee Boiler, Minneapolis-Honeywell.

(Continued on page 2)

newsletter

- Building Research Advisory Board will hold a conference in Washington, D.C., on Jan. 11 and 12, on climatological studies now available. Those interested in attending should contact William Scheick, director of the Board.

- Booklet entitled Preparation and Revision of Building Codes is available from U.S. Gov't. Printing Office, Washington, D.C., for 15 cents. It was prepared by George N. Thompson for National Bureau of Standards. Another good treatment of the same subject is series of articles by Cleveland architect Emil Szendy appearing in The Construction Specifier, new publication of Construction Specifications Institute.

- New regional architectural magazine, a quarterly, is Design +, to be issued from Miami, Fla., with an editorial staff including Henry Wright, Lee Childress, Ezra Stoller. Advisory board is made up of eleven outstanding Florida architects.

- 974 projects have been at least tentatively approved under the National Hospital Program of Public Law 725. Total estimated cost of these jobs is $630 million. 616 projects have final approval. Boost to this program was given at end of last Congress session, when amendments doubled Federal aid for four years.

- U.S. State Dept. has put together a splendid study collection on housing, planning, and construction for use in U.S. libraries and in information centers abroad. Prepared under the direction of Harold Sandbank, the collection contains over 1200 photos, 100 books, 500 special reports. Sets are now circulating abroad.

- Homer Hoyt has prepared a market analysis of urban shopping centers for Urban Land Institute. He concludes that this is a "tremendous and almost untapped field" since the "whole movement is in its infancy." The report warns, however, that small neighborhood centers "do not have the pulling power of a regional center."

- A competition for the design of prestressed reinforced road bridges is being conducted by Cement & Concrete Ass'n, 52 Grosvenor Gardens, London S.W. 1, England, from whom applications can be had for 1 sh. Designs are due May 31, 1950; first prize is £500.

- Institute of Design in Chicago, under Serge Chermayeff, will become a part of Illinois Institute of Technology, where Mies van der Rohe is director of the dept. of architecture.

- Thomas Hall Locraft replaces his partner in practice, Frederick V. Murphy, as head of Department of Architecture at Catholic University of America, Washington, D.C.

- Sir Patrick Abercrombie, British architect and town planner, will be awarded A.I.A.'s Gold Medal at 1950 Washington convention. He will be sixth foreign architect to receive the award.

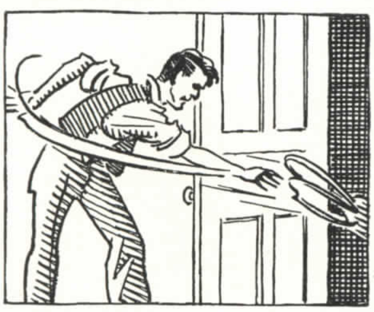
- It is reported that 1953 A.I.A. convention will be held in Seattle, Wash. Other dates are: Chicago, 1951; New York and possibly Bermuda, 1952.

From "LCN's"

TO MODERN *LCN* DOOR

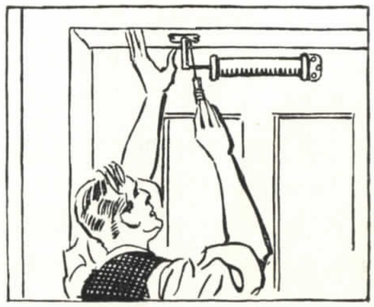
● Winter, 1877. Dr. Phillips Brooks, eminent rector of Boston's new Trinity Church, was displeased. Said he to the contractor's foreman, "You *must* stop that storm door from banging!"

Angry that his efforts to fix the door by padding were not appreciated, the young foreman, L. C. Norton (original "LCN"), took off his overalls, threw them in a closet

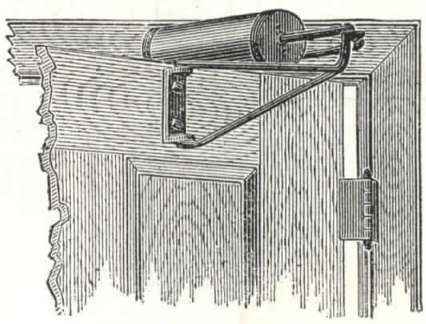


and slammed the door. That is, he tried to slam it, but the cushion of confined air prevented the slam!

Here was an idea. A man of action, "LCN" bought a small hand pump, made a hinged cap for the lower end, attached this to the door, secured the piston rod to a vertical post on the jamb, and thus created the first door check.



"LCN" devoted the rest of his long life to scientific door control. His first commercial checks of 1880 were successful, as were the highly



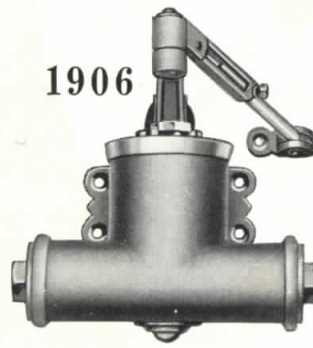
1880

ornate models of the '80s and '90s which had springs to close the door. In 1906 the hydraulic checking principle was adopted. In 1926 the

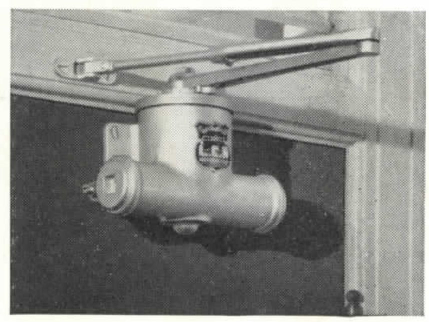
1885

LCN exposed type door closer was put in production, followed shortly by three types concealed in the floor. In 1928 LCN introduced the closer

1906

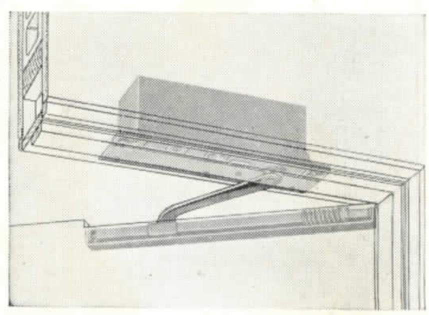


concealed in the head frame. In 1932 the closer concealed-in-door was brought out, providing hidden control for the lighter doors. In 1936



1926

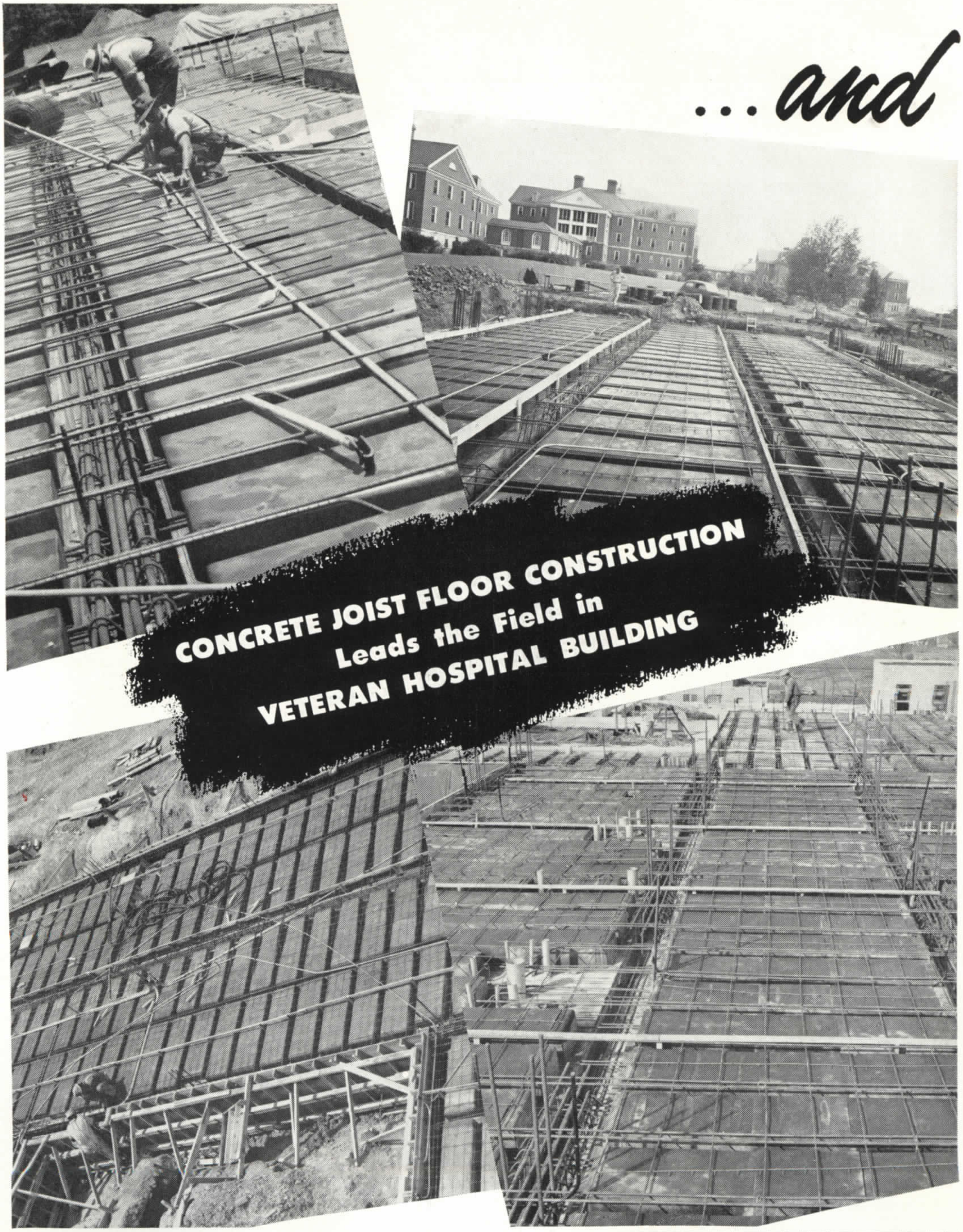
came a double-acting overhead concealed closer for interior doors, and in 1940 another, employing the lever principle, for exterior doors, while



1928

1948 brought a concealed-in-door closer for metal interior doors. Thus has LCN kept pace with advancing Architecture.

... *and*



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1900 era

VMP type B cast iron stacks with open bar shelves installed in New York Public Library.

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1925 era

VMP type A stack with steel supporting columns, cast iron shelf supports and non-flush ceilings installed in Library of Congress.

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1950 era

VMP's modern bracket stack with hinged open bar shelves, wide ends and stack aisle light reflectors installed on steel deck floor in the University of Alabama.

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VIEWS

COLUMBIA DEAN RECALLS THIS CENTURY BROUGHT "BEAUX ARTS" SCHOOLS TO UNITED STATES

Dear Editor: In August you sent me Carl Feiss' opening contribution to a column he will conduct for PROGRESSIVE ARCHITECTURE (see page 116) and you asked me for comments. Feiss' statements and questions are provocative and thereby fulfill their intention.

My own reaction is excited by the following sentences: "Schooling is a very small part of education; also schooling becomes obsolete overnight as world conditions change . . . There is almost nothing in the tattered remnants of our Beaux Arts atelier system in formal architectural education which relates the drafting table to the modern world."

That schooling is but a small part of education, most of us will agree, as education is a lifelong process, while schooling is limited to a certain number of years. But that "schooling becomes obsolete overnight" is debatable.

Schooling that is worthy of being considered a factor of education cannot change in its essence any faster than man changes in essence. And for better or worse, man does not change overnight, however fast the facts that he learns and the methods by which he learns may change. Schooling which is educational, in any field whatsoever, must train the essential man—must train him *how* to think (not *what* to think, I hasten to add).

I am reminded of Oscar Wilde's sagacious comment, that "it is dangerous to be too modern; one runs the risk of becoming old-fashioned so suddenly."

If a school limits itself to teaching facts only, both Feiss and Wilde are correct. It is sad to admit that in many of our schools, and in many of our schools of architecture in particular, "facts" are not only stressed, but constitute an abnormally large part of teaching. In design, which is not made up of facts as such, a set of formulae is frequently offered by instructors who lack true "education," or training in reasoning.

If a school really "teaches" (and many of the better schools in this country *do* teach, and teach very well indeed) the student is taught primarily to analyze and to think. The architectural forms and the structural methods he uses are very contemporary, but he is warned that they are subject to change.

And if a student has both creative imagination and good training, he may himself become an innovator; but the new forms that he may create do not imply obsolescence of the reasoning processes by which he created them.

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My second reaction comes in response to the pejorative reference to the Beaux Arts system. Feiss shares an opinion which is very generally held, and which is due to a considerable misunderstanding of what this system, or method, really is. Without stating conclusively whether it is good or bad, I wish to explain a bit what this system really is, what it stands for, and, if possible, how and why it has been misunderstood and consequently misrepresented.

As the name implies, it is the method of teaching used in the National School of Fine Arts of France, of which the school of architecture is a part. It is perhaps interesting to note that the fundamental tenets for the training of architects in the French School are essentially the same as those in any other good school: to teach the student to analyse and to think. The system, or method, recognizes that an architect must first be able to analyse social requirements; that he must then have the artistic ability to formulate these requirements into a workable and esthetically pleasing plan, and a correspondingly pleasing elevation. "Making it work" functionally is essential but not in itself sufficient. Furthermore, he must be capable of erecting his design in a structurally sound and economically acceptable manner. The School has always insisted that the student carry courses in science and structure with his design courses.

It should also be noted that the French School, like other schools, is a living thing and is far from static. In its 300 years of activity it has had its ups and downs. At the moment it is having troubles—the troubles of the times, aggravated no doubt by special conditions in France. Such a "system" in essence continues to be sound; but, quite rightly, the Beaux Arts system has always been subject to the requirements of the people it served and still serves, and not to other requirements.

In the first decade of this century, enthusiastic students returning from their exciting studies in Paris founded a group in this country to "stimulate" our architectural students and "to raise the standards of design" in our schools. This group had excellent intentions, and it would be unjust to say that they did not do a much-needed job, for many years. In fact, I believe that the service rendered still has important educational value. But the methods used are in no way comparable to the method used in France. This country's requirements are quite different, the architect's offices are administered differently, the economic conditions of the students are different—the Beaux Arts in America could only be a pale reflection of the real thing. Consequently, in time, it deteriorated into a superficial "jury and program writing center" with well-meaning and serious-minded people devoting time and energy to its activities; but it is *not* a system of education, as it is limited mainly to the design phase of the work, divorced from the structural requirements without which the design is incomplete.

The unfortunate point, it seems to me, is that it was thought possible to transplant to this country a method of teaching essentially foreign to us. The sad and curious fact is that there are intelligent people who are vociferous in condemning the so-called French system (which they really do not know) yet are willing to accept this or that *other* foreign system, which is just as alien to our needs, under the pretext that it is "modern." It should be quite evident that what we need and should have is a system of our own, meeting the requirements and ideals of these United States. Such a system would differ in many respects from the Beaux Arts system in France, but it would be based upon the same essentials—training and guidance in the process of reasoning and analysis.

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It is an interesting commentary that William R. Ware, before founding the School of Architecture at M.I.T. in 1864, made an extensive trip to Europe. Upon his return he evaluated the various European methods then used in training architects, and he pointed out what to him were the better and less good features of each method. He then established a curriculum of his own for the new School of Architecture, the first to be established in the U.S.A. His report is fascinating reading. As Ware explained it, this country, with its own distinct requirements, could accept no *one* European method—but needed its own method.

In conclusion, the Beaux Arts system in architecture is but a specialized expression of France's ancient tradition in education; tradition which is based on the assumption that education is concerned primarily with the human being and only secondarily with minutae of his time and environment. Finally, let us recall that the Beaux Arts was at a high peak of activity and influence, especially in the United States, at the beginning of our century; and if the fashion of that period is at present out of favor, that fashion should not be identified with the system itself.

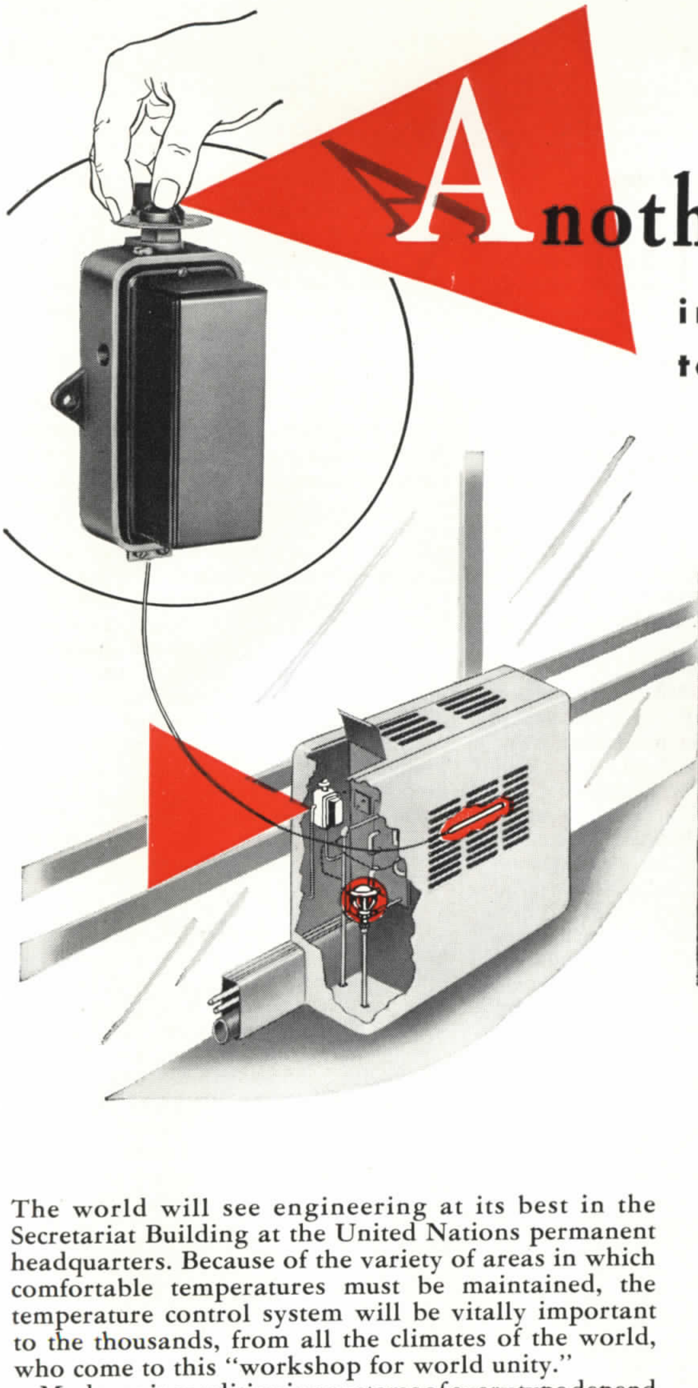
The three questions which Carl Feiss proposes to raise in future columns are certainly worthy of discussion—and I hope that he will enlarge on them himself and incite others to join with him.

LEOPOLD ARNAUD, Dean
School of Architecture
Columbia University
New York, N.Y.

Another Masterpiece

in individual room temperature control systems

by Johnson



Secretariat Building, United Nations Permanent Headquarters, New York, N. Y.
Architects: Wallace K. Harrison (chairman); Max Abramovitz (deputy); Voorhees, Walker, Foley & Smith; Skidmore, Owings & Merrill; Clark, Rapuano & Holleran.
Mechanical Engineers: Syska & Hennessy, New York, N. Y.
Heating & Air Conditioning Contractors: Almirall & Company, New York, N. Y.

The world will see engineering at its best in the Secretariat Building at the United Nations permanent headquarters. Because of the variety of areas in which comfortable temperatures must be maintained, the temperature control system will be vitally important to the thousands, from all the climates of the world, who come to this "workshop for world unity."

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AMERICAN ARCHITECTURAL PERIODICALS SINCE 1900

Academy Architecture and Architecture Review 1889-1931

The American Architect 1876-1938 (Merged with Architectural Record. See also The Inland Architect)

American Homes and Gardens 1905-1915

The Architect 1923-1931 (Merged with California Arts and Architecture)

The Architect and Engineer (of California) 1905-

Architects and Builders Journal 1903-1908 (Merged with National Contractor)

Architects Law Reports 1904-1905

The Architect's World; monthly digest February-June 1938 (Merged with Architectural Forum, October 1938)

Architectural Concrete 1934-1945

The Architectural Digest V. 1 No. 1 September 1914

The Architectural Digest; A Pictorial Digest of California's Best Architecture 1930-1947

The Architectural Forum (Title varies. 1892-1916: Brickbuilder; 1916- Architectural Forum. See also The Architect's World)

Architectural Record 1891- (See American Architect and Architecture)

The Architectural Reprint 1901-1907

Architecture 1900-1936 (Merged with Architectural Record)

Architecture and Building 1883-1932 (Title varies. 1899-1911: Architects' and Builders' Magazine)

The Architecture Index V. 3 1904

The Architecture Quarterly of Harvard University 1912-1914

Building and Building Management 1913- (Title varies)

California Arts and Architecture 1912- (See The Architect)

Construction Details 1913-1915

The Federal Architect 1930-1945

The Hoggson Magazine 1915-1917

House and Garden 1901-

The House Beautiful 1901-

The Ideal House 1905-1906

The Inland Architect and News Record 1892-1908 (Merged with American Architect 1909)

Interior Architecture and Decoration combined with Good Furniture and Decoration 1914-1932

The Monumental News 1904-1918

The National Architect 1914-1916

New York Architect 1908-1912

New York (City) Beaux Arts Institute of Design Bulletin 1924-

Northwest Architect 1937-

Ohio Architect, Engineer and Builder 1912-1916

Pencil Points 1920- (See Progressive Architecture)

Prefabricated Homes; A Journal of the Industry 1943-1947

Progressive Architecture 1920- (Title varies. 1920-1945: Pencil Points; June 1942-December 1943: New Pencil Points; 1945- : Progressive Architecture)

Shelter 1930-1939

Task 1941-1944

The Technology Architectural Record 1916-

The Western Architect 1903-

Western Building 1942-

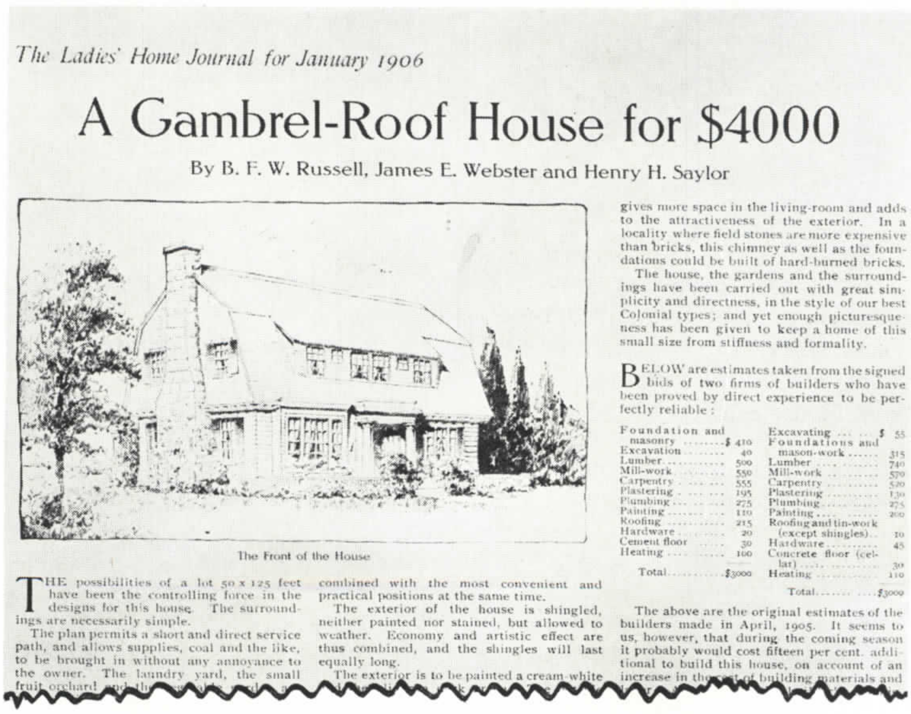
Architecture In Print

By EUGENE RASKIN

Open this magazine practically anywhere and you will find distinguished and scholarly comment on architecture in America as viewed from this mid-point of the century. As intellectual fare, you will find the menu rich, varied, and meaty, dished up as it is by those skilled journalistic chefs, the editors of PROGRESSIVE ARCHITECTURE, without whom (and their colleagues of the other architectural journals) we of the profession would have gone hungry these past decades. Hungry, that is, for the stimulation, nourishment, and occasional indigestion they have so faithfully brought us. It is only fair and fitting, therefore, that this issue should contain at least a brief appraisal of the architectural press at this important birthday.

The architectural press inevitably shares some of the unfortunate characteristics of the American press as a whole, but happily differs from it in others. Like most of the American press, for instance, the architectural press exists to earn money for its publishers and its principal source of income is advertising. But as the implications of this fact are explored, the resemblance becomes less marked. In most sectors of the press the editorial department's function is to provide attractive bait to the reading public so that as many eyes as possible will be exposed to the advertising. Advertising rates are based on circulation, so it is the editor's job to get circulation. It is also his job to help make the advertising effective by creating a mood, tone, or atmosphere throughout his journal that will be favorable to the advertiser's message. An example (perhaps extreme) of such assistance is the running by some magazines of "tests" of advertisers products; then the granting of seals of merit, or badges of approval.

(Continued on page 12)


The Ladies' Home Journal for January 1906

A Gambrel-Roof House for $4000

By B. F. W. Russell, James E. Webster and Henry H. Saylor

The Front of the House

THE possibilities of a lot 50 x 125 feet have been the controlling force in the designs for this house. The surroundings are necessarily simple.

The plan permits a short and direct service path, and allows supplies, coal and the like, to be brought in without any annoyance to the owner. The laundry yard, the small fruit orchard ...

combined with the most convenient and practical positions at the same time.

The exterior of the house is shingled, neither painted nor stained, but allowed to weather. Economy and artistic effect are thus combined, and the shingles will last equally long.

The exterior is to be painted a cream-white ...

gives more space in the living-room and adds to the attractiveness of the exterior. In a locality where field stones are more expensive than bricks, this chimney as well as the foundations could be built of hard-burned bricks.

The house, the gardens and the surroundings have been carried out with great simplicity and directness, in the style of our best Colonial types; and yet enough picturesqueness has been given to keep a home of this small size from stiffness and formality.

BELOW are estimates taken from the signed bids of two firms of builders who have been proved by direct experience to be perfectly reliable:

Foundation and masonry	$ 410
Excavation	40
Lumber	500
Mill-work	550
Carpentry	555
Plastering	195
Plumbing	275
Painting	110
Roofing	215
Hardware	20
Cement floor	30
Heating	100
Total	$3000

Excavating	$ 55
Foundations and mason-work	315
Lumber	740
Mill-work	570
Carpentry	520
Plastering	130
Plumbing	275
Painting	200
Roofing and tin-work (except shingles)	10
Hardware	45
Concrete floor (cellar)	30
Heating	110
Total	$3000

The above are the original estimates of the builders made in April, 1905. It seems to us, however, that during the coming season it probably would cost fifteen per cent. additional to build this house, on account of an increase in the cost of building materials and

Efforts of the professional press to inform architectural men of design and technological advances during the first half of the 20th Century have been supplemented by a similar service to the public, undertaken with increasing zeal by consumer publications. A pioneer among these was *The Ladies' Home Journal*, under leadership of the most celebrated editor in his field. Following a series of "good interiors" and "good exteriors" photographed around the country during the nineties, Mr. Bok called upon architects to aid in his crusade, through a series of prize awards starting at the turn of the century. These houses, such as the one reproduced above, were studied and copied endlessly as any observer familiar with the American scene would testify. Stanford White paid tribute to this supplemental effort when he observed: "I firmly believe that Edward Bok has more completely influenced American domestic architecture for the better than any man in this generation." It is significant that every large consumer magazine today pays more or less attention to the changing architectural scene and some continue to supply stock plans for nominal charge.

p/a

PROGRESS REPORT

(Continued from page 11)

In the architectural press such direct and obvious domination of the editorial department by the advertising department has never been accomplished. Perhaps it is because the readers of architectural journals demand real substance and would never accept bait, but I prefer to think that there is an additional reason—the editors are architects as well as editors. The contrast, in layout alone, to the bulk of American journals is marked. In the more commercially minded magazines, the editorial matter is so shunted about, so pushed and battered by the advertising that it is often a chore just to find—let alone read—a story or article.

The press as a whole tends to pander to existing public taste, doing nothing to elevate or guide it, except when an industry (women's dresses, say) wishes to stimulate a change in style. Again the contrast is sharp. A study of the architectural press over the past decades shows that the editors, by their choice and treatment of material, have been consistently well ahead of public and even professional taste. In fact, it is largely by their editorial efforts, their constant stress on the new and the better, that architectural thinking in this country has made such large and rapid strides. It has been unavoidable, I suppose, that some editors have occasionally surrendered to hero worship, attaching disproportionate importance to the work of a few outstanding men, work that has sometimes been notable more for its sensational and photogenic qualities than for real merit. But editors are merely human, nor would we have them otherwise.

To the individual practitioner, working away quietly in his own community, the architectural press has meant the difference between creative contact and smug stagnation. He sees his own work and that of his local colleagues daily, and the easy tendency is for his scale of standards to assume the level of accomplishment around him. But every month when the architectural journals arrive, he sees the best work of the most gifted men in the land. He looks at his own work with a more critical eye, and strives inevitably to design against a higher scale of standards. The barriers and limitations of regionalism are also diminished by this monthly survey, so that our national architecture is taking unmistakable shape.

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It is perhaps unfortunate that our journals show the best work of the country (within the limits of the editors' judgment) and never the worst. Back around the turn of the century *Architectural Record* once in a while printed pictures of some unnamed atrocity of the month. The horrors of the design were candidly analyzed and exposed in the accompanying text. It was a salutary and enlightening experience for many an architect, who was perhaps himself guilty of similar sins. The rareness of negative criticism in today's architectural press is, I think, to be regretted.

An important aspect of the architectural press, not to be overlooked, is

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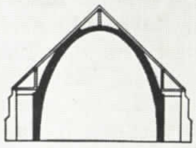
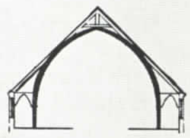
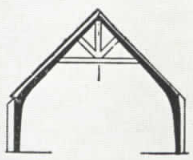


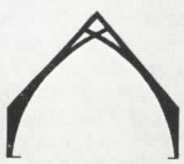
Elliptical shape is highly efficient structurally, as well as unusual and effective architecturally.



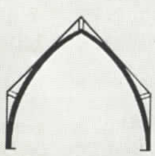
Gothic Frame
Simple "UNIT" arch clear of wall structure, leaving space for aisles.



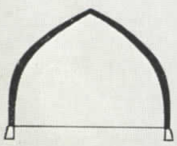
Straight top lines of this variation permit greatest economy in roof construction by providing direct seat for purlins.



Scissors truss effect of Type G arch completely fabricated in factory is far more stable than bolted truss.

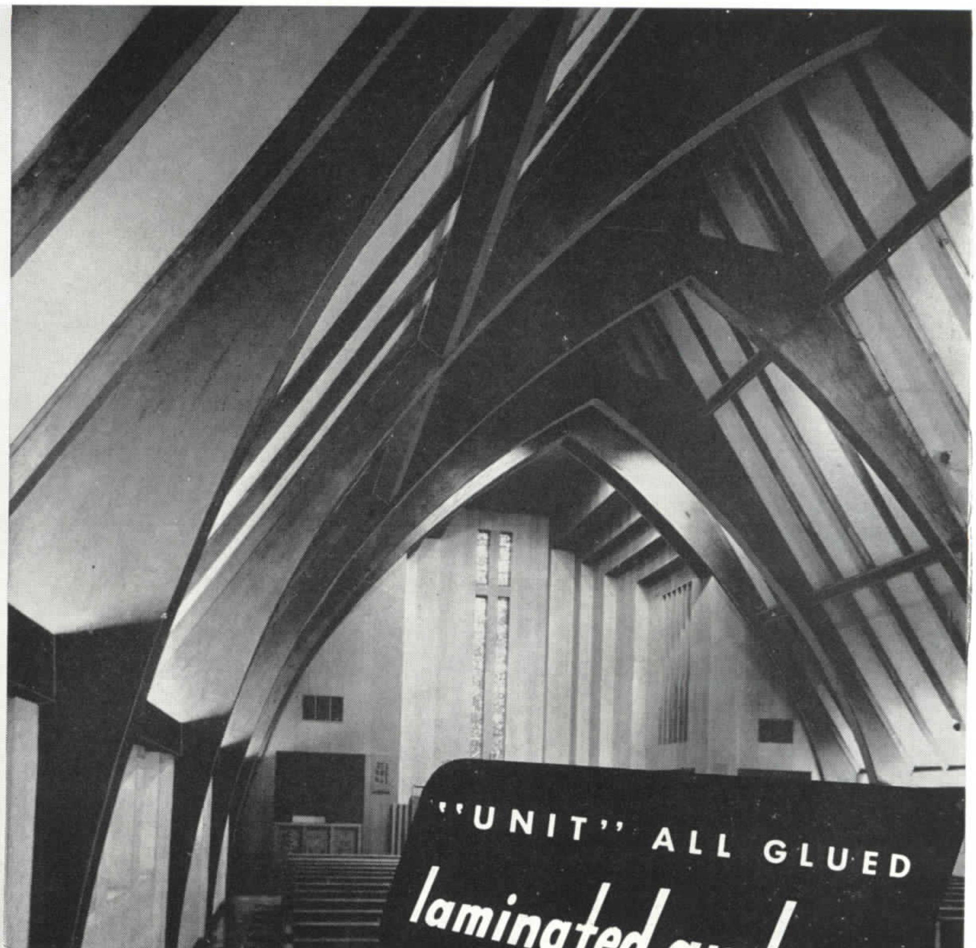


Various decorative effects may be achieved by gluing functional section during fabrication.



Type G with spring line up near eaves level provides maximum clearance.

TYPE G, may have the spring line at the heel and is the simplest form. Tie rod at heel is usual practice. Buttress may be used instead.



"UNIT" ALL GLUED laminated arches

specify with confidence!

THE pioneering background and the design and production "know how" of Unit's technical staff has resulted in the use of "Unit" arches by leading architects all over the nation.

The laminating process (U. S. Patents No. 2177395 and No. 2172093) used in the construction of "Unit" all glued laminated arches permits shaping to any desired form resulting in greater stability than the use of natural sawn timbers . . . a structure that will not shrink, check or warp . . . a structure which offers unlimited decorative treatments and maximum fire resistance.

For complete details check Sweet's File, Architectural for our descriptive Catalog or write to Unit Structures, Inc., Peshtigo, Wisconsin. The technical staff of Unit Structures, Inc., is prepared to furnish advice and assistance to architects in the selection and application of "UNIT" glued laminated arches and beams and prepare preliminary and final design data for special units for individual application.

FOR GREATER ECONOMY . . . FOR ERECTION SIMPLICITY . . . FOR A NEW STANDARD OF MODERN DESIGN AND EFFICIENCY. SPECIFY "UNIT" ARCHES, BEAMS OR RAFTERS FOR YOUR NEXT PROJECT.

UNIT STRUCTURES, INC. UNIT STRUCTURES, INC. PESHTIGO, WISCONSIN — PESHTIGO WISCONSIN

REPRESENTATIVES IN ALL PRINCIPAL CITIES

PROGRESS REPORT

(Continued from page 12)

the wealth of technical information, news of new materials and improved processes that it brings. Our ever-increasing technological advances in structure and equipment make this service to the profession not only desirable, but indispensable. Which brings us to the chief difference between the press as a whole and the architectural press. With the exception of straight news, we could get along without most of the American press, which is why the editors have to woo us so desperately and degradingly. But the services of the architectural press to the building world are so vital, so real, that we have no choice. We must have them. Which, in turn, is why our architectural editors can stand up proudly and give us journalism that bows to nothing but its own standards of excellence and self-respect.

In this past half-century the profession has become heavily indebted to the architectural press; for which that press wants no repayment, I am sure, except a continued opportunity to serve the cause of architecture. For the next 50 years, I know that my fellow architects will join me in wishing our press not ill-won prosperity—but continued vigor, intelligence, and devotion.

NOTICES

IT WAS FREDERICK G. FROST

We have repeatedly scolded editors who fail to credit architects when publishing examples of their work. An inexcusable instance is our own failure to credit THE FIRM OF FREDERICK G. FROST, ARCHITECTS for Brownsville housing project, which was illustrated in our PROGRESS REPORT, page 14, October 1949 P/A, as a fine example of New York City Housing Authority design advance. We apologize to the architect and thank Donald Dodge of that firm for calling the omission to our attention.

DIFFERENT FIRM

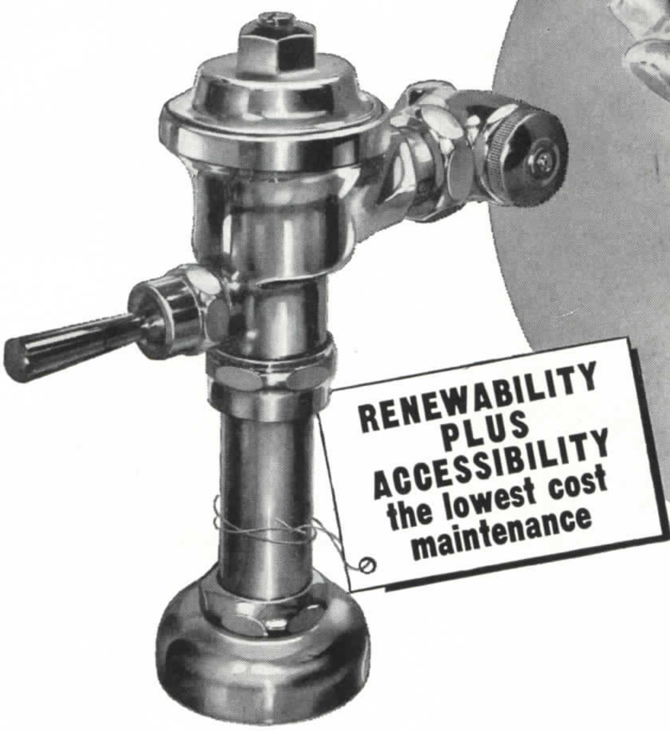
We wish to call attention of our readers to the full name of the firm advertising on page 106 of November 1949 P/A. It is the AEROVENT ALUMINUM WINDOW CORP., 270 Park Avenue, New York 17, N.Y. This notice is prompted by the fact that a number of inquiries resulting from the November advertisement have been misdirected to a competitive firm with a similar name—Aluminum Window Corp., 101 Park Ave., New York 17, N.Y., a division of General Bronze Corp. of Garden City, Long Island, N.Y., and *no connection* of the advertiser referred to above.

APPOINTMENTS

The University of Texas School of Architecture has announced the following appointments: J. ROBERT BUFFLER, chairman, Department of Architecture and Planning; WERNER W. DORNBERGER, chairman of architecture engineering. NOLAN E. BARRICK, CAL BRIGGS, H. CONRAD KROLL, CLINTON MOCHON, and HAROLD W. UNDERHILL, JR., have joined the faculty of the Department of Architecture and Planning.

Its *Simplicity* is your assurance of efficiency

The Delany Flush Valve has only 6 moving parts, the simplest assembly of any flush valve and the quickest and easiest to repair.



It is a recognized fact that DELANY FLUSH VALVES require less service over long periods—but do you know why? There is only one component part subject to maximum wear and tear—*the Leather Diaphragm illustrated to the right*. All other functional parts are free fitting and hence free from friction and wear.

Using only top grain, chrome tanned leather, with our special process and formed to our rigid requirements, provides this long lasting peak performance.

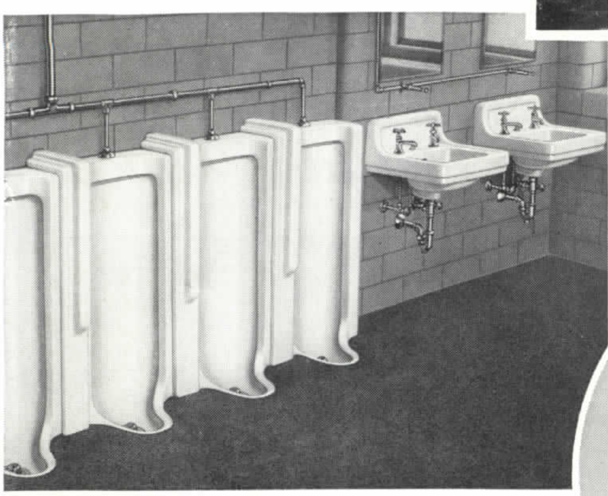
Its replacement is accomplished very quickly at little cost and regains *instantly* the initial efficiency of the DELANY FLUSH VALVES.

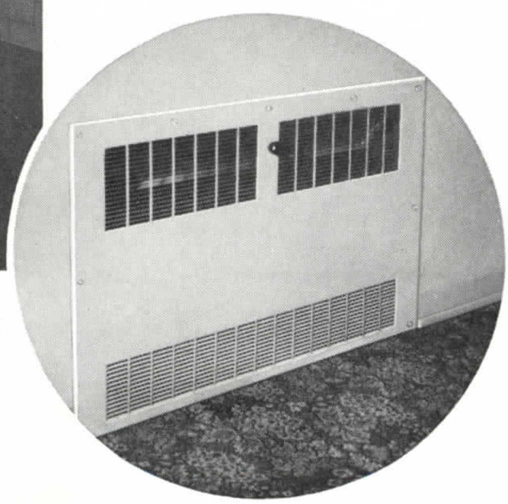
The Delany Leather Diaphragm illustrated above has been in continuous use for over 6 years and is in perfect operating condition.

DELANY *Flush* VALVES

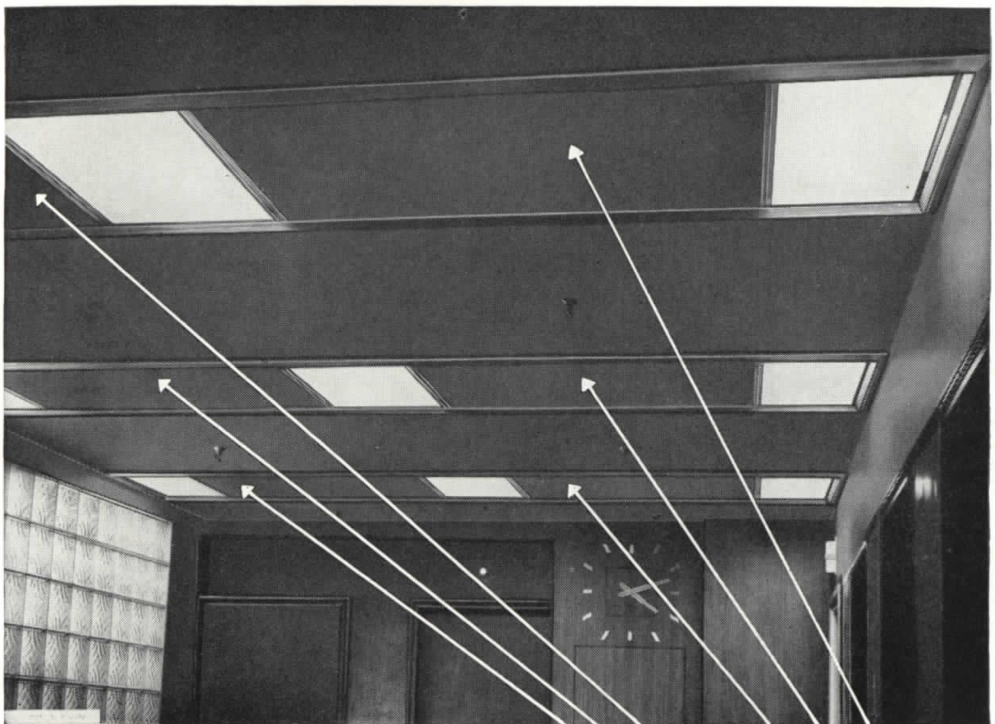
SINCE 1879
Coyne & Delany Co.
BROOKLYN N.Y.

IN CANADA: THE JAMES ROBERTSON COMPANY, LIMITED • MONTREAL • TORONTO • ST. JOHN, N. B.





For *complaint-free* low velocity air distribution



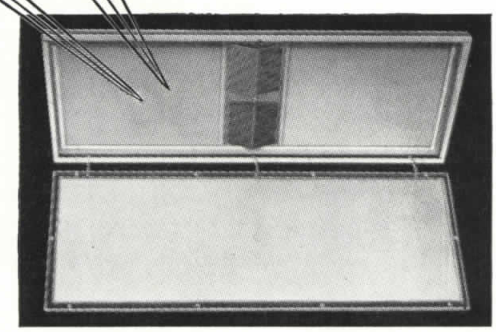
Use the Best...

THE CARRIER CORPORATION OFFICES, New York City. Multi-Vent panels, barely discernible in beautiful, plaque-type coffered ceiling. Remarkably fine temperature regulation achieved by varying air volume in each zone with thermostat controlled modulating dampers.

Use

MULTI-VENT *Ceiling Panels*

T.M. Reg. U.S. Pat. Off.



Though the cost of supply and return air outlets is a very small percentage of the overall cost of a good air conditioning system, economizing in the selection of air distribution media is often the cause of complaints from clients on drafts, uneven temperatures, insufficient air, noise and dirty ceilings.

Multi-Vent is better able than any other diffuser to provide widespread uniform air distribution, without these common objectionable conditions because the basic draft, noise and dirt hazards, inherent in all other diffusers, are non-existent in the unique Multi-Vent principle of *distributing air entirely by displacement rather than by high velocity injection.*

In distribution by displacement there are *no* strong air streams to aim and *no* change in air flow pattern when air supply is varied. Regardless of room size, ceiling heights and relative positions of partitions, beams, etc., *all problems of outlet location and air direction adjustments for throw and drop to avoid drafts are eliminated.*

Multi-Vent, moreover, can handle greater amounts of air in proportion to room size than any other diffuser and still maintain a rate of air motion low enough to meet not only the most exacting comfort zone requirements but also to solve the high load and high ventilating problems in critical laboratory and industrial processing areas.

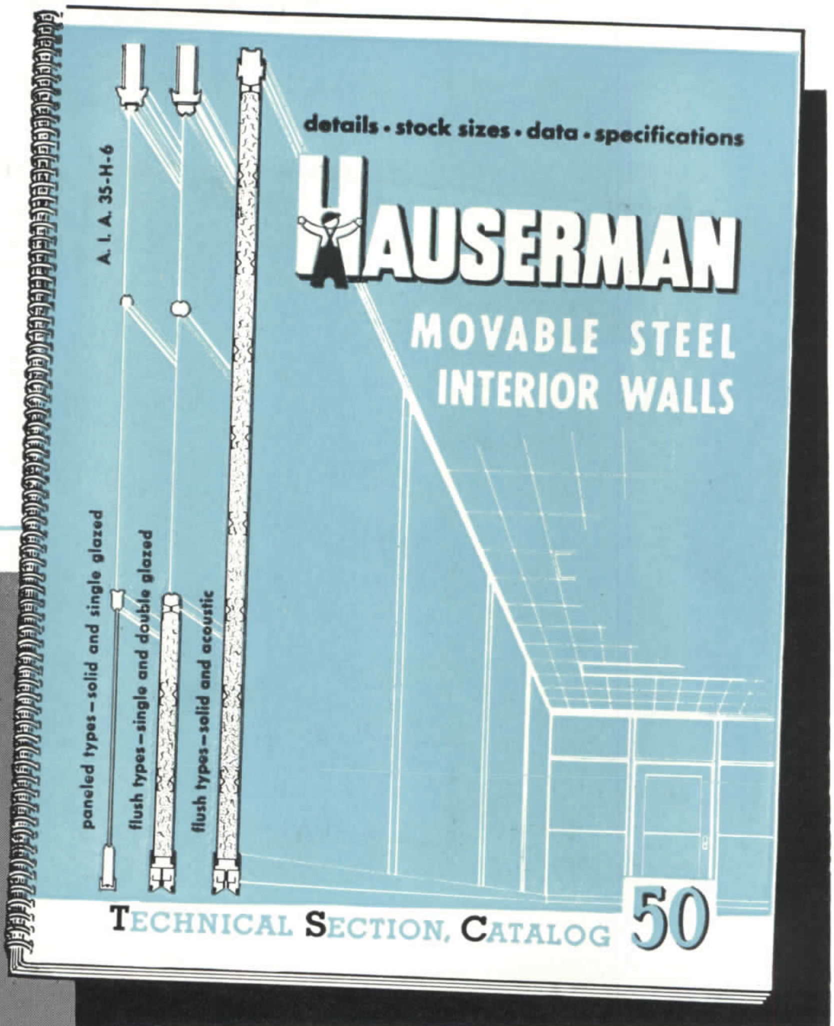
Multi-Vent has many other advantages such as savings in basic heating, cooling and air handling equipment in addition to the important installation, maintenance and decorating economies.

Write for detailed literature and the name of our sales engineer in your vicinity.

MULTI-VENT DIVISION • **THE PYLE-NATIONAL COMPANY** 1379 N. KOSTNER AVE., CHICAGO 51, ILL.

YOUR ENTIRE AIR CONDITIONING SYSTEM WILL BE JUDGED BY THE PERFORMANCE OF THE OUTLETS

IT'S *New* AND IT'S *Yours* FOR THE ASKING



YOUR copy of Hauserman Catalog 50 is now ready. It's a fully illustrated, 60 page catalog that thoroughly describes all the *proved* advantages of Hauserman *Movable* Steel Interiors. It also contains all the latest technical developments and specifications.

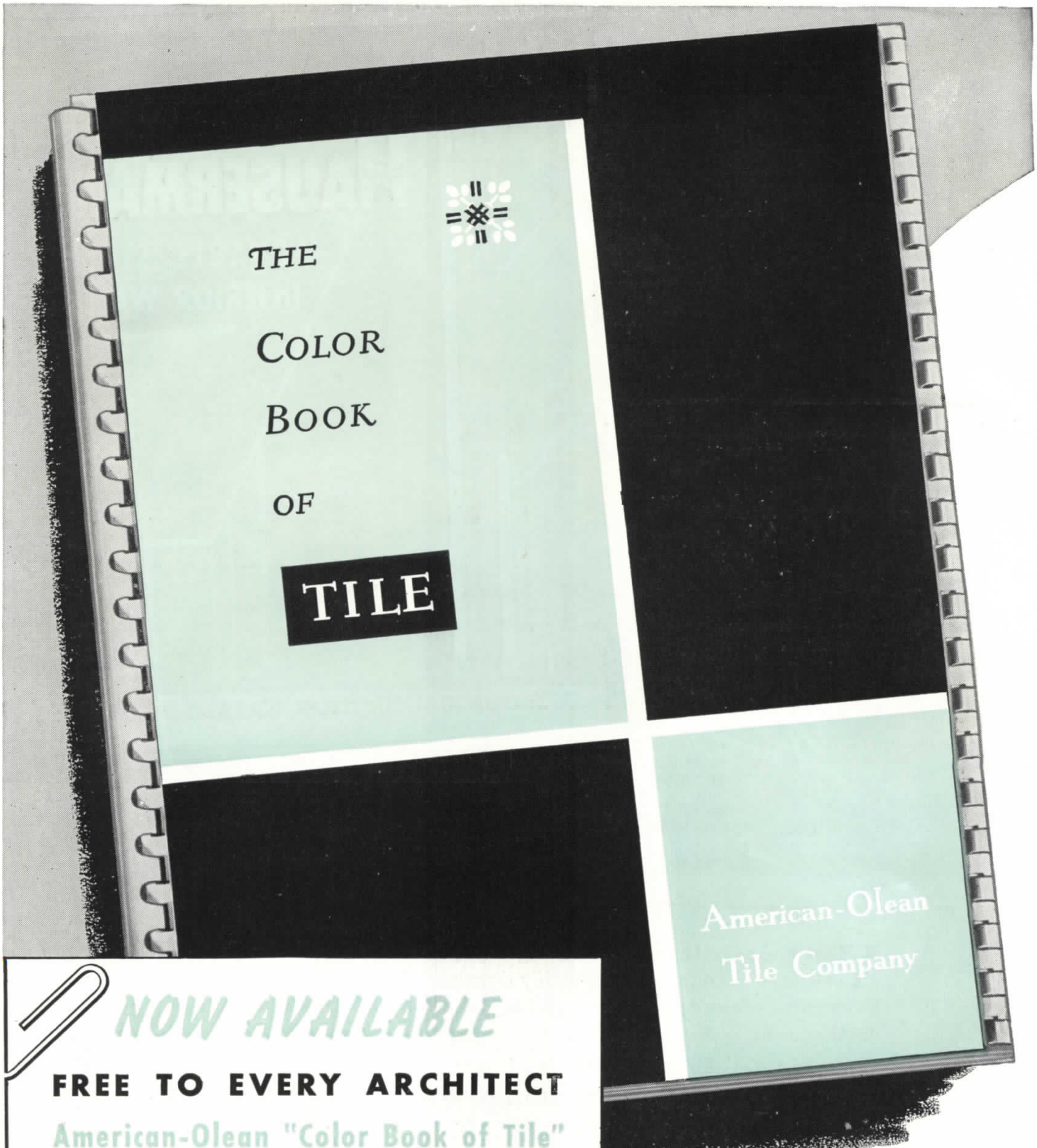
You'll find that this new catalog is a handy, easy-to-use reference. It shows and explains all the Hauserman types for commercial, industrial and institutional buildings.

Hauserman Catalog 50 and the services of trained Hauserman engineers are yours for the asking. Just call the Hauserman office or representative nearby, or contact *The E. F. Hauserman Company, 6794 Grant Ave., Cleveland 5, Ohio.*

Organized for Service Nationally Since 1913

HAUSERMAN *Movable Steel Interiors*

Partitions • Wainscot
Railings • Acoustical Ceilings
Complete Accessories


THE
COLOR
BOOK
OF
TILE
American-Olean
Tile Company

THE COLOR BOOK OF TILE

makes it easy

To Specify Tile   To Select Colors

If you've ever searched through a catalog for tile specifications—or puzzled over a client's "description" of desired colors—you'll find relief in American-Olean's new "Color Book of Tile".

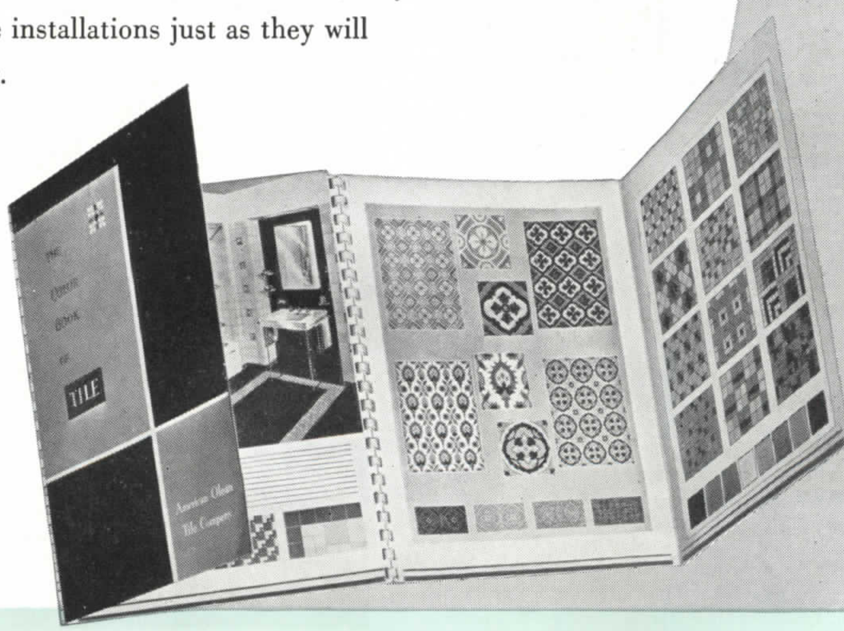
Specifying tile becomes easy. You'll like the color selections and the complete 42-word specifications which are given for each installation—ready for you to copy.

Your clients will like "The Color Book of Tile", too. With it, they can select colors and visualize the installations just as they will be in the homes you are planning. All installations are shown in full color, with alternate treatments to choose from.

There's no other book like "The Color Book of Tile"—no other book so complete and easy to use. A file-size copy is on the way to each architectural office on our list. Be sure to watch for it.

See our catalogue in Sweet's Architectural File for 1950, Sec. $\frac{13b.}{1}$

Twenty pages, largely in color.



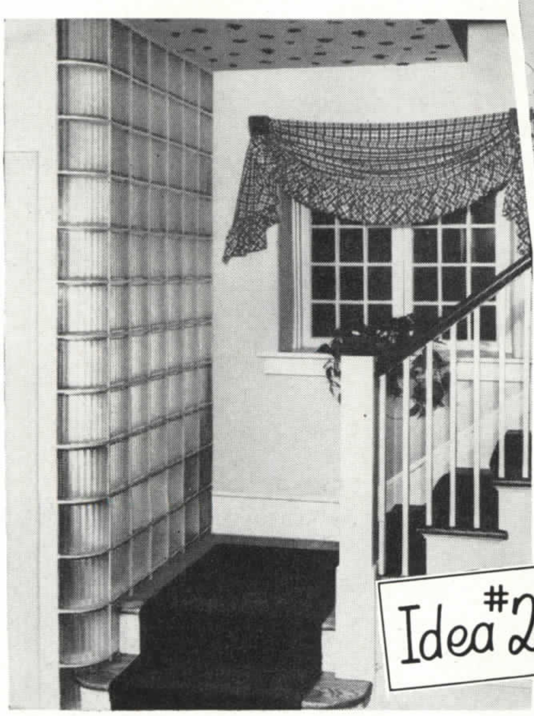
American-Olean Tile Company

Executive Offices
Lansdale, Pennsylvania

Some ideas on the use of Glass in today's residences

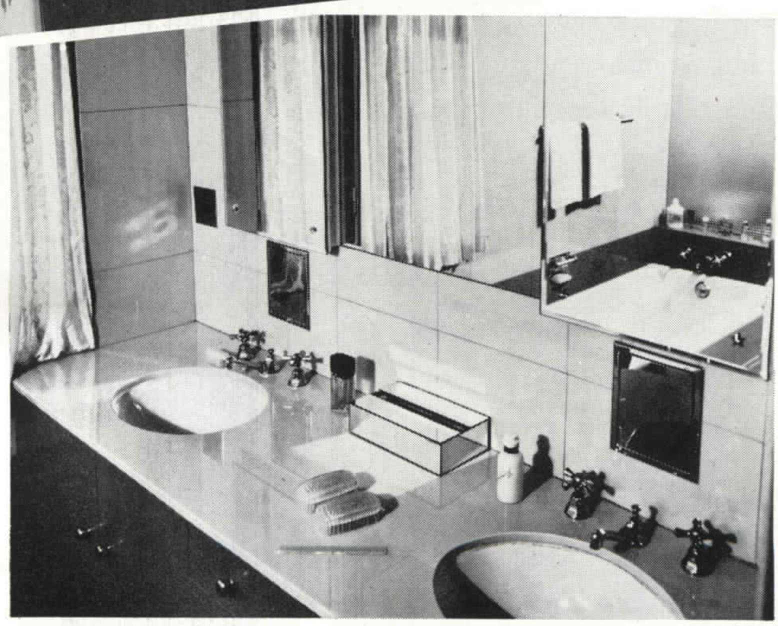
Idea #1

TRANSFORMING dull, passive rooms into bright, expansive, warm interiors. You can do that with Pittsburgh Mirrors. Moreover, they have the ability to increase the apparent size of small rooms. A wall covered with floor-to-ceiling mirrors can often solve a perplexing decorating problem. Pittsburgh Mirrors are obtainable in a variety of sizes and shapes—Venetian, or with modern or Period frames to conform to any scheme. They're available in a range of colors, and with silver, gold or gunmetal backing. Architect: Henry W. Johanson, Roslyn, New York.



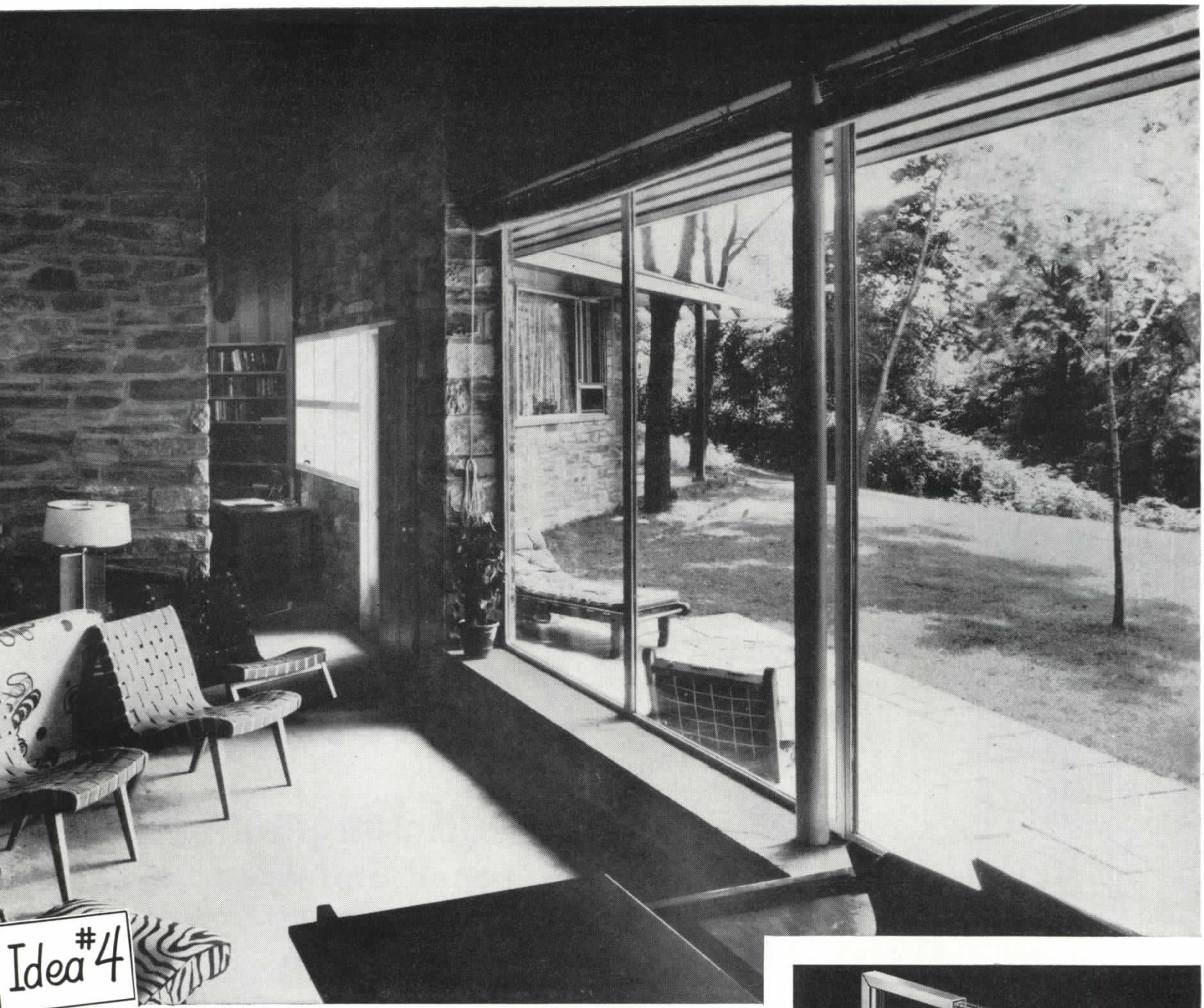
Idea #2

DAYLIGHT IN ABUNDANCE. There are some places in the home where this is wanted, but privacy must be assured, too: In bathrooms, entrance-ways and stairwells, for example. Pittsburgh Corning Glass Blocks are ideal here, because they meet these two requirements fully. What's more, they are actual money-*savers* for your clients. Their insulating properties cut heating bills and they hardly ever need repairs or replacement; never require painting.



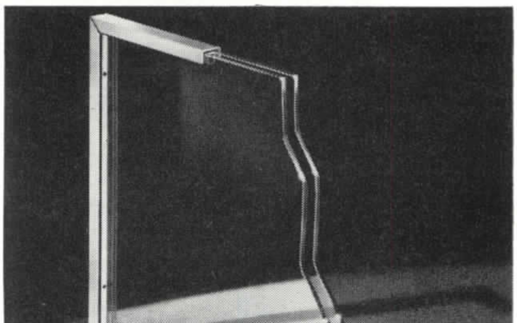
Idea #3

PERMANENCE AND BEAUTY are what home owners want. Those are important reasons why so many of the country's foremost architects specify "the *quality* structural glass"—Carrara. It's an ever-lasting product—finely-machined and easily handled. Its joints are true and even. It's adaptable and versatile. It's impervious to moisture, acids, grease and pencil marks—the ideal material for bathroom and kitchen walls. There are ten beautiful Carrara Glass colors to choose from. Architect: Henry W. Johanson, Roslyn, New York.



TO FRAME THAT VIEW of the garden, road, pond or distant hills and make it a living picture for enjoyment from inside the house. Here Twindow, Pittsburgh's window with built-in insulation, is the logical answer. Twindow units are flawlessly transparent; have exceptional surface beauty. Architect: J. P. Trouchard, Washington, D. C.

TWINDOW is made up of two or more panes of Pittsburgh Polished Plate Glass, enclosed in a protective, long-lasting stainless steel frame. The hermetically-sealed air space between the panes offers effective insulation—minimizing downdrafts, cutting heat losses through windows, reducing condensation. Forty-five standard picture window sizes are available and are adaptable for either wood or steel sash. Twindow is another example of the extensive Pittsburgh research which helps to solve architectural problems by supplying materials that will produce better jobs.



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Pittsburgh Glass

Your Sweet's Catalog File contains a complete listing and description of Pittsburgh Plate Glass Company products.

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PITTSBURGH PLATE GLASS COMPANY

Floor of Northern Hard Maple, 80 x 100 feet, a dual-purpose innovation which combines gymnasium and roller-skating rink, at Archbishop Stepinac High School, White Plains, N. Y.—an interesting development in supervised recreation. Eggers & Higgins, Architects, New York, N. Y.

Reflecting Good Judgment

in the bright beauty, endurance and economy of

NORTHERN HARD MAPLE

Formed to conserve the natural supply and to raise and stabilize the mill standards of genuine Northern Hard Maple Flooring, the **MFMA** has, naturally, watched and recorded for many years the performance of the thousands of fine Maple Floors that have been laid in American institutions, residences, stores, offices and factories.

MFMA records prove that true economy and thorough satisfaction are assured by a well-laid, properly-finished floor of Northern Hard Maple. *It reflects good judgment.* Northern Hard Maple is close-grained, tough, strong, rigid. It is truly resilient. It is amazingly resistant to denting by pointed impact or pressure, and to abrasion by scuffing. It is non-splintering. It is readily stained to many varied tones, and it is brightly beautiful without any stain.

Second Grade, Second-and-Better Grade and Third Grade Northern Hard Maple, **MFMA**-marked, provide very appreciable economies, too, at no sacrifice of performance characteristics.

For full data, see Sweet's, Arch., 13/g/6—Eng., 4/5/22. Write for latest listing of **MFMA**-approved finishing products and processes. Address—

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FLOOR WITH *NORTHERN* HARD MAPLE
BEECH AND BIRCH

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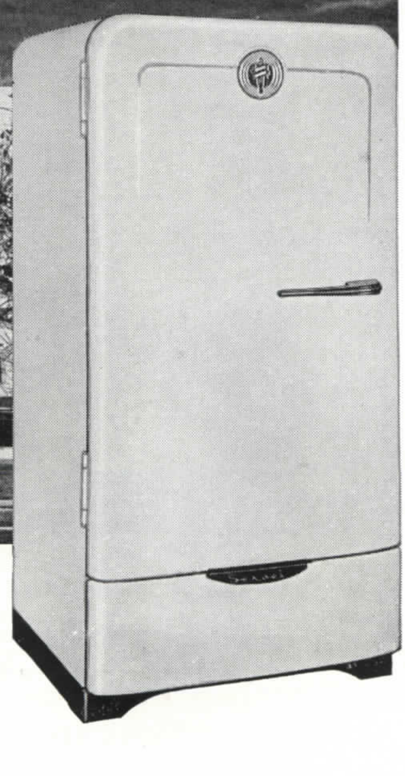
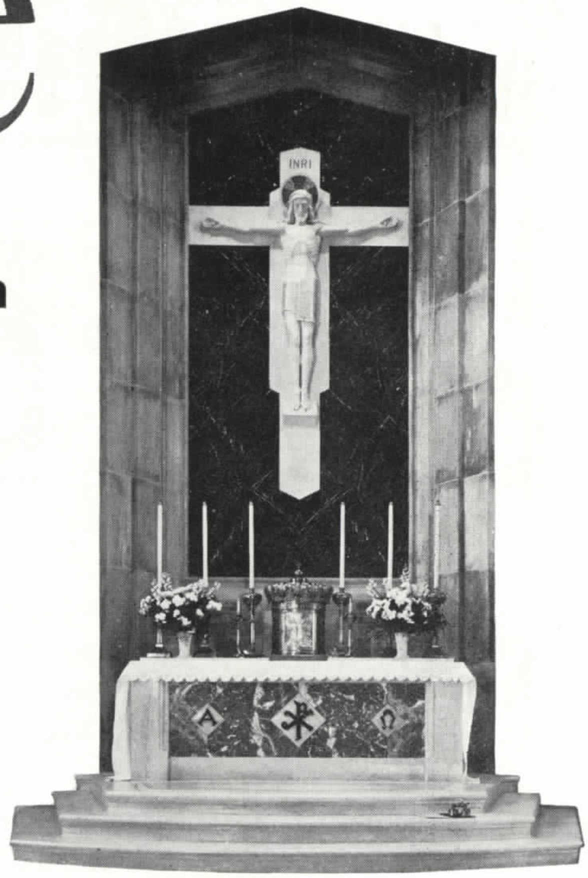
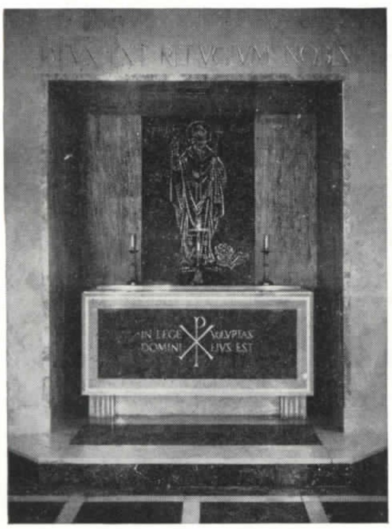
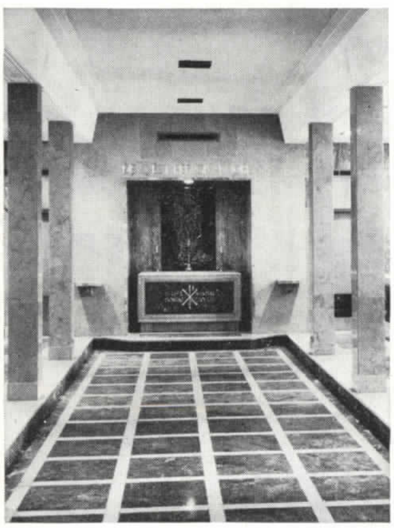


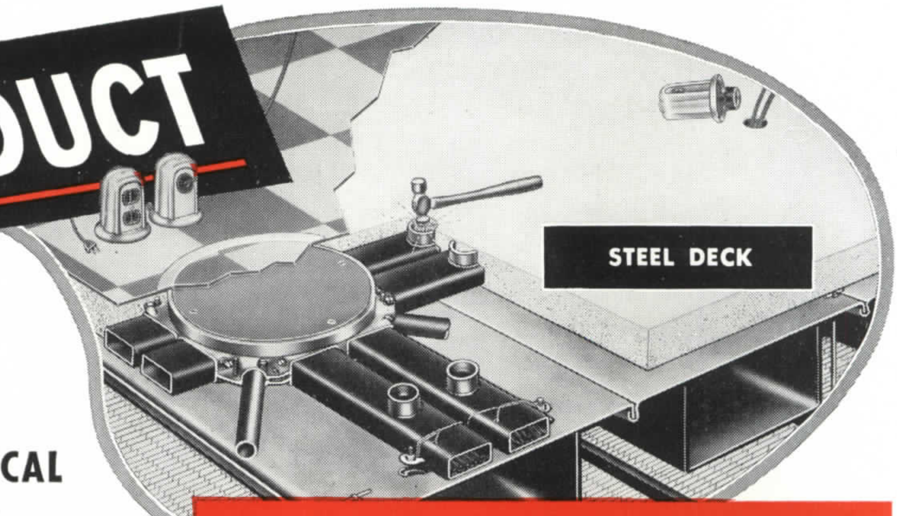
3,010 GAS REFRIGERATORS were chosen for Park Forest —Chicago's most modern community, now under construction by American Community Builders, Inc., Loebl, Schlossman & Bennett are the designers.


INRI





NEPCODUCT



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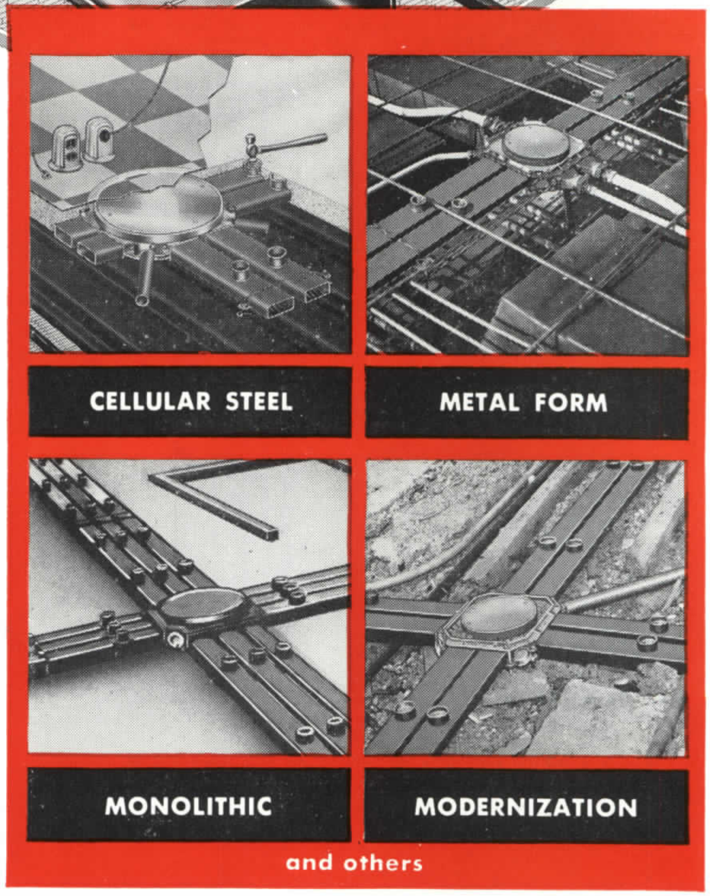
FOR NEW CONSTRUCTION AND MODERNIZATION

Fits ANY TYPE of floor construction



PROVIDES CONVENIENCE OUTLETS AT THE FLOOR SURFACE

New junction box permits installing NEPCODUCT in the upper 2½″ of concrete slab or *above steel deck construction.*

- A complete and independent system to meet electrical designs of engineers and for installation by electrical tradesmen.
- Brings outlets—already threaded—to the concrete floor surface.
- Eliminates cutting the permanent structure and boring through raceway to establish service connections.
- Reduces cost of electrical extensions and maintenance through easy accessibility to services in junction boxes and outlets.
- Ample outlets and circuit capacity for telephone, communications, light and power.

Steel for permanence Grounded for Safety

Let us send you complete service and installation data on NEPCODUCT Underfloor Wiring Systems and Service Fittings.

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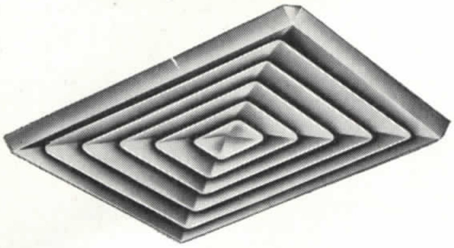

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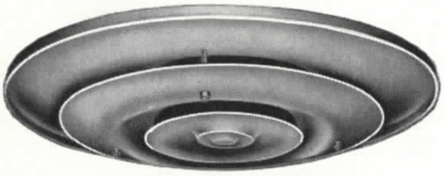
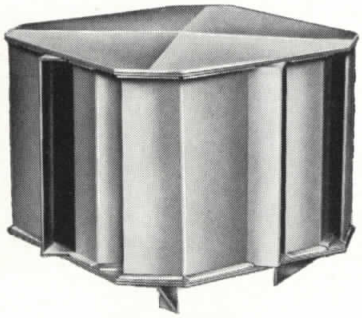
Diffusion Pattern Control is in-built to permit 100% control of air distribution—with no drafts, no blank corners, no hot spots, no cold spots. Assembled from standard parts into any desired shape for ceiling, baseboard or sidewall installation.



CIRCULAR AIR DIFFUSERS

Combine beautiful design with finest operating features to give rapid temperature equalization and draftless diffusion of air. In all sizes for all types of mounting and with lightning combinations.



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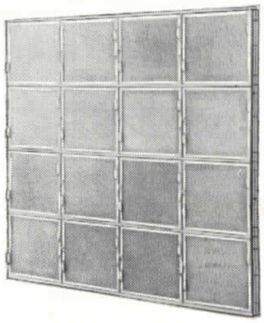

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Filter 50% more air with greater efficiency at the high velocity of 432 F.P.M. In all types and sizes for air conditioning, ventilating and industrial applications.

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17 EAST 42nd STREET • NEW YORK 17, N. Y.

Serving the Heating, Ventilating, Drying and Air Conditioning Industries

Something New in Oak Floors

A pegged oak floor that's moderately priced and easily installed

This new floor has been developed by Bruce to bring the charm and individuality of pegged oak floors to homes in all price ranges . . . even those under $10,000.

With alternate 2¼" and 3¼" widths, beveled edges, and walnut pegs, the Ranch Plank Floor looks very much like an expensive, custom-built random-width plank floor. It has informal beauty and enduring style.

Yet this floor is moderate in cost and has none of the installation complications of a wide plank floor; it is installed by blind nailing . . . just like regular strip flooring. It is pegged and completely finished and waxed at the factory.

BRUCE

It's pegged and finished at the factory

Architects and interior designers praise Bruce Ranch Plank Floor for modern and traditional interiors, and say the new "Decorator" Finish is perfect for all color schemes. Owners vote it one of the most admired features of their homes.

See our catalog in Sweet's 1950 File. For new booklet in color, write E. L. BRUCE CO., MEMPHIS 1, TENNESSEE.

BRUCE
Ranch Plank
FLOOR

Doors, as contained in the A.I.A. Catalog illustrated above. Use the coupon for convenience.

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Brasco STORE FRONTS . . .

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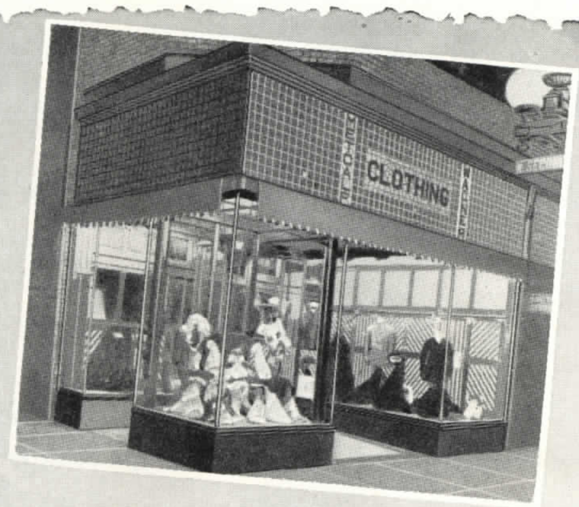
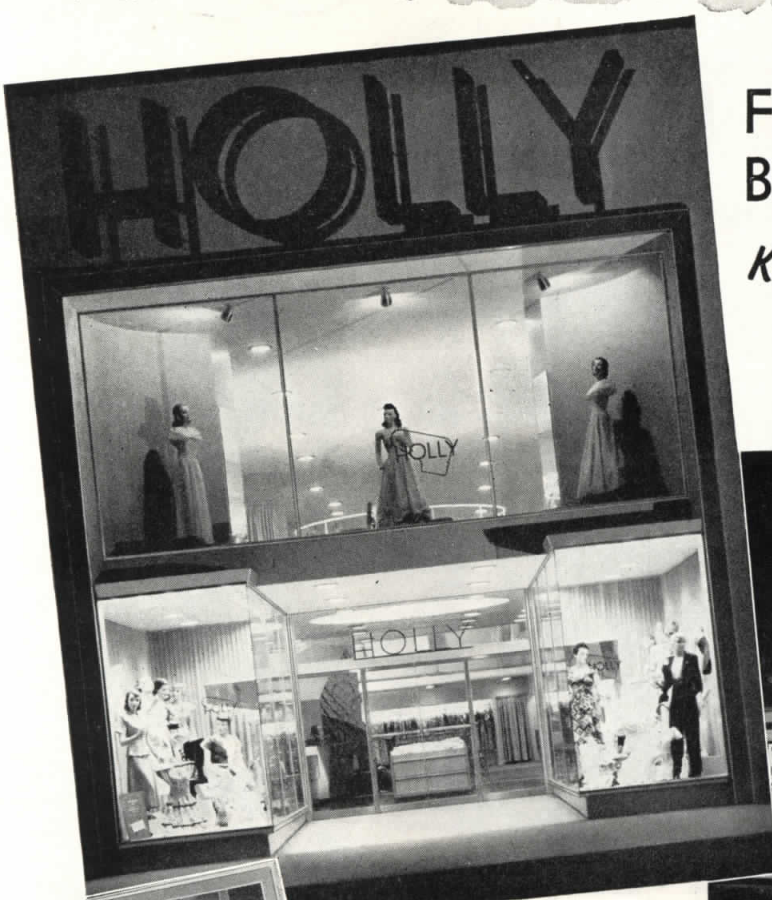


"Modern" BRASCO Installation
Vintage of 1917



Archts. Sidney H. Morris & Associates, Chicago

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Designed by Philip Rawson, Fort Worth

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A NEW IDEA GIVES YOU MORE FOR YOUR DOLLAR IN DOORS

Simplification, as a key to economy, has been given a full ride in Fenestra's latest development in doors.

You know how it has been—swing-in or swing-out, left-hand or right-hand, glass panel or metal—every different use called for a different door. That, or a lot of cutting, mortising and planing.

Fenestra* has put an end to this with a standard hollow metal door which can fill a number of different requirements—and be installed in a jiffy.

A unique hinge arrangement makes it possible. This enables Fenestra to streamline production by concentration on less types. For you, it means savings which are passed along in lower first cost . . . so low that a comparison with what you have been paying will surprise you. This is all achieved right along with the use of quality materials and finest workmanship.

Complete with Frame and Hardware

Each door arrives on the site with its steel frame, *ready* to go in—*ready* for application of pre-fitted, quality hardware. Cutting, mortising and drilling are done at the factory. That saves time . . . money.

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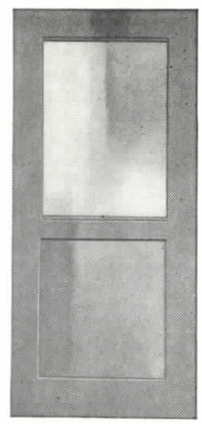

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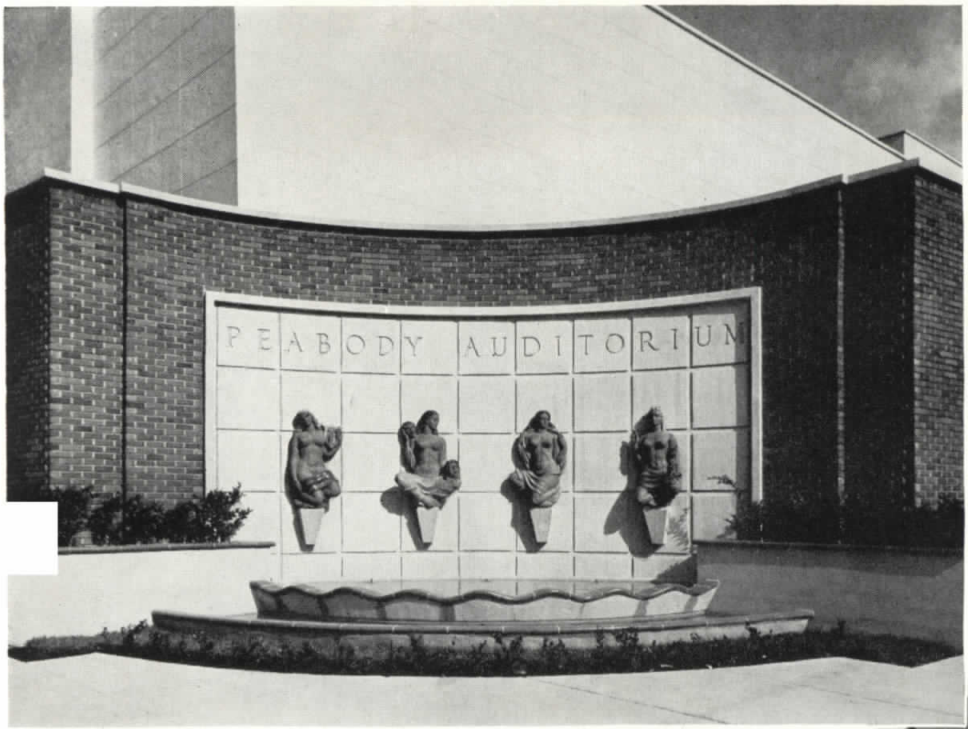

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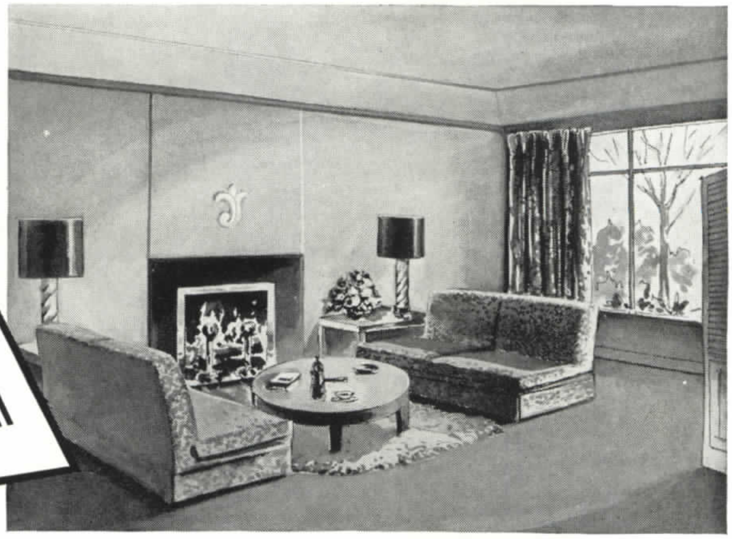

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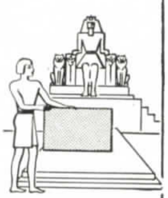

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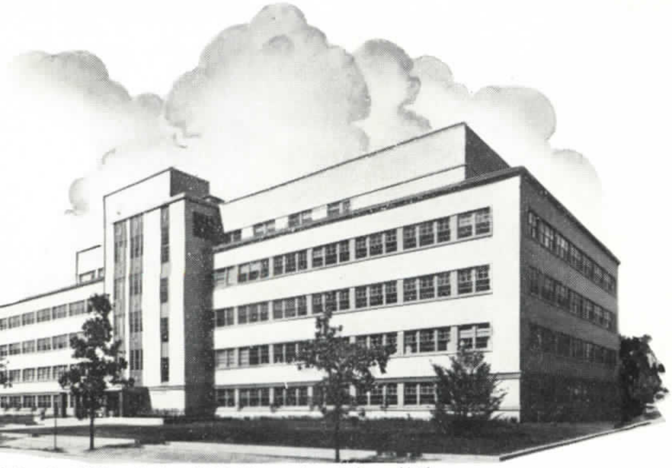

l Service Bldg., Univ. of Michigan, Ann Arbor, Mich.
ts: Harley, Ellington & Day

Rotogravure Bldg., Philadelphia Inquirer, Philadelphia, Pa.
Architects: Albert Kahn Associates

Mercy Hospital, Springfield, Ohio
Architects: Maguolo & Quick

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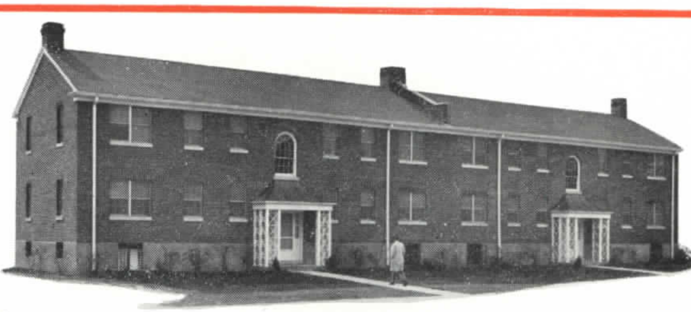
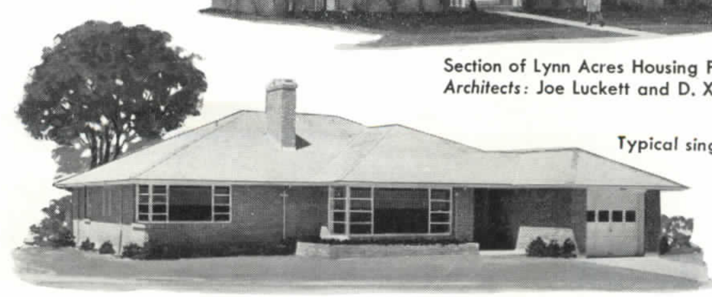


Section of Lynn Acres Housing Project, Louisville, Ky.
Architects: Joe Luckett and D. X. Murphy



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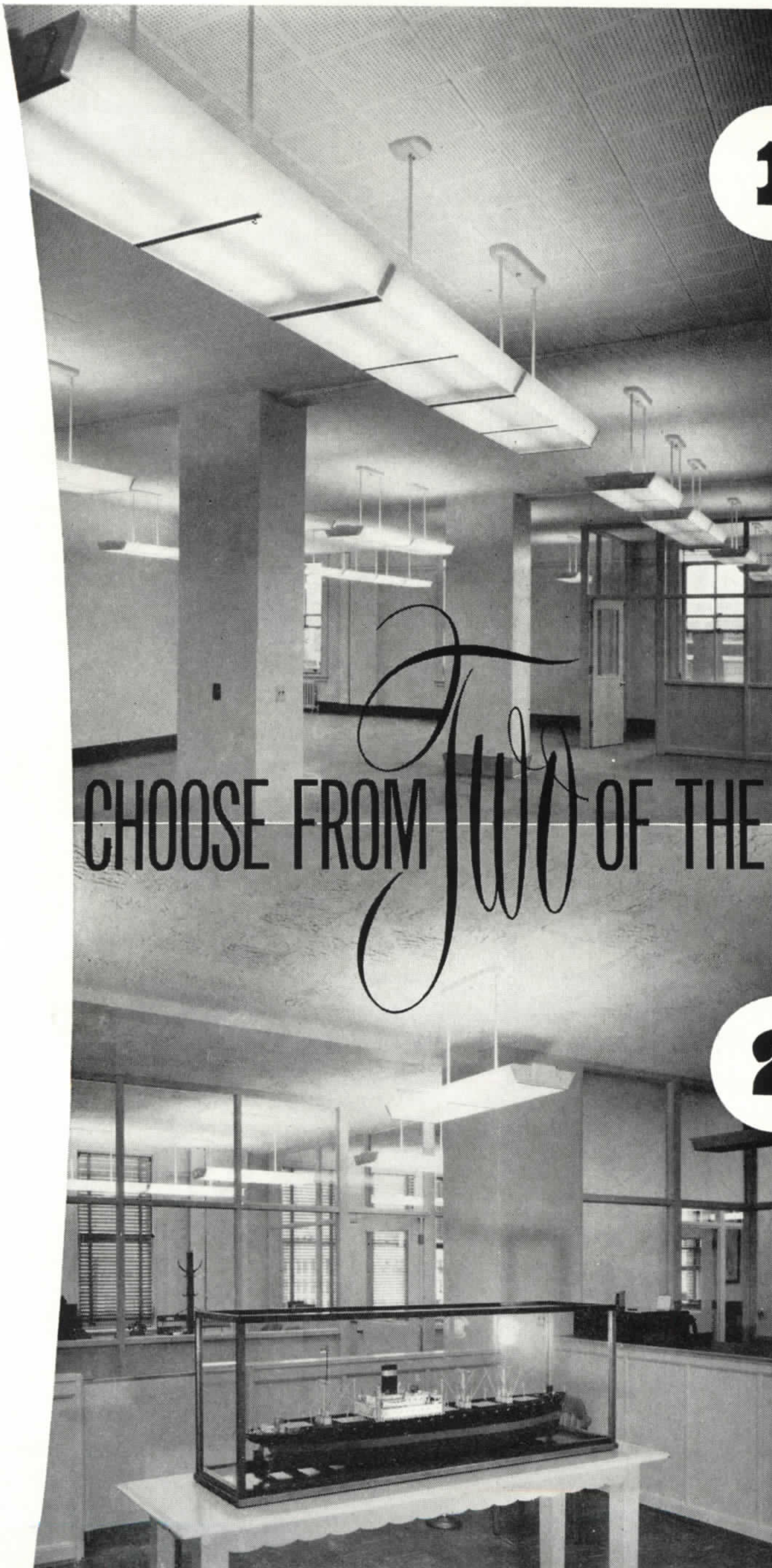

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$25,000.00 in 145 Cash Prizes

ranging from $100.00 to $1000.00 each

for the best ideas for furnishing and decorating seven types of rooms

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IN order to bring to readers again this year a full range of ideas for furnishing and decorating various types of home interiors, the Chicago Tribune is conducting its Fourth Annual Better Rooms Competition, offering $25,000.00 in 145 cash awards for the best ideas submitted.

Just as the Chicago Tribune's competitions in 1947, 1948 and 1949 brought out a wealth of fresh and interesting ideas in this field of high popular interest, so the 1950 competition has been designed to set new standards in home interior fashions.

Here is your opportunity to plan one or more typical rooms just the way you would like them to be. And here is your chance to win cash and nation-wide recognition for your efforts.

After the prize winners have been chosen, the Tribune, just as it has in previous years, intends to reproduce the winning ideas, or adaptations of them, in full color in the Chicago Sunday Tribune.

Everyone is eligible to compete, except employes of the Chicago Tribune and subsidiaries, members of their families, and of the Jury of Awards, which, as in the past, will be composed of recognized authorities of high standing in the field of home furnishing and interior decoration.

For complete information to help you prepare your entry, send today for your free copy of the rules which will be sent to you postpaid. The closing time is February 20, 1950. So don't delay. Fill in the coupon below, paste it on a postcard, and mail today.

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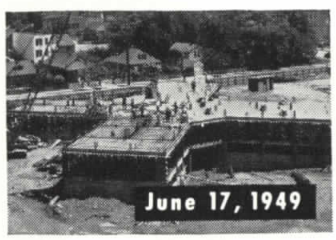
A crew assembles column forms, then moves to next building.

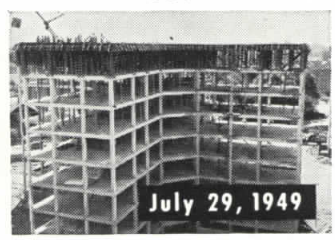
Next crew erects beam forms—each crew trained in its own job.

Placing slab forms and layout for mechanical trades.

Setting reinforcing steel and installing pipe work.



Concreting second floor—other crews on respective cycles.



Concreting roof (9th floor)—84 floors in 65 working days!

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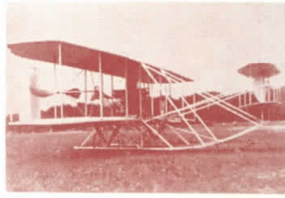
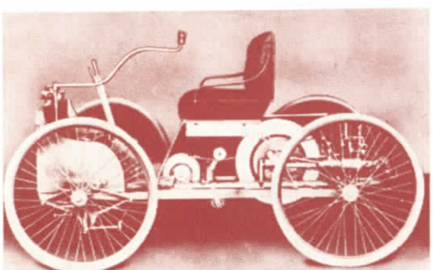
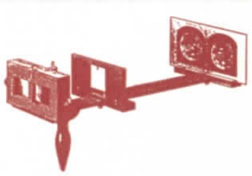
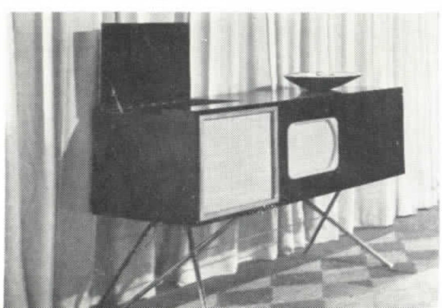
U. S. ARCHITECTURE
1900-1950








Above, Cable Building, Chicago, by Holabird & Roche, 1899; right, Equitable Building, Portland, Ore., by Pietro Belluschi, 1948.

1900-1950

the GRAND detour

The first half of this century is gone. At its beginning, the world in general and the self-confident United States in particular, seemed on the verge of an era of culmination and satisfaction. Nineteenth-century political philosophy had suggested means of producing lasting peace and prosperity. Scientific studies and technological abilities gave promise of usable, practical results for man's greater comfort and surer growth. Yet the year 1950, at the century's mid-point, marks the end of a period which has not been what was expected or hoped for. Rather has it been a time of building in lavish volume with unsure purpose; of alternate booms and depressions, recurrent wars and uneasy peace times; of the spread of contentious political theories; of technical knowledge so advanced that it can produce (as we will) good places to live or shattering bombs to destroy.

We have traveled a circuitous route in these 50 years. As in world affairs, a grand detour in architecture has taken us through periods of imitation, of experiment, of speculation. A layman, looking at the then-and-now illustrations on this page might ask the practicing architect, "What took you so long?" Work done before the start of the 20th century showed sharp advance in planning, in new techniques, in an integrated and pleasing expression of the over-all design. And yet it has taken half another century to reach the stage of development that we approach today. Why *did* it take so long?

Perhaps the answer lies in the pages that follow. Technology was not ready at first for rapid growth. Scientists and technicians knew before 1901 the principles of central heating, of electric lighting, of mechanical ventilation, and of sanitary plumbing. But remember that most of the culminating inventions and the actual production of sources, distribution, and outlets came after the turn of the century in all those fields. Structural steel framing was a novel method of construction at the beginning of the century; reinforced concrete was then a distrusted material.

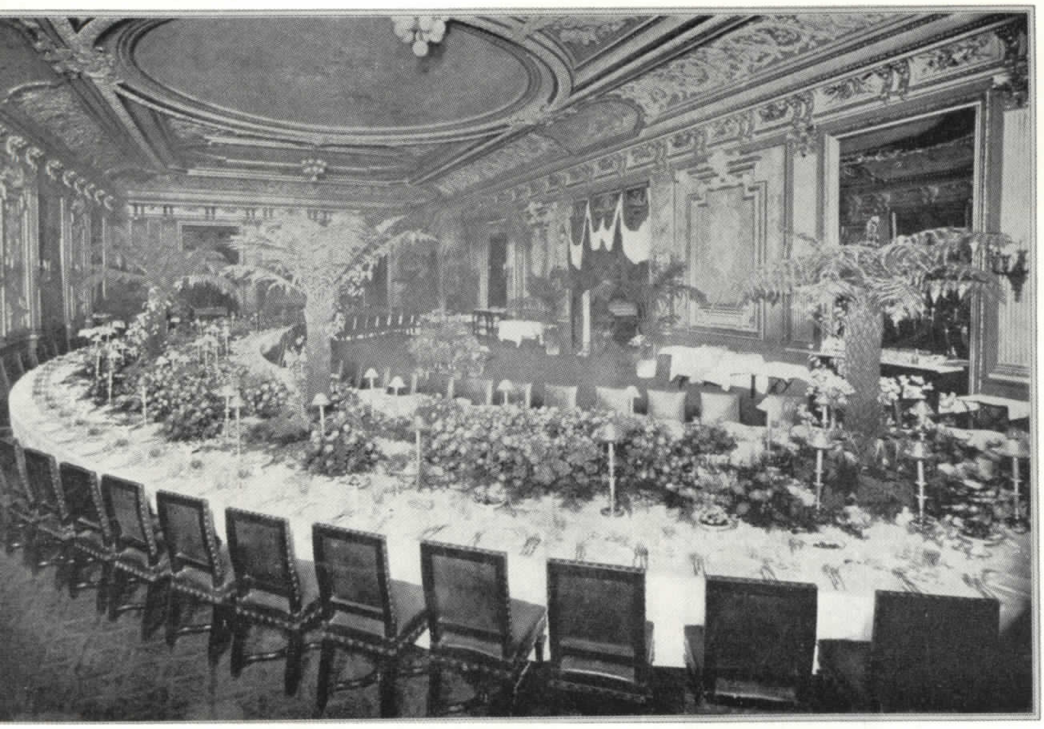
Social development itself—the program that the architect works to, in the larger sense—has not been conducive to rapid advance in design. When the architect was called on to produce extravagant mansions and ostentatious clubs, it was not reasonable to expect him to search out simplicity in expression. When others employed him and held as principal criterion the rapid turnover of investment, it was not to be expected that monumentality would survive. When every possible square foot of dwelling space was squeezed out to lower costs, humanism could not result. In addition, consider that many of today's most common building types—the airport, the gasoline-and-service station, the monstrous factory of mass production, the suburban department store, to name just a few—were unknown at the beginning of the century. Each has presented new problems for the architect to solve. Moreover, the growth of scientific and social understanding in disciplines which affect architecture—education, psychology, medicine and related emotional and physiological fields, sociology, esthetics and the study of visual and tactical perception—also have been tentative, radically altered in some cases, more securely established on earlier premises in others. The architect, the buildings, and the cities he has produced have moved slowly because he and his client were both feeling their way.

Where will we go in the next 50 years? Will it be out on another detour, perhaps as costly and self-destructive? Or can there be a more direct advance from the best of the recent work than there was 50 years ago from the work of the great designers of the late 19th century? It is in the belief that this question can be answered more clearly if we study carefully what *did* happen in the first half of our century, that **P/A** presents this issue.

This issue of PROGRESSIVE ARCHITECTURE *is given over fully to a review of the course of architecture in the United States during the past 50 years. The editors have tried to document architectural developments in the successive periods of our own recent past, to set down the reasons for what has happened as factually and accurately as possible, and to illustrate the results with typical examples familiar to our readers. In this task, the editors have had the advice of the following board of consultants:*

Henry S. Churchill, architect, city planner, writer.
James Marston Fitch, architectural editor, writer.
Talbot F. Hamlin, architectural historian, writer, teacher.
Carroll L. V. Meeks, architectural historian, writer, teacher.
Fred N. Severud, engineer, writer, lecturer.

Full credits for the pictures used in the issue, and identification of the subject matter of each, will be found in the back of the issue beginning on page 130. A bibliography begins on page 114.



Splendor and meagerness both typified the era. (New York club banquet for a Prussian Prince; a middle-class kitchen.)

1900-1916 the scene

Dreams of Empire . . . Roosevelt the Trust Buster . . . the Billion-dollar Corporation . . . the Company Town . . . the City Beautiful . . . Henry Ford and the Wright Brothers . . . the Panama Canal . . . Tenements and Zoning Ordinances . . . World War I.

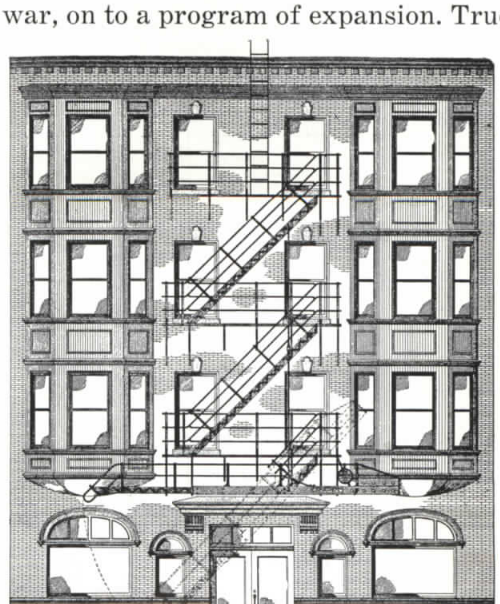
important events

1900: U.S. population: 75,994,575. Autos (including trucks and busses): 8000.
1901: McKinley shot. Theodore Roosevelt President. Queen Victoria dies. First shaft-driven automobile. McMillen Plan for Washington.
1902: First movie house opened. N.Y, enacts tenement house law.
1903: Panama Republic recognized by U.S. Iriquois Theater fire, Chicago. First successful flight at Kitty Hawk.
1904: Roosevelt re-elected. U.S. occupies Panama Canal Zone. N.Y. subway opened. First ice cream cones, at St. Louis Fair.
1905: Einstein discovers that energy equals mass x the square of the speed of light. 1,000,000 immigrants.
1906: San Francisco earthquake and fire. Stanford White shot by Harry K. Thaw.
1907: Financial panic. Hartford, Conn., sets up City Planning Commission. Carrie A. Nation attacks saloon.
1908: William Howard Taft elected. National Conservation Commission.
1909: Peary discovers North Pole. Bleriot flies Channel. Burnham's Chicago Plan.
1910: U.S. population 91,972,266. "Los Angeles Times" dynamited.
1911: First transcontinental airplane flight. U.S. Supreme Court orders Standard Oil combine dissolved.
1912: Titanic sunk. China becomes Republic. Woodrow Wilson defeats Taft.
1913: Peace Palace at the Hague dedicated. Panama Canal completed. Department of Labor set up. Armory Show of modern art, New York.
1914: Assassination at Sarajevo sets off World War I. U.S. Marines to Vera Cruz, Mexico. First Ford assembly line.
1915: Luisitania sunk.
1916: Wilson re-elected: "He kept us out war." Successful wireless transmission. Tom Mooney case. N.Y. passes first zoning ordinance—setbacks result. Communist International formed.

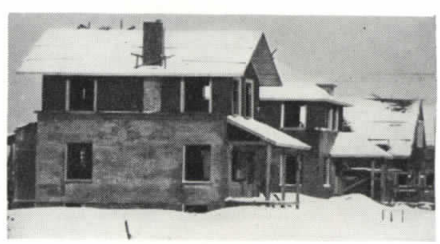
A new world, full as much of hazard as of promise, was coming into being. When the century was young, the United States went through an unprecedented period of technical development and industrial expansion.

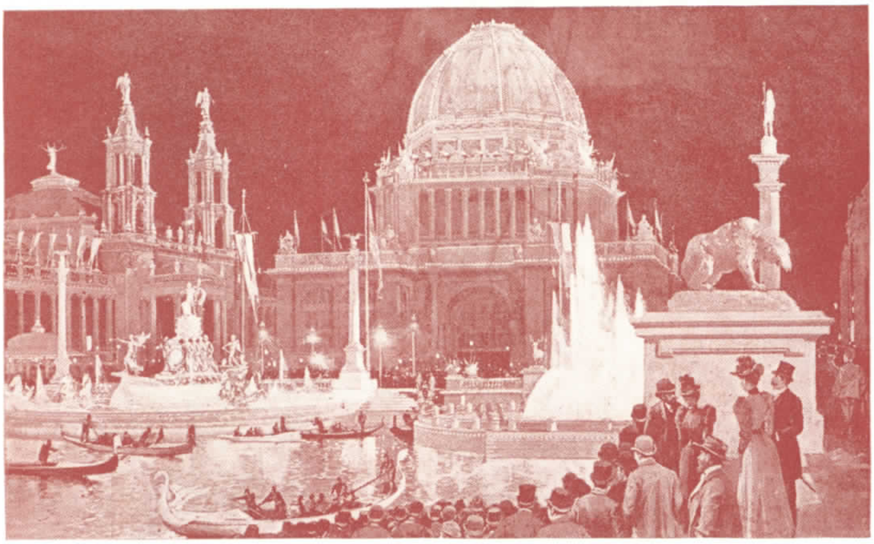
The following inventions were recorded early: the internal combustion motor, the high-speed elevator, the radio telephone, the airplane, the depth bomb, the tungsten lamp—and aspirin. Niagara Falls, awesome wonder to earlier generations, was harnessed as a source of hydro-electric power, and other plants followed. Manufactured gas, an industrially useful steam engine, interconnected electric power units, were all developed at about this time as prime sources of power. Along with scientific development came industrial expansion and eager commercial application. Trusts were outlawed and great corporations were founded—American Radiator in 1899, U.S. Steel (first billion-dollar corporation) in 1901, Bethlehem Steel in 1905.

Great personal fortunes amassed in the 19th century had given rise to an aristocracy of wealth, with dreams of imperial dimensions. By the time a trumpeting Theodore Roosevelt became president in 1901, on the assassination of McKinley, we had already moved, sparked by the Spanish American war, on to a program of expansion. True, there was a panic in 1907, a sharp



New ways of living included the city apartment house and the company town.





The period was heavily influenced by recollections of the Chicago World's Fair.

technical developments

1900: High speed tool steel developed. First electric lamp introduced to United States. First automatic bilge pump installed. Factory-made kitchen cabinets and cupboards manufactured.

1901: Invention of mercury-vapor lamp. Cast-in-place concrete pile invented by A. A. Raymond. First bituminous concrete pavement laid in Rhode Island.

1902: First radio message sent. Development of gearless traction electric hoisting machine. Magnetite arc light produced by Charles Steinmetz. Tantalum lamp developed by von Bolton and Feuerlein.

1903: First under feed automatic stoker manufactured. First mechanical dishwasher. Concrete slab and buttress dam built at Theresa, N.Y. First successful air conditioning system installed in lithographing plant.

1904: Mile-long East Boston subway tunnel opened, ventilation ducts drew out air. Harlem River tunnel in New York built by sinking sections within coffer dam. Willis H. Carrier invented apparatus to humidify and dehumidify air.

1905: Commercial freezing of fruits. First Douglas fir plywood produced in Oregon. Nickel refining developed by Ambrose Monel. Metal lath of slit sheet steel. First electric clothes washer. Electric precipitator invented for air cleansing.

1906: Steel forms first employed for concrete work. Reinforced concrete bridge 280 feet long built at Philadelphia.

1907: Radio audion tube invented by Lee De Forest. First tungsten filament lamp produced in United States.

1908: Baekeland secured first patents on synthetic resins. Interlocking steel sheet-piling introduced by Lackawanna. Indirect lighting principles introduced to Illuminating Engineering Society.

1909: First concrete road started in Michigan. First vacuum cleaner introduced. Nickel steel for high strength members of Manhattan suspension bridge. First electric iron marketed.

1910: Flat slab reinforced concrete construction originated by Orlando W. Norcross. Gyro compass invented by Sperry. Timoshenko method for stability design of structures.

1912: Chemical closet developed for rural areas. Jackhammer, one-man rock drill developed.

1913: Los Angeles aqueduct, 233 miles long completed. First patents granted for built-in bathtubs. Patent obtained for gas-filled lamp, last revolutionary improvement in incandescent lighting.

1914: Insulation board first produced commercially in Minnesota.

1915: Slope-deflection method for rigid frame analysis proposed by Maney.

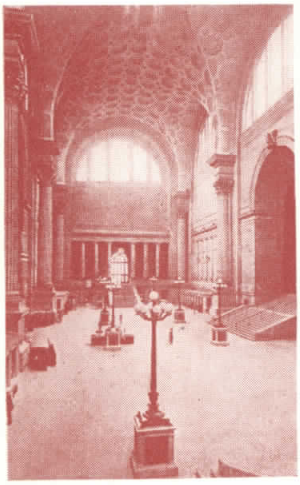
1916: Test methods and standards for portland cement adopted by cement industry. Bonded roofs introduced. Transit mixer for concrete introduced. Stainless steel patents granted in U.S.

depression, and signs of declining prosperity were again visible when World War I came; but generally speaking the country was riding high for 15 years.

A strong *leitmotif* in this American "Emperor Concerto" was the fact that an impressive share of accumulated dynastic wealth was poured into specialized fact-finding agencies, into building funds of select colleges, into the establishment of memorial foundations. There were also vigorous political drives against the piling up of private fortunes: in 1913 the income-tax Amendment was added to the Constitution, for social as well as federal revenue purposes. It is similarly significant that this period saw the first zoning law; the first City Planning Commission; and more laws against firetraps; and the first state tenement house law.

This was the slightly shifting scene in which architects worked through the first years of the century. Some of the pages that follow will show the results. It appears to be the vision of glory and wealth that provided the strongest impetus, rather than the undercurrent of social growth or the unregarded technical advances. The imperial dream had been expressed for all to admire at the Columbian Exposition in Chicago—and the earlier work of the Chicago School was all but forgotten. It was in keeping with sentiment of the time that the monument proudly erected in New York to herald the return of Admiral Dewey from Manila Bay was a Roman triumphal arch—made of plaster, burlap, and hay.

Mediocre town and city streets were lifted out of the ordinary by monuments of marble—or plaster. (Right, Dewey Arch.)



Although structural design was daring, it was generally disguised by veneers. (Waiting room, far left, and Grand Concourse, above, Pennsylvania Station, New York, by McKim, Mead & White.)

Steel skeleton problems were solved; skyscrapers went higher and higher. (Cass Gilbert clothed Woolworth Building with terra cotta; Daniel H. Burnham covered the Flatiron Building with granite.)

1900-1916 construction methods

The design of the Manhattan Bridge (by Hornbostel and Lindenthal) was first in United States to include theory that dead weight reduces live load distortions.

When the 26-story Park Row Building was built in New York City in 1898, it was considered doubtful that other buildings as high would be either desirable or profitable. But in 1913 the Woolworth Building went to 58-stories—with reduced floor heights, it is true. The tall building was here to stay, primarily by virtue of the steel skeleton frame, the curtain wall, and the construction methods they produced. Reinforced concrete also began to play an active part; and in wood construction the balloon frame became almost universal.

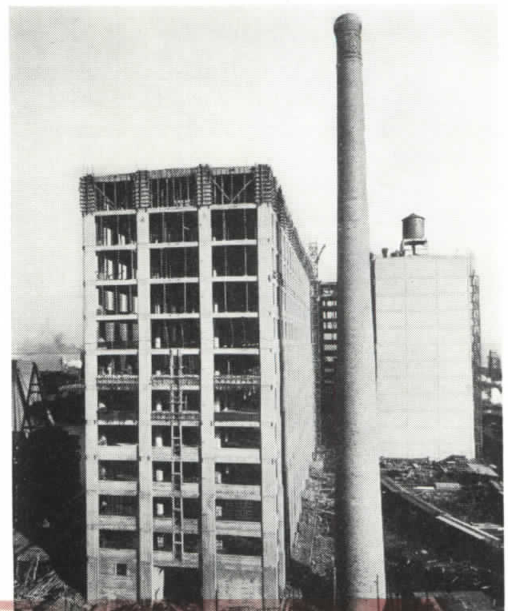
With the failure of cast-iron columns of an apartment house in 1904, that material passed out of favor for major structural members. Early structural steel columns were assemblies of channels, angles, and plates, although steel I-beams and girders had been rolled since 1885. Wide-flange sections appeared in 1906. During this first period of structural steel design in the United States the architects and the engineers solved most of the problems of the *statically determinate* steel structure.

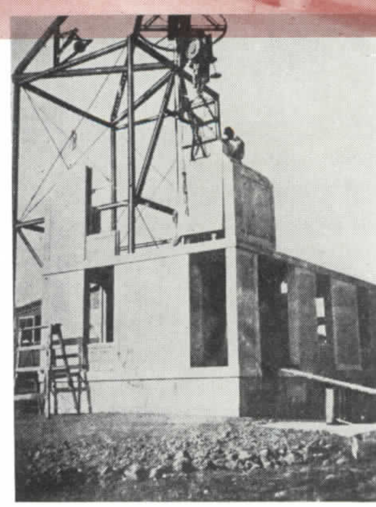
In the field of reinforced concrete there was great activity; both the Portland Cement Association and the American Concrete Institute were founded. By 1914, 925 patents had been granted for various methods of concrete construction and much of the original technical work in Europe had been absorbed here. In 1903, the Ingalls Building in Cincinnati flaunted a concrete frame 16-stories high; by 1908 complete houses and school buildings had been poured. At first the concrete frame imitated steel beam and girder design; but by the end of the period round and octagonal columns, bell caps, drop slabs, and four-way, two-way, and circumferentially reinforced floor slabs were common. Many varieties of deformed bars were designed to assist in bond; extensive water-cement ratio studies were made.

Steel construction forced attention to the practice of fireproofing. The common floor system in the early years was the flat terra cotta arch springing from the bottom flanges of steel I-beams; soon there were also concrete arches with suspended plaster ceilings, expanded metal floors, and Columbian floors with flat plate construction combined with rolled steel bars and concrete. During this era, pyramidal masonry foundations were abandoned for cantilevered concrete designs; grillage was less frequently used; and pneumatic caisson construction gained in use.

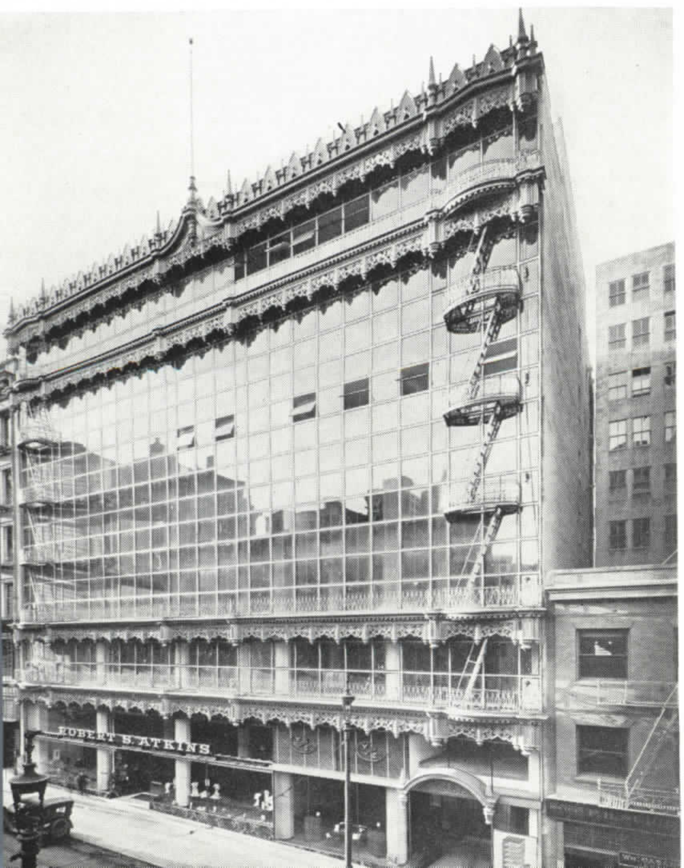
Although many buildings were so disguised by veneers and architectural symbols that they looked almost like masonry structures, there were a few daring designers who frankly revealed structure and filled the openings with glass areas; indeed, at this time began a general acceptance of larger wall openings. It was a time of bold experiment in basic structure—though the 20th century concept of the *indeterminate* type was yet to come.

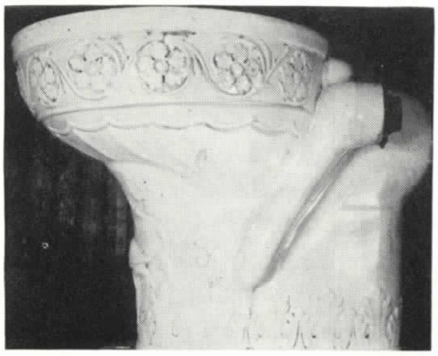
By the end of the period, designers made appropriate use of concrete. (Below: skeleton frame building by Charles Fall; flat slab construction by Lockwood, Greene & Co.; and precast floor and wall slabs at Forest Hills, Long Island, by Grosvenor Atterbury.)





Advanced for its time was the window wall, below. (Hallidie Building, San Francisco, by Willis Polk.)

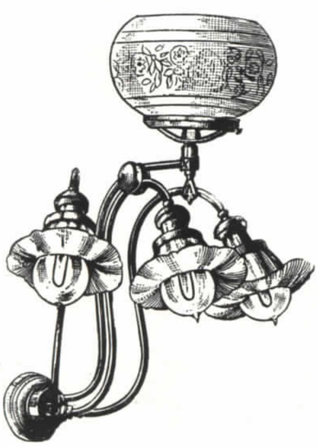




Plumbing and heating fixtures were more commonly used, but coordinated design was yet to come.

As buildings grew larger, new equipment offered solutions for vertical transportation. (Above, moving stairway installed in Pittsburgh department store.)

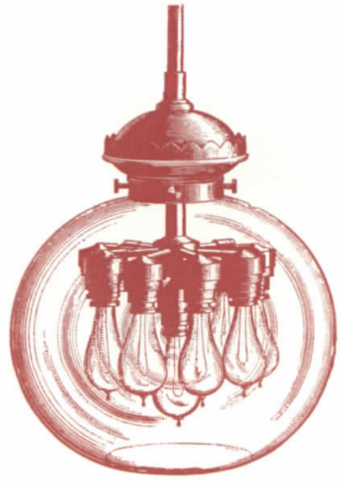
1900-1916 materials and equipment



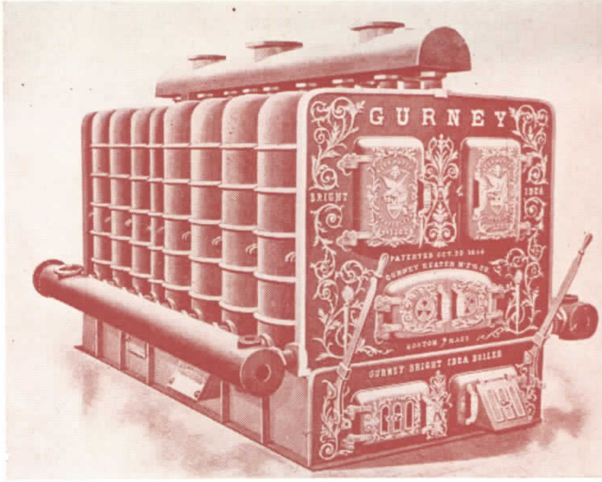
It was possible, as late as 1900, for an architect to design and engineer his structures, specify the lighting, heating, and plumbing without assistance, and be thoroughly familiar with all the building products. With the arrival of countless new materials, methods of construction, and items of equipment, the task became more complex. Among new materials, steel quickly met all the major structural requirements for stabilizing skeleton structures, also restrained all of the tensile forces acting in reinforced concrete structures. Cast iron, along with wrought iron and bronze, was now employed for elaborate ornamental work for marquees, elevator enclosures, stair panels, grillwork, and doors. Metal panels also were pressed to resemble pilasters, pediments, and quoins for the fronts of buildings, as well as unmistakably false coffered ceilings.

Exterior stone masonry was used for the double purpose of protecting and hiding the frame. Craftsmanship in brick construction achieved one of its highest standards in history. Terra cotta was a popular and dominant material, because of its lightness, ease of manufacture, wide range of color and style imitations, and its adaptability to skeleton construction methods. Partly because of the high cost of wood, one of the new structural materials

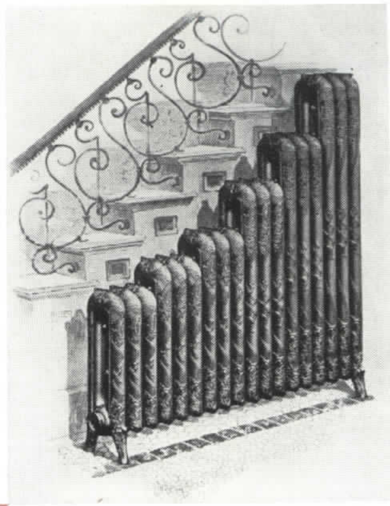
New electric lighting fixtures were adaptations of gas units, or combinations of both.

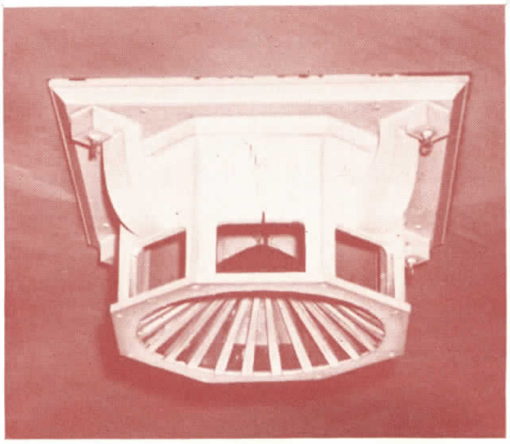


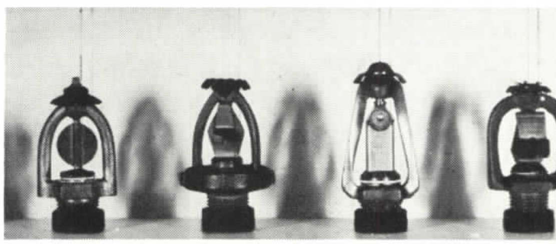
Early electric range (above); a first motor-driven washing machine and wringer (below).



Efficiency of boilers and radiators was not reduced by their ornate "architecture."



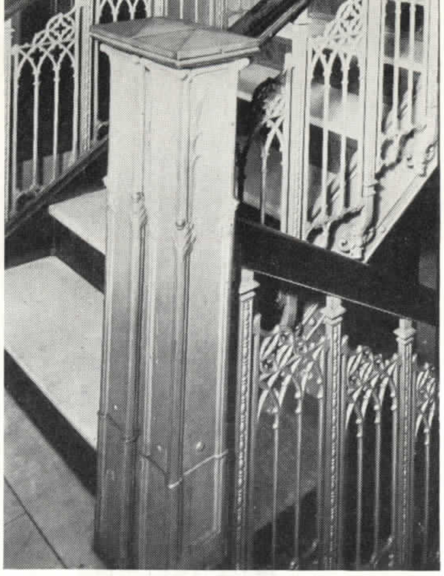




to be introduced was the cement block. In its younger days the block was cast to imitate picked stone masonry, but was not very popular.

Roofs were frequently covered with tin, corrugated iron, copper, or nickel-copper sheathing; although wood, clay, and slate shingles remained in use. Asbestos and multi-ply roofing methods were being established (Barrett began giving a 20-year surety-bond guarantee in 1916). Glass became a more important material, as efficient factory methods for continuous production were developed. Increasing cost of wood in the East caused a westward migration of the lumber industry and a standardization of building woodwork. As early as 1905 "veneered wood" produced in large sheets by the rotary cutter was used primarily for door panels and drawer

Manufacturers soon produced workable equipment such as air diffusers, sprinklers, valves, and other control items.



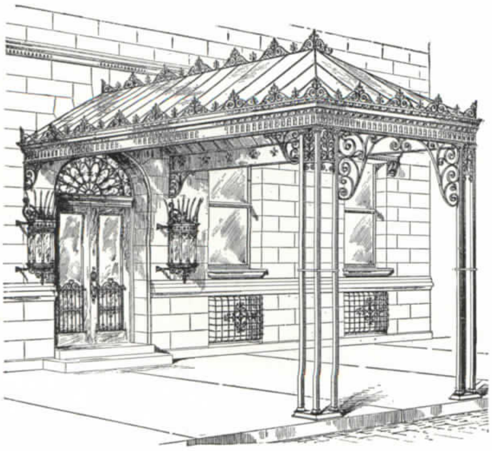
Architectural cast aluminum was introduced at this time, while pressed metal ceilings continued to be used.

bottoms. Kiln drying of lumber was introduced in 1910. Hardwood flooring became popular. Protection methods moved toward stabilization at the end of the period, when prepared paints began to replace the painters' own mixes. Most builders' hardware exhibited the typical décor of the period; but one contribution to advance came when the panic bolt was invented, as a result of disastrous fires.

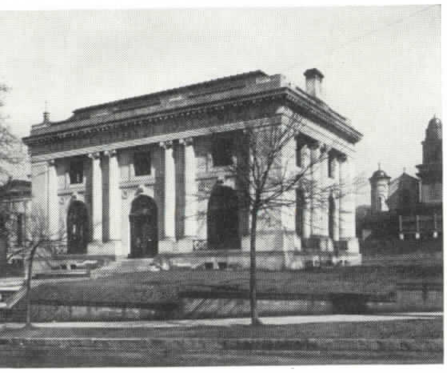
Early in the century, incandescent lighting challenged and defeated the gaslight as the means of artificial illumination. Along with auxiliary heating units, one and two pipe steam and hot water systems were installed; pipes were relatively large and temperatures relatively low, despite the generous size of the first florid, cast-iron radiators. Gravity hot-air systems gained the advantage of thermostatic control; the automatic stoker made its appearance; gas- and oil-fired boilers were in use by 1916. The first steps in the conditioning of air were made in industrial plants; further experiments occurred in office buildings during the period.

The science of sanitary plumbing progressed rapidly. Bathtubs emerged from their Victorian disguises, and overhead water chambers were lowered to toilet-fixture level. As the provision of hot and cold running water became more general, water closets, once the privilege of the few, found their way even into rural middle-class homes. The Imhoff tank and the activated sludge methods were developed for the treatment of sewage.

The architects and engineers of the period could not complain about the tools with which they might design and build. Technology and industrial production produced for them the greatest array of new materials and products that had ever been offered a group of designers.



Cast iron and wrought iron combined possibilities of structure and embellishment (far left). Terra cotta was a versatile covering material much used at the time (left).



Carnegie libraries were frequent commissions; theaters were an active building type. (Montgomery, Ala., Library; New Theater, New York, by Carrere & Hastings.)

The downtown department store introduced new planning problems. (Carson Pirie Scott, Chicago, by Louis Sullivan.)

1900-1916 architectural practice

Provided with new construction methods and materials that made higher and wider structures possible, patronized by princes of wealth or ambitious heads of business ventures expanding to a size heretofore unknown, and challenged by strange design problems in the creation of building types that were as new as the century, the architects soon brought to the American scene an imposing series of the biggest buildings yet.

It was in this period that the first of the great railroad stations were completed—Pennsylvania and Grand Central terminals in New York, the Union Station in Washington, Northwestern Station in Chicago. There was in the design of these buildings a really adventurous sort of engineering, successfully hidden in most instances. There was also, in planning, a careful study of functional needs and social preferences of the time. Although schools and hospitals that were done later in the period were not buildings that would satisfy today's experts, they had advanced far from the bleak concepts of institutions that obtained at the beginning of the century. For instance, remember that little was known in 1901 of nursing care to avoid infection, yet some surprisingly well-planned hospitals had emerged by 1916. A.D.F. Hamlin also had justification for writing the year before that "a new architecture of school buildings has been developed, based on scientific principles and the logical use of plan and structure." In building types as new as the great metropolitan department store, the elevator-served steel-framed skyscraper, and the large commercial hotel, the architect faced new design challenges—faced them bravely, in structure and plan.

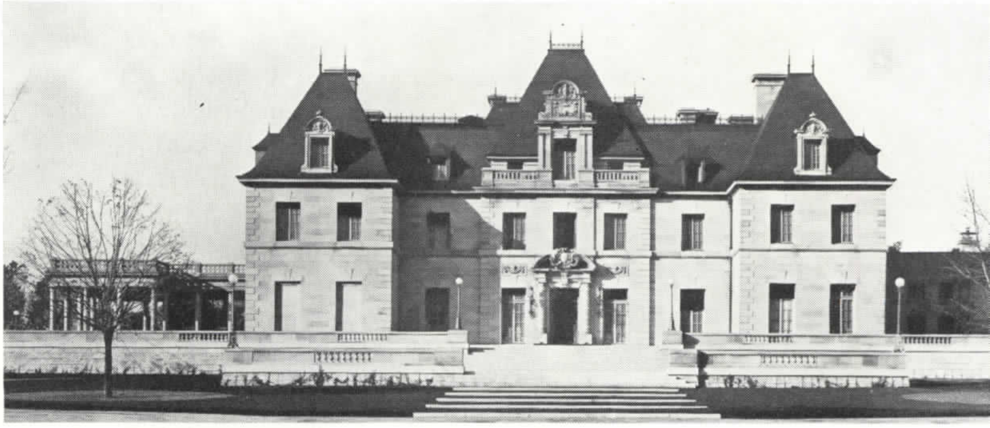
The Russell Sage Foundation sponsored the Long Island community of Forest Hills, a project for working people, and Grosvenor Atterbury,

The formal city center was a harbinger of city planning. (Springfield, Mass., Civic Center, by Pell & Corbett.)

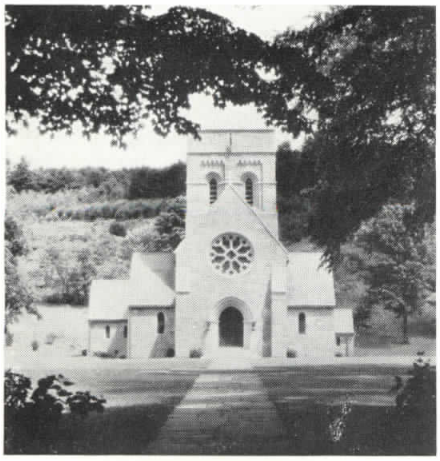
Bankers commissioned temples; school boards preferred castles. (Chicago National Bank by Jenney & Mundie; McKinley High School, St. Louis, by William B. Ittner.)

Luxury apartment houses and huge commercial hotels were new building types. (Left, 998 Fifth Ave., New York, by McKim, Mead & White; left, below, Biltmore Hotel, New York, by John McEntee Bowman.)

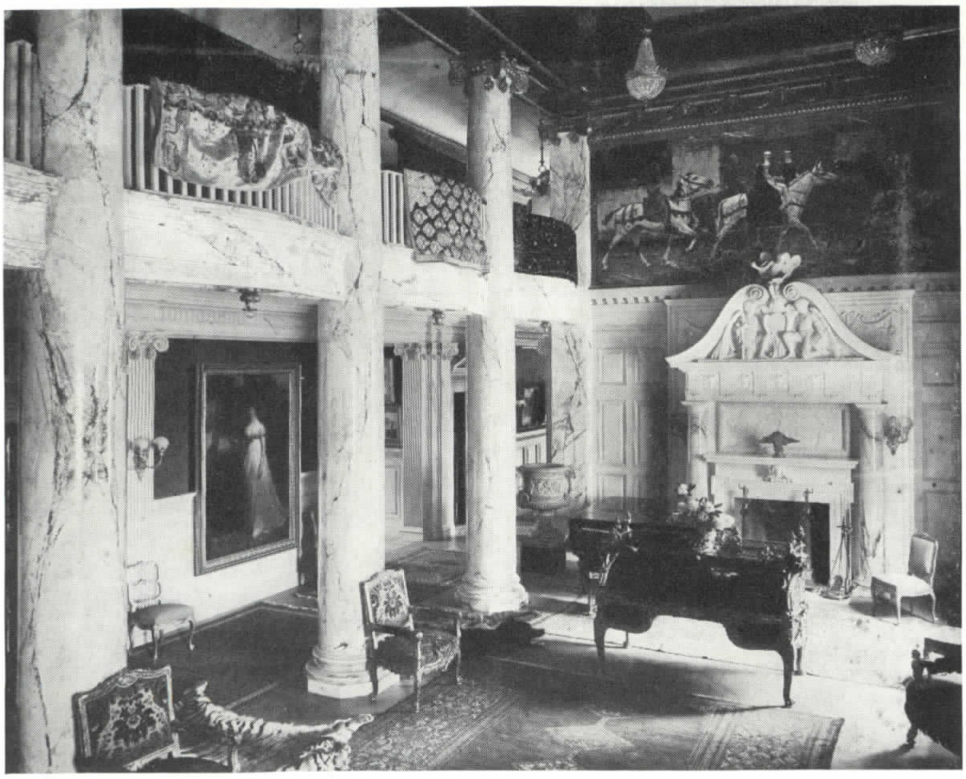
Residential commissions ranged from suburban cottages to stately mansions. (Right, *Ladies' Home Journal* prize-winning $3000 house by William G. Rantoul; below, Clarence Mackay mansion, Roslyn, Long Island, by McKim, Mead & White.)



the architect, merits double credit for development of his schemes in pleasant relationship to the landscape and also for introduction of a practical system of precast floor and wall slabs. Then, too, such moves toward the "city beautiful" as the Civic Center in Springfield, Massachusetts, gave hints of better things to come and indicated a desire to control in some design discipline the haphazard city and suburban growth. There were a few "garden cities" but none cared to look at the drab company towns that began to appear in most of the mushrooming industrial centers or at the awkward suburban houses that the architects seldom touched. Trolleys, subways, elevated railways, automobiles, and ever-faster trains fed city



Some distinguished architects were busy with church design. (All Saints', Peterborough, N.H., by Cram & Ferguson.)



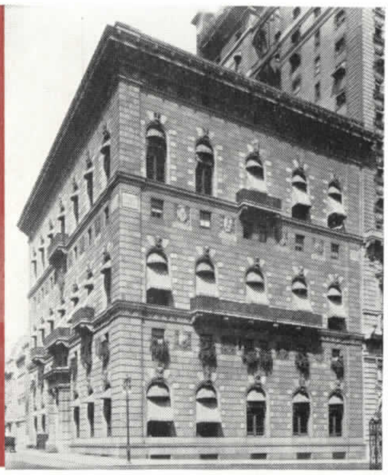
Commissions for grandiose mansions overshadowed the problem of housing the average citizen. (Above, left, George Gould mansion, Lakewood, N.J.; Clark mansion, New York, by Lord, Hewlett & Hull; right, farmhouse, Grand Traverse County, Mich., *anon.*)

congestion of the most uncontrolled sort; the symbol was the skyscraper, while the escape was the prideful garden suburb.

Thus during this first period the practice of architecture—as distinguished from the design results, which will be considered on the following two pages—moved forward rather rapidly. New building types and whole new fields of practice emerged and the profession began to grapple with them. If the results were spotty and confused, it was doubtless because the times were confused. Basic dichotomy of the rapid technological advance and the sweeping eagerness for facades of success hardly could have produced much beyond the *melange* that resulted.

Assembly-line production in fast-growing industries called for a new type of expanded plant. Most professionals did not consider the factory architecture. (Ford Motor Co., Highland Park, Mich., by Albert Kahn.)

Most architects were content with traditional styles and even stretched them to cover new structural forms. (San Francisco City Hall by Bakewell and Brown; Singer Building, New York, by Ernest Flagg; St. Vincent Ferrer Church, New York, by Goodhue and Chisling.)



Best firms were capable of tasteful, accurate eclecticism. (Left, Lincoln Memorial, Washington, by Henry Bacon; right, University Club, New York, by McKim, Mead & White.)

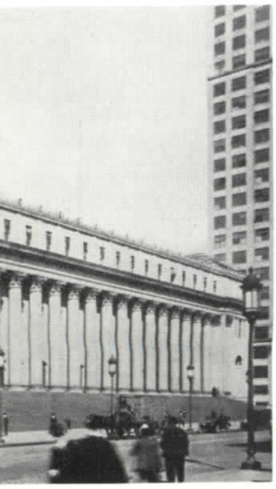
Meantime, in California, work by Greene & Greene (above), Maybeck, and others reflected original design thinking.

At the turn of the Century, the vigorous Chicago work of Holabird & Roche (three buildings below) and Sullivan (facade of building at right) was continuing. By the end of this period, it was all but forgotten.

1900-1916 design result

Pausing on the eve of World War I to review the first design period of the century, A.D.F. Hamlin wrote in retrospect: "During the last 15 years there has been witnessed the growth of a very interesting phase of eclecticism in style, by which certain classes of buildings are habitually treated in various phases of neo-Classic design, others in free versions of the Gothic. Even the Greek Doric appears . . . Underneath the Gothic, Greek and Renaissance details and through them all, one may discern the real American architecture." Whereas the Classic Orders certainly denoted the most popular of the imported styles, there was indeed a parallel devotion to every other namable tradition, as well as the Beaux Arts variations. A rash of scholarly Gothic churches appeared.

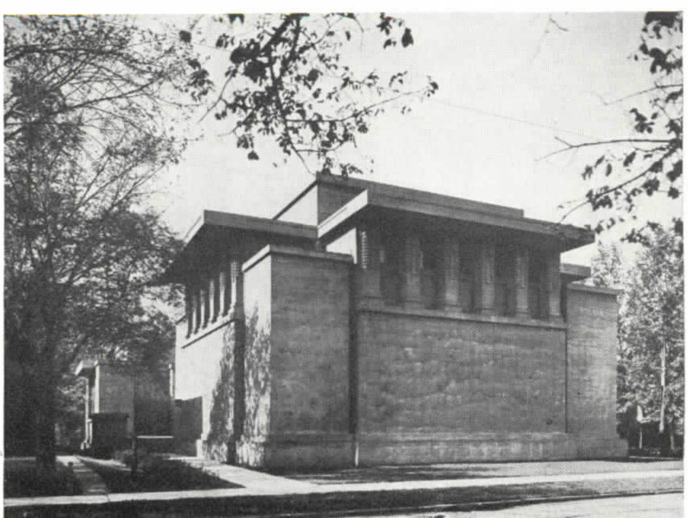
On the Woolworth Building, Gothic detail molded in terra cotta was used, in the active search for an appropriate enclosure for the new steel-framed skyscraper. On other skyscrapers the effort was not so laudable or so successful. One observant historian has pointed out that the tower built for the Boston Custom House boasts among its storied architectural fragments not only a base, a shaft, and a number of architraves; but also a Greek Temple, a tall office building, a model for a national bank, a large parlor-mantel clock, a summer palace for a middle-eastern monarch, and an elongated Egyptian pyramid. Perhaps the outstanding fault with the design of the time, as we look back on it, was the lack of integration between purpose and plan of the buildings, and their final expression. Well-conceived garden communities were made to resemble romantic English favorites. The move toward orderly city centers fell into groupings of French Renaissance versions of Roman temples.

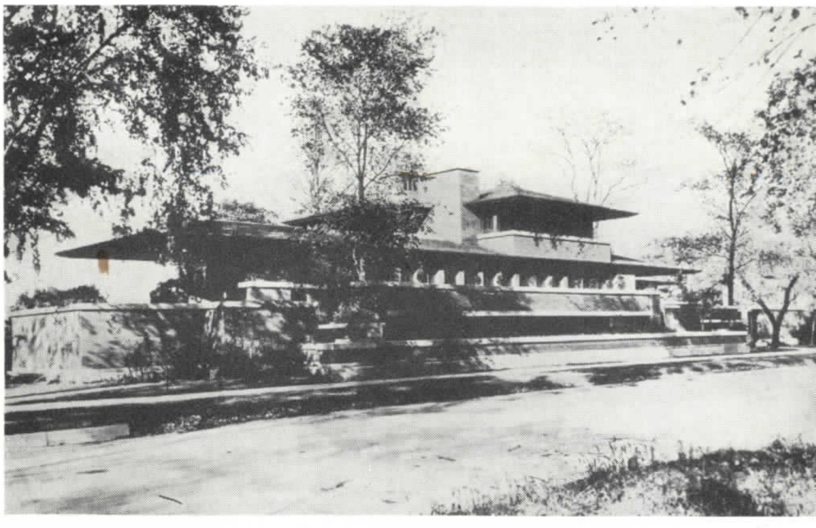


Imperial colonnades were sometimes two blocks long. (General Post Office, New York, by McKim, Mead & White.)

Yet through the period ran a footnote of experiment and accomplishment. Not only were some designers making an effort to find an appropriate style by adaptation and conversion; others were searching for beauty through the imaginative expression of plan, structure, and materials. As one surveys the whole product of the times, it seems as though the work of the earlier native innovators had been completely obliterated. And yet, as Sullivan's Transportation Building struck a minor note in the Columbian Exposition, noticed and admired principally by visitors from abroad; so the work of Wright, Greene & Greene, Maybeck (Sullivan, too, for a while), and some others, persisted, along with the more triumphant eclecticism.

Wright was first to cast a concrete building complete, ornament and all (Unity Temple, Oak Park, Ill.); the famous Robie house (Chicago) demonstrated his "organic" concept for living.





Veterans of World War I left their tents to face a housing shortage which stimulated haphazard, speculative developments, as in Los Angeles (above).

1917-1930 the scene

World War I . . .The Roaring Twenties . . . The Speculative Splurge . . . Radio . . . Al Smith and the Empire State Building . . . The Flapper and John Held, Jr. . . . Lindbergh . . . The Wall Street Crash of '29.

The "war to end war" marked a turning point. To finance the cost, income taxes went up to 65% for the highest bracket and excess profits taxes were levied. Government-financed war housing for shipyard workers was quickly sold to private interests. Bankers channeled billions of American dollars into rebuilding Germany, as the eastern bulwark against the new-risen Soviets. Wilson's social concepts were brushed aside. The United States hastily abandoned Europe and the infant League of Nations. Everyone soon forgot that World War I had intervened to save a deteriorating economic situation; and the postwar boom which held off the *reckoning* for another 10 years was a grand inflationary splurge.

Diverse ingredients made up the beginning of the boom period. Borah and Lodge effectively fought the ideal of international cooperation; and Harding and Coolidge won the country's top offices, against Cox and Franklin D. Roosevelt. Prohibition added bootleg zest to the economic mulligatawney. "Normalcy" produced higher tariffs.

Coolidge "prosperity" won in 1924. Al Smith, who favored repeal of prohibition, lost in 1928 to Hoover, rugged individualist, who pronounced it a "noble experiment." There were 10 million radios in U.S. homes; 50

important events

1917: U.S. enters World War.
1918: World War I Armistice; 75,000 U.S. lives lost. Republican Congress elected. A.F.L. membership: 2,725,000. First air mail route.
1919: Dempsey wins heavyweight title from Willard. Versailles Treaty. First transatlantic, non-stop flight. Suffrage for women ratified.
1920: U.S. population: 105,710,620. U.S. Senate rejects League of Nations Covenant by 8 votes. First commercial radio broadcast. Eighteenth Amendment goes into effect.
1921: Harding "normalcy." Republican tariff law; agrarian laments.
1922: "Abie's Irish Rose" opened. Eskimo pie patented. Isolation of insulin for medical use. Schindler introduces "space architecture" in California—cellarless; floor extending to garden; wall-height glass sliding doors; shed roof; clerestory windows; movable partitions.
1923: Harding dies; Coolidge becomes President. First practical commercial demonstration of television photograph transmission.
1924: First round-the-world flight. First Chrysler car. Dynamic loudspeaker. Vitamin D by irradiation.
1925: Nurmi runs 2 miles in 9 minutes. Paris Exposition.
1926: Gertrude Ederle, first woman to swim the English Channel. Gropius Bauhaus buildings. First talking-picture shorts shown (N.Y.).
1927: Lindbergh's non-stop flight, New York to Paris.
1928: "I do not choose to run," says Coolidge. Hoover elected. Boulder Canyon Project Act. First all-talking picture: "Lights of New York." Teletype.
1929: Stock market crash; financial panic.
1930: Telephones: 20,201,000. Bobby Jones wins 4 golf championships. First planetarium: Adler, Chicago. First windowless factory (Simonds Saw, Fitchburg, Mass.). Democratic majority in the House. Nylon.

Competitive enterprise pushed skyscrapers ever higher in already congested cities. (Left, McGraw-Hill Building, New York, by Hood & Fouilhoux; right, Chrysler Building, New York, by William Van Alen.)

Mass auto production caused increasing traffic congestion. Chicago (Michigan Boulevard, above), like other cities, sought new solutions.

Some fled to suburban comfort (above); some few war workers lived in well-planned communities (right, above); but the average man put up with dull builders' subdivisions (right).

million Americans went to the movies every week; installment buying became a habit. National income was $65 billion in 1922, $76 billion in 1923, $86 billion in 1925, and $89 billion in 1929. The stock market rocketed. Those who thought they could afford it moved from crowded cities to make first payments in restricted suburbs.

In industrial economics, large corporations formed in prewar years passed in many instances to the control of promoters and bankers. Then, just as smaller corporations had merged into larger ones in the first part of the century, the banks began to merge. Culmination was the largest merger of all, in 1931, when Chase National became the nation's greatest money power, with resources of $2½ billions. During this same period the Reconstruction Finance Corporation was set up; the government sponsored a housing survey; and all of the social reforms introduced since 1900 were continued and in some cases accelerated; though both Coolidge and Hoover vetoed Congressional bills sponsoring government ownership of the Muscle Shoals (later TVA) development.

During the race for wealth and escape from realities, it was overlooked that we had two million unemployed through most of the '20s; much of Europe was in the financial dumps; our farming was not prosperous; technological unemployment was worrying both labor and industry. In the fall of 1929 the stock market collapsed. Around the corner where prosperity was said to be lurking—were 12,000,000 unemployed.

Hoovervilles appeared on the American landscape. Williamsburg, Va., was restored to show how our forefathers lived.

technical developments

1917: First electric refrigerators introduced. Continuous method of drawing sheet glass developed. First bridge to employ silicon steel at Metropolis, Illinois.

1918: First unit heater marketed. Self-regulating electric time system introduced.

1919: Casein plastics.

1920: Centrifugally-cast-iron pipe and cement-lined pipe on the market.

1921: Air filters developed and marketed in conjunction with air conditioning. American Institute of Steel Construction founded.

1922: Rigid frame concrete spans used for Westchester County, New York, bridges. Invention of small hermetically sealed absorption refrigeration unit making household gas refrigeration commercially possible.

1923: First electric tube neon advertising sign.

1924: Development of hardboard. First large use of water-cement ratio in concrete design of Black Canyon Dam, Idaho. Diesel-powered excavators first employed. Cellophane produced.

1925: First inside-frosted lamp. Standardization of lamps facilitating mass production. First large zeolite water-softening plant in operation at Pittsburgh. Development of orifice control of steam supply to radiators. Dry ice used commercially for the refrigeration of ice cream.

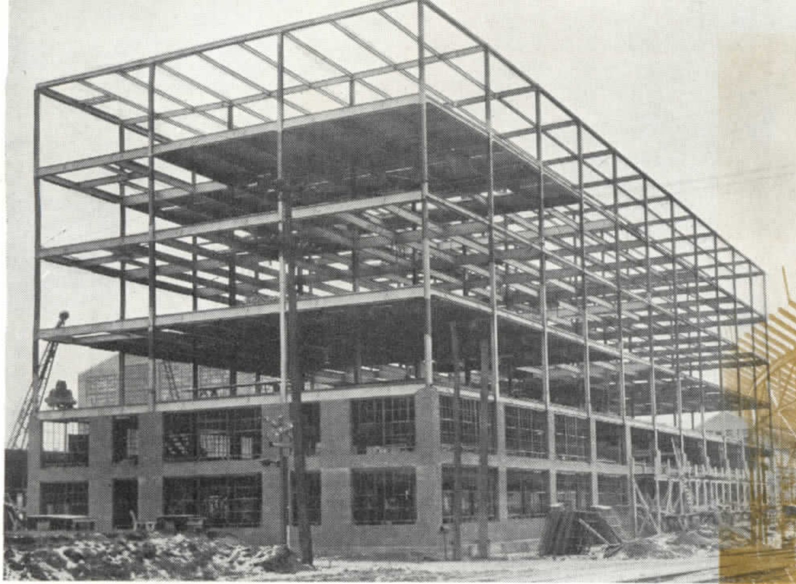
1926: Structural Steel Welding Committee of American Bureau of Welding organized. Bay Crossing Aqueduct brings water to San Francisco peninsula. Development of continuous strip mill steel plate.

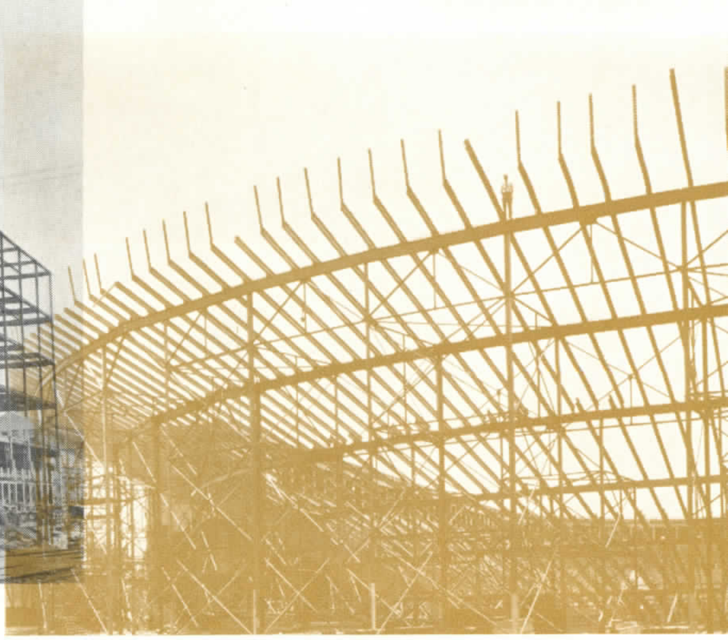
1927: Safety glass brought to general market. Holland Tunnel, New York, completed, ventilated by mechanical means.

1928: Emulsified asphalt stabilization used for first time on California road.

1929: Successive approximations for design of indeterminant structures introduced by Hardy Cross.

1930: Factory-made shower cabinets reach market. Automatic clothes dryers available. Freon, non-toxic refrigerant, commercially marketed. Continuous working surfaces in kitchens.





Among the first large all-welded steel buildings was a Westinghouse factory at Sharon, Pa.

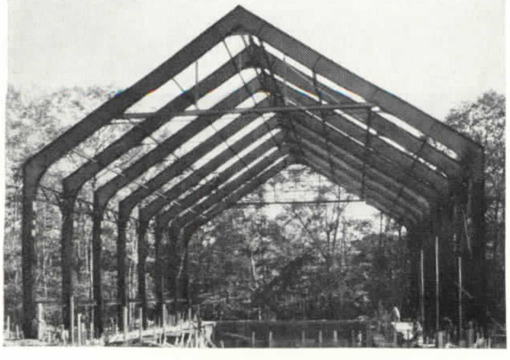
1917-1930 construction methods

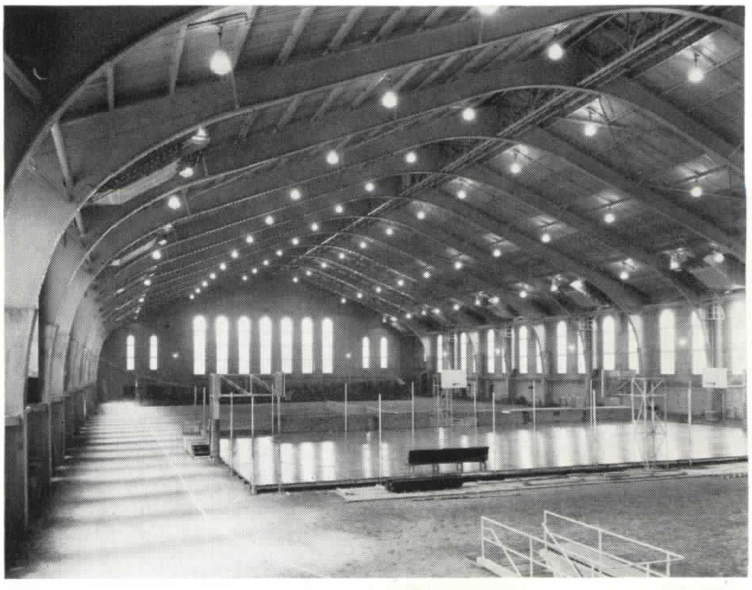
After World War I there was more evident exploitation of the vast amount of technical knowledge developed during the preceding 20 years. When the Empire State Building was carried to a height of 1248 feet, the principal construction methods employed to accomplish the feat were not new. Again it was crowed that a top height had been reached; although technical knowledge of the time was competent to erect structures twice as high. Only business frenzy and land-abuse spawned similar buildings elsewhere.

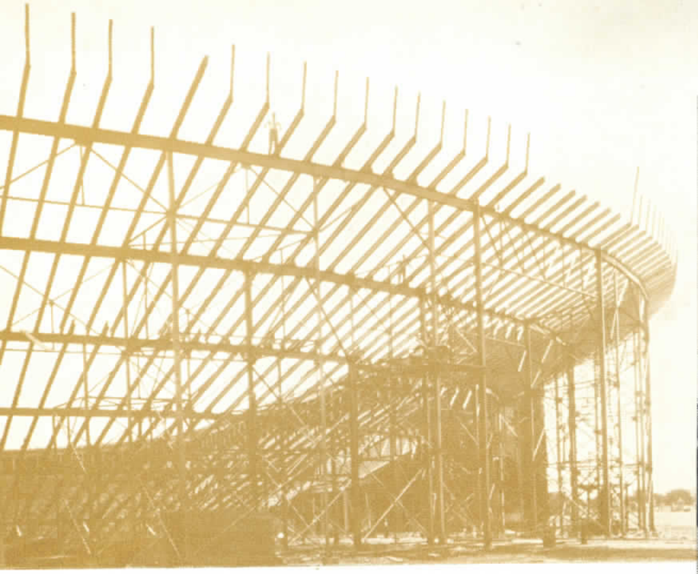
Having solved more than enough structural problems of static height, the designers turned to the questions of large span and continuity of stress. In the first years of the century, structures were spanned by various forms of truss construction; by steel arches springing like groin vaults from composite steel columns, by masonry and concrete domes, and (in a few cases) by high concrete arches. These were primarily developments of bridge engineering. In the continuing search for lighter building materials, reduced construction costs, and a more efficient use of space and volume, more daring methods and uses of materials were briskly explored. Great advances were now made in the solution of the *indeterminate* structure: in advanced studies of the rigid frame and of continuity.

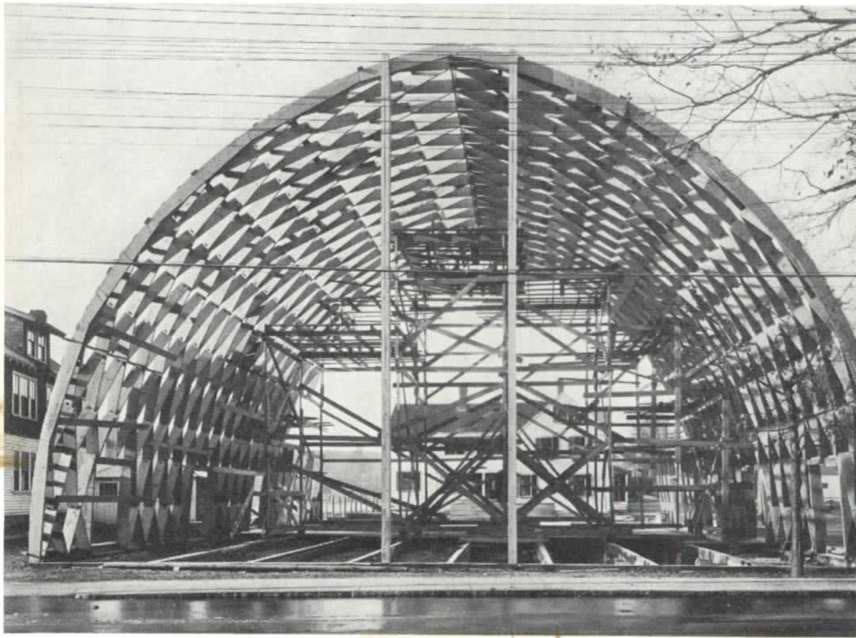
Assembly-line production methods in the output of building products, as in other fields of mass manufacture, spurred design advances. Many of

Rigid steel frames provided uninterrupted enclosed space. Earliest examples included an indoor tennis court on the Marshall Field Estate, Long Island (below, by Warren & Wetmore) and a field house for the University of Chicago (right, by Holabird & Root).









Growth of spectator sports brought new problems of framing and spanning. (Above, steel framing for addition to Harvard Stadium; right, wood lamella roof for recreation hall at Uxbridge, Mass.)

the first applications of new principles were made in minor structures; and the growing interest in spectator sports, requiring buildings with great clear spans, brought about many of the first studies. For instance, a relatively small enclosed tennis court provided an early example, in this period, of riveted rigid steel bents; while later in the same decade appeared a large university field house with a welded and riveted rigid frame construction spanning 155 feet.

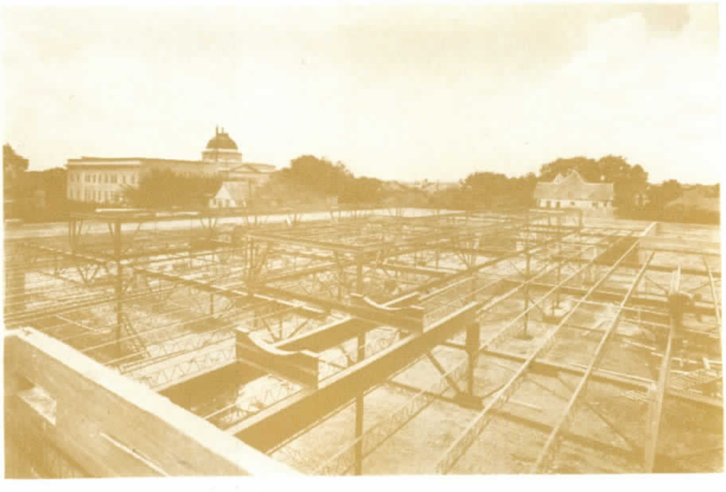
Materials and techniques, as well as basic design knowledge, showed advance during the '20s. Steel frames became lighter; complete facility in curtain wall construction was developed. Open-web joists and lightweight pressed-steel beams were widely used. Great strides were made in the structural design of industrial buildings: monitors became much lighter; window openings were converted into virtually continuous strips; the distances between column centers in factory bays spread considerably wider. Lozenge-patterned lamella arch construction, a development of wood design originating in Europe during the early '20s, was used frequently by the end of the period, to cover such structures as garages, recreational buildings, and hangars.

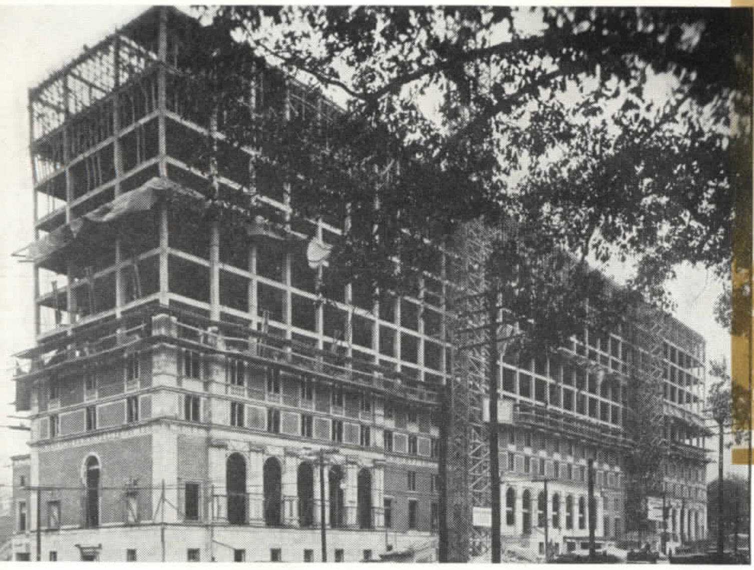
At that time, welding bid for a major role in construction. The earlier technological difficulties with the weld metal, which had held up the process

Builders were able to erect with more speed and efficiency, as curtain-wall techniques were refined.

Continuous monitor lighting in vast industrial areas required imaginative structural solutions. (Factory building, Detroit, by Albert Kahn.)

Joists with steel-bar webs were used in place of rolled beams for lighter structures.



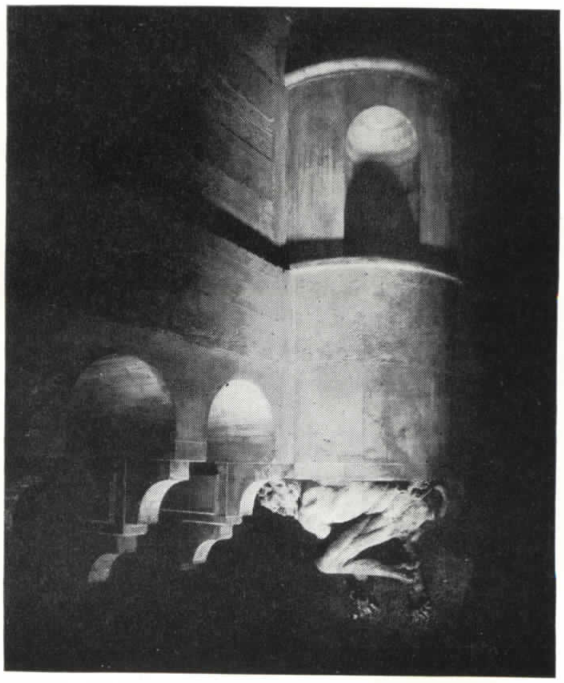


Unique possibilities of concrete were seldom exploited. Advanced concrete frames were generally covered by curtain walls. (Far left, Atlanta Biltmore Hotel by Schultze & Weaver.) Concrete was also employed to imitate load-bearing masonry. (Left, First Baptist Church, Los Angeles, by Allison & Allison.)

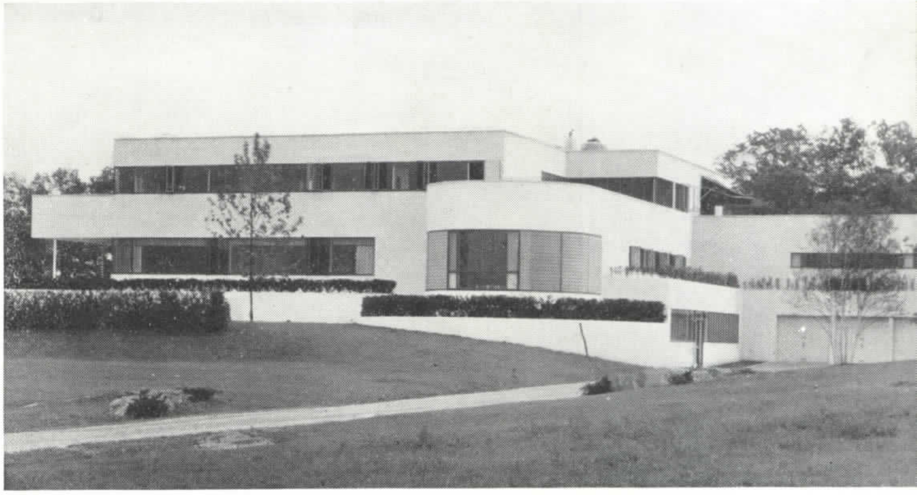
for 20 years, were solved. But the next step was to overcome the lag among designers, who for some time evaluated welds as replacements for rivets and failed to take advantage of the continuity that welding can give to a structure. The acceptance of welding under existing building codes also was slow, but it gradually became a recognized method. By 1927, structures commercially welded in all their parts had been erected.

Concrete designers, as they made refinements in the use of that material, also extended their thinking to the greater possibilities of continuous framing. Although the appearance of haunched sections introduced a more truthful expression of the forces taking place within concrete girders and although the concrete skeleton became far more slender and graceful; frames were still usually covered with veneers which reflected an esthetic preference and also an incomplete confidence in the technical knowledge for obtaining durable surfaces. This despite the fact that in some parts of the country—notably the West—cast-in-place concrete detail, in imitation of elements as remote as Gothic masonry, was extremely popular.

Concrete was also cast in place, in plaster molds.

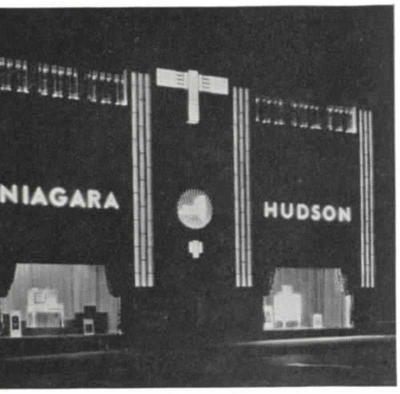


Plastic nature of concrete led to fanciful experiments relating decoration and structure. (Church of the Precious Blood, Los Angeles, by Newton & Murray.)



To utilize natural lighting, glass appeared in larger areas (left, Oak Lane School by Howe & Lescaze) and in block form (above, house by Edward D. Stone).

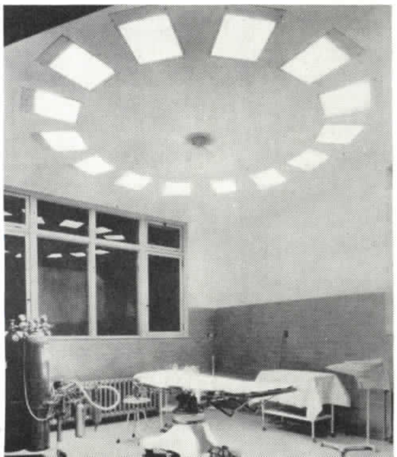
1917-1930 materials and equipment

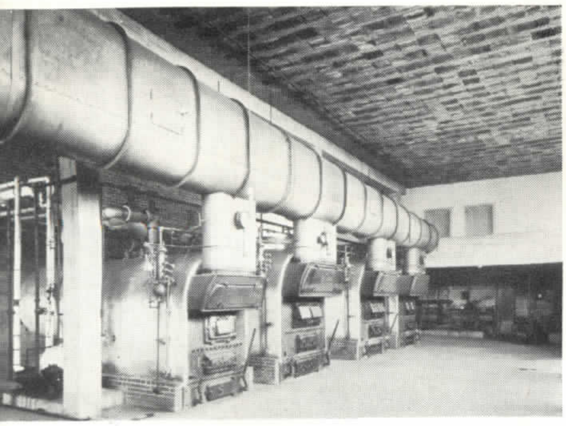


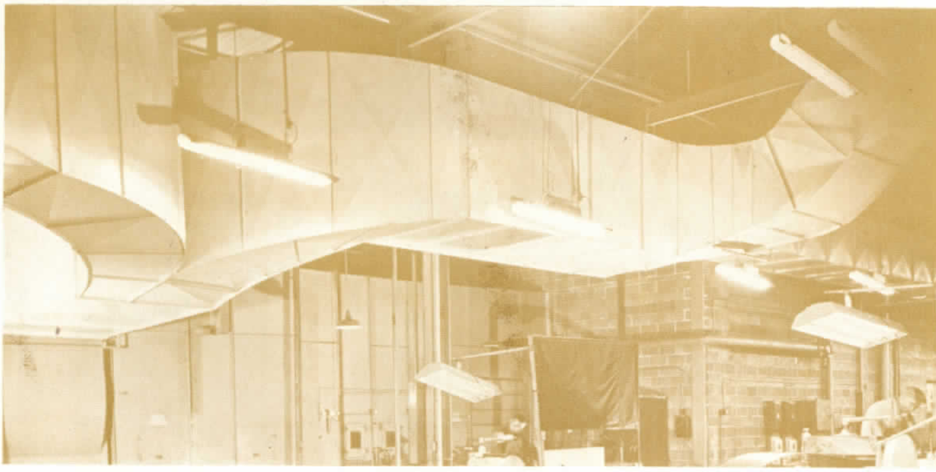
The great wealth of technical knowledge shared by the inventor and the manufacturer, the development of distribution and sales systems, and the increased interest in modern technology among architects and engineers, all were clearly reflected in the availability and use of new materials and equipment items during this period. It is important to realize that the evolution was not merely one of taste; almost uniformly the new products contributed to man's leisure and decreased his labor. This was the time of the introduction of the electric refrigerator, the automatic clothes dryer, remote-control door operators, intercommunication systems, elevator signal controls, etc.

As in the previous period, not all new materials were at once accepted. Stainless steel was introduced, primarily as a non-structural material (and its producers were required to furnish 20-year guarantees). Cast aluminum, used earlier in interiors, at this time became popular as a spandrel covering.

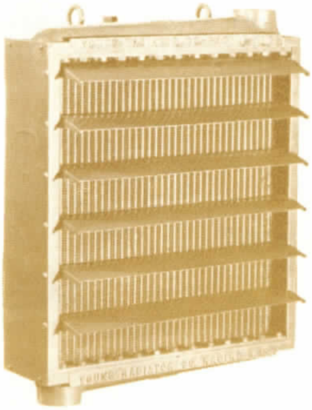
Lighting moved toward closer integration with function and with other design elements. (Below, prismatic lenses in operating room; right, coffers combining light and air control in hotel dining room.)







Heating and air conditioning were increased in scale and precision. (Above, bank of boilers; right, air-conditioning ducts in first windowless factory.)



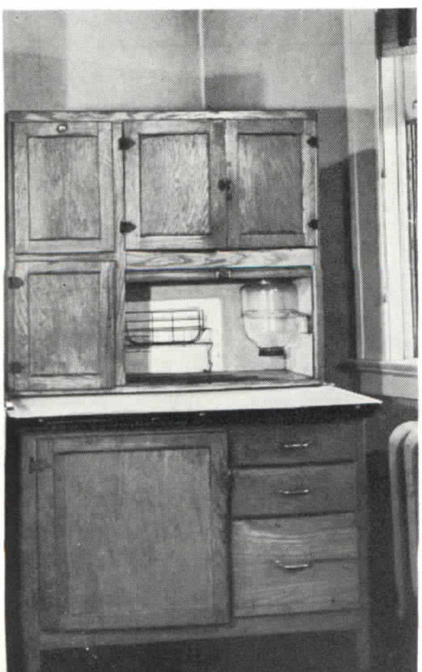
More precise regulators and new unit heaters assisted environmental control.

1917-1930

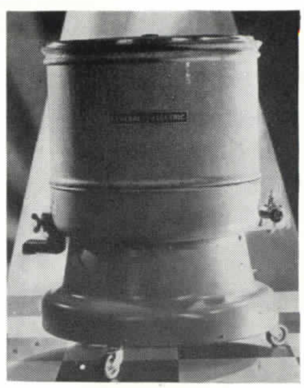
There was activity in the development of wood products and by-products: such materials as wood-fiber insulation, hardboard, extremely thin veneers, and block flooring appeared on the market. Plywood, strongly established as an important building material by its service in World War I, enjoyed a steady increase in acceptance. Better adhesives (protein glue was used by 1927) and better protectors and repellents were welcome aids.

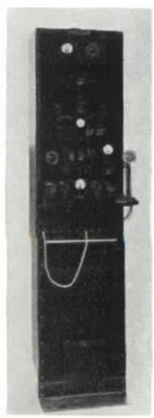
The use of insulation, particularly in residences, spread rapidly during this period as studies of its advantages were published. Vermiculite, the result of expansion of "fool's gold", was marketed as an insulating material as well as a lightweight aggregate. Perlite, too, was discovered about this time, although it was not developed commercially until later. Blast-furnace slag was found to make a superior rock wool. At the same time, several large manufacturers pioneered in acoustical insulation materials, as more scientific attention was directed to this problem.

Asphalt tile and rubber tile were manufactured commercially in 1922, but architects were at first reluctant to adopt the new resilient flooring products. In 1920, broadloom carpet had been introduced and many of the boom-time hotels used unbroken expanses of carpet as flooring material. Two important steps were taken in the design of builders' hardware: the key-in-knob lock and the hold-open type of door closer.

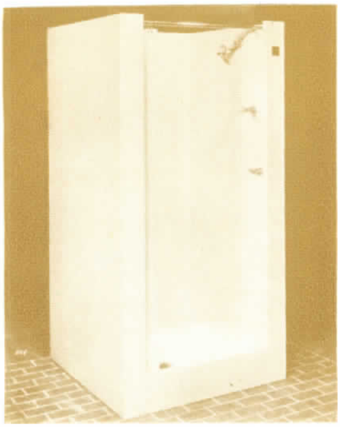


Household tasks were simplified by prefabricated kitchen cabinets, electric refrigerators, and better electric washing machines.





Early intercommunication systems assisted administrative efficiency.



Movable metal partitions found various uses. Prefabricated shower stall and built-in tub were new bathroom features.

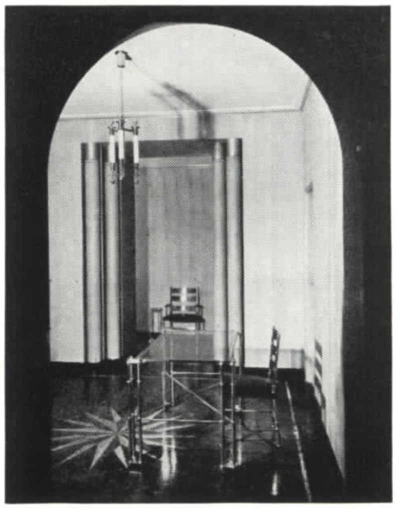
materials and equipment

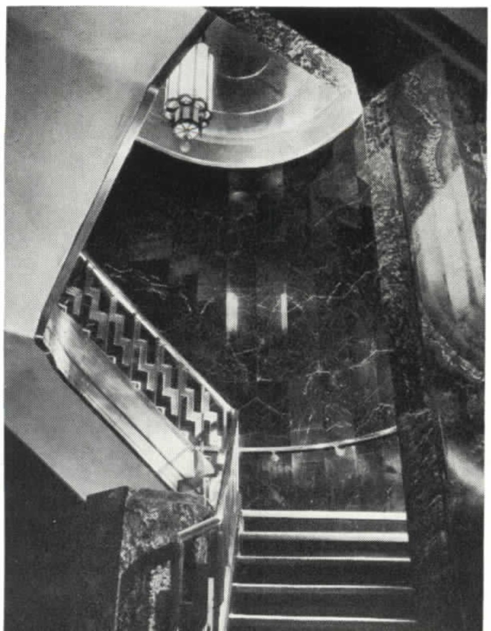
With the increasing demand for larger window areas, designers began to exploit more of the possibilities of natural lighting. The quality of sheet and plate glass improved and, toward the end of the period, glass blocks were introduced. In artificial lighting, there was study of concealed lighting of various sorts; some fixtures were manufactured which advanced toward diffusion principles. The first neon lights and the first frosted incandescent lamps were produced in the '20s.

Advances were similarly made in the clearer analysis of heating problems and the development of equipment to solve them. Forced hot-water circulation was developed around the middle '20s; and as the water later was circulated more rapidly and at higher temperatures, pipes became smaller. The first unit heater was invented in 1918 and its popularity rose as gas rates began to fall shortly after. The ceiling-suspended discharge unit was invented in 1928.

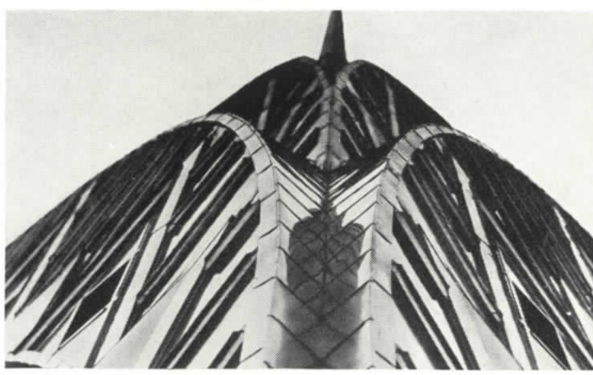
Materials with which to build and finish structures, equipment with which to control the environment, thus were becoming available in ever-increasing quantity. If their use was often hesitant and sometimes downright reluctant, it is understandable when one remembers that few of the new products had then been tested. In fact, since that time, many of them *have* been radically altered and improved.

Paper-thin wood veneers provided economy and rich, flush surfaces.





Designers found fresh uses for established materials, such as marble and aluminum (left). Stainless steel moved out of the cutlery shop to crown the Chrysler Building (below).



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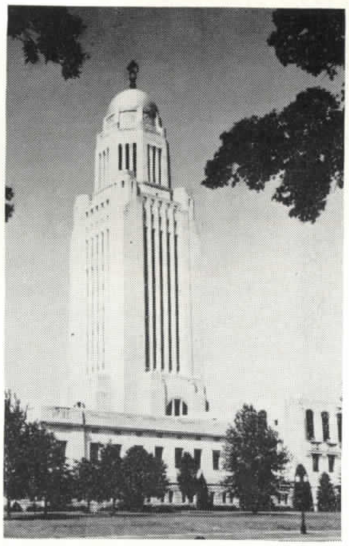

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Towers everywhere: City Hall by Austin; Parkinson; Martin 1.
State Capitol by Goodhue 2.
Department Store by Parkinsons 3.
University by Klauder 4.
Opera Building by Graham, Anderson, Probst & White 5.
Hotel by Schultze & Weaver 6.
Office Building by Shreve, Lamb & Harmon 7.

1917-1930 architectural practice

6

Lush was the word for it! The tallest and biggest buildings the world had ever seen were crowded onto lots subdivided years before for city houses. The skyscraper concept rose to become a national fetish. Clients demanded towers on every sort of building, whether the site was limited or vast; values high or low. City halls, department stores, hotels, office buildings, universities, and state capitols soared upward to tickle the sky, amaze the populace, and keep the architects and engineers busier than they'd ever been before.

Not only was there an immense *amount* of building, but also it was done with record-breaking speed. Of the building types that had flourished in the earlier period of the century, the post-war boom activity produced ever bigger—and in many cases better—versions. In a few instances, series of buildings were designed to harmonize in scale and color, as on Park Avenue above Grand Central Station. In addition, a whole new series of building types appeared, offspring of social demand and profitable enterprise. The movies prospered mightily and learned to talk. Designers were called on to provide marble "palaces" everywhere for the throngs of devotees. Concentration of population and increasing tax funds made possible

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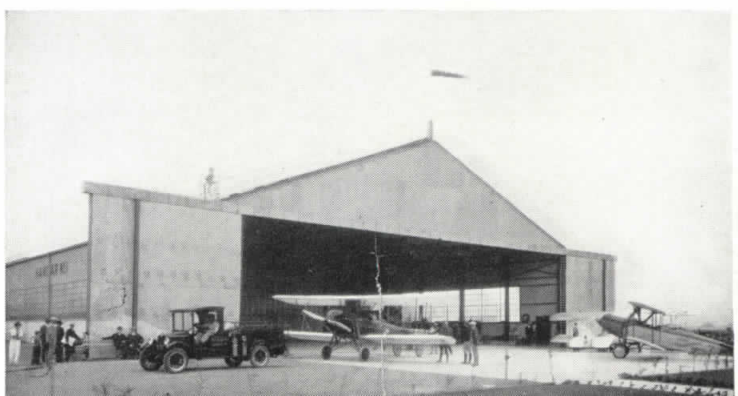
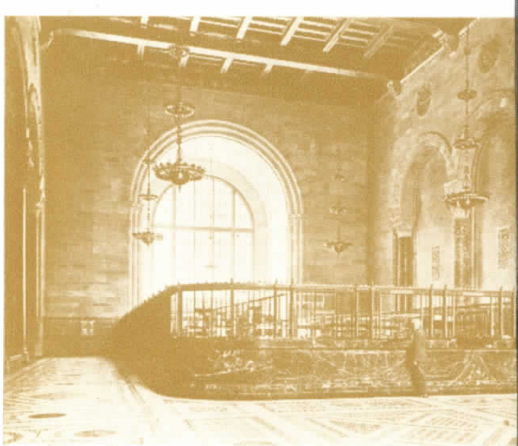
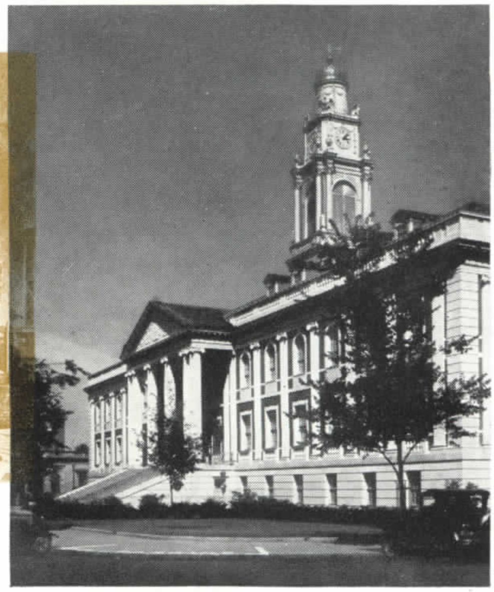
The airplane hangar (right) was a new building type.



Commissions ranged from the infrequent formal "plum" (Henry E. Huntington Library, San Marino, Calif., by Myron Hunt) to the ubiquitous public institution (Adams Primary School, Phoenix, Ariz., by Fitzhugh & Byron).

Concentrated needs and available funds posed vast, complex design problems. (Above, Columbia-Presbyterian Medical Center, New York, begun in 1928 by James Gamble Rogers.)





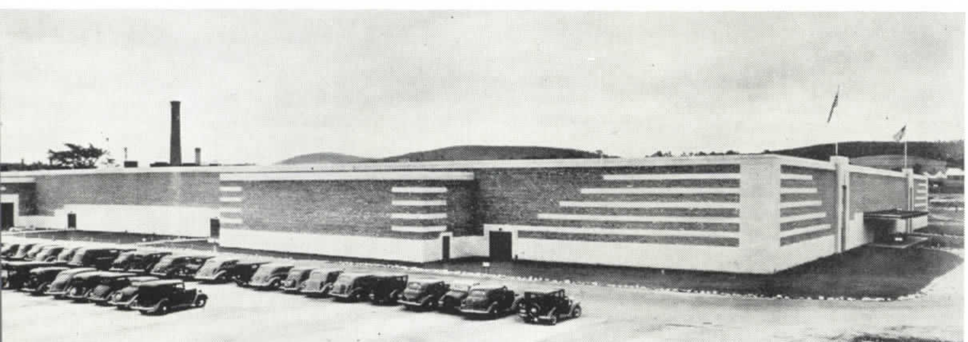
Imposing banks rose in all major cities. City Halls continued an established tradition. (Above, left, Bowery Savings Bank, New York, by York & Sawyer; above, Schenectady, N.Y., City Hall, by McKim, Mead & White.)

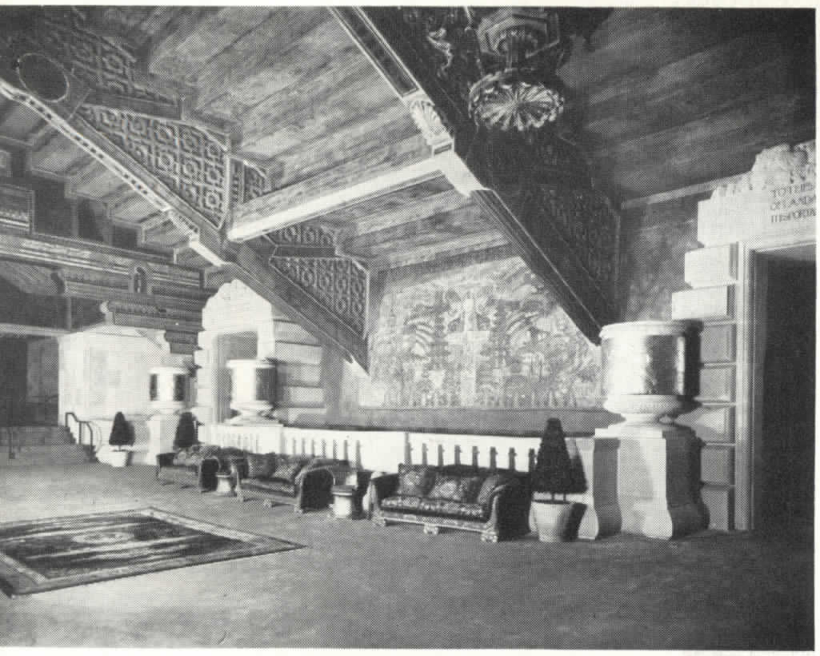
huge new medical centers and metropolitan and county hospitals. The automobile required more and more gas stations and garages. Sports events won the adulation of millions, so arenas were constructed of a size not seen since Rome baited Early Christians. In the year 1924 alone, new stadiums provided seats for 366,000 fans; in the year 1926 they accommodated 512,000 more. Baseball became big business; football financed many a college. Airplanes became more common, the hangar and the airport began to require architectural services. The new radio broadcasting brought other specialized design problems.

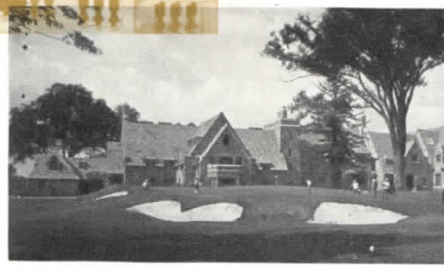
Residential work of all sorts was a rewarding field for the architect's services. For socialites and their imitators, the Mizners and others embellished the Florida East Coast with mansions worthy of the movies, so mixed in result that the architects themselves designated them vaguely as Modified Mediterranean. For the well-to-do such classic developments as the Country Club District, Kansas City; Westchester County, New York; and Grosse Point, Detroit, mark the period.

Thoughtful men in the design profession also began seriously to turn to the problems of housing the less wealthy and the very poor; of planning

Increased auto traffic required huge city garages; increased technical knowledge allowed precision control in windowless factories. (Above, Motor Mart Garage, Boston, Mass., by Ralph H. Doane; left, Simonds Saw & Steel Co., Fitchburg, Mass., by The Austin Co.)







Design of movie "palaces" required endless rolls of dazzling full-size details. (Above, Theater, Los Angeles, by William Lee Woollett; right, Theater, Chicago, by Rapp & Rapp.)

From exclusive suburbs came commissions for vast and expensive country clubs. (Winged Foot, Mamaroneck, N.Y., by C. C. Wendehack.)

1917-1930 architectural practice

new subdivisions with more attention to pleasant and convenient living. The Rosenwalds subsidized a housing project for Negroes in Chicago; the Amalgamated Clothing Workers built an apartment project in New York. Planners developed bold new patterns for white-collar living, in such communities as "Sunnyside" in New York and "Radburn" in New Jersey.

The profession of architecture was at a busy crossroads. The American Institute of Architects had grown from a small club that included about 500 members at the beginning of the century to a more representative and inclusive—if still conservative—professional society. The work of individual practitioners ranged from far-sighted social studies in planning and housing needs, by such leaders as Henry Wright, Sr., Clarence Stein, Robert D. Kohn, and Frederick Ackerman, to the shoddy production of thoughtless house plans for a few dollars, by some of those who were doing speculative work. In between lay a large field of professional activity, in which it was hard to draw the line between ethical practice and a loss of professional independence. Hotels were designed by the best firms for a

The hotel boom and its subsequent collapse summed up the period's speculative aspects. (Pennsylvania Hotel, New York, by McKim, Mead & White.)

Decorators as well as architects found it profitable to serve the demand for luxury. (Right, bedroom of New Jersey home; beyond, country house by John Russell Pope; Eggers & Higgins.)

Centers of learning found it good business to build sports arenas; cities began to develop public areas for recreational escape. (Above, Ohio State Stadium, by Howard Dwight Smith; right, Jones Beach State Park, New York, by Architectural Staff, Long Island State Park Commission.)

block of stock as fee—a practice many of them regretted when booms collapsed and the Crash came. Apartment houses and office buildings were ground out by "specialists," in a series of stock solutions for fees so low that they prohibited any study or research. Drafting rooms were full, salaries were fairly high, and charrettes were continuous. In chain hotel design, in the planning of office buildings for flexible use, in the scheming of expensive apartment house plans, in hospital planning and to a lesser extent in school planning, in the layout of amusement and recreational spaces, real advance was made by more thoughtful architects. Even in the field of residential design, such experiments as Ernest Flagg's houses, Fuller's Dymaxion, the American Houses' prefabs, and some others, challenged professional and consumer alike to reconsider conventions.

In a sense, it was a period when the architect could call the turns. Where the profession failed, none could say it didn't have the opportunity to do better. That here and there it succeeded brilliantly was a harbinger of things to come.

All manner of residential work crowded the drafting rooms as well as the suburbs. (Left, New Jersey house by Randolph Evans; below, San Diego bungalow.)

Neoclassic, Norman, and Moderne were high style. (Left to right: Folger Library, Washington, D.C., by Paul P. Cret; House at Tuxedo Park, N.Y., by McKim, Mead & White; lobby of Barclay-Vesey Building, New York, by McKenzie, Voorhees & Gmelin.)

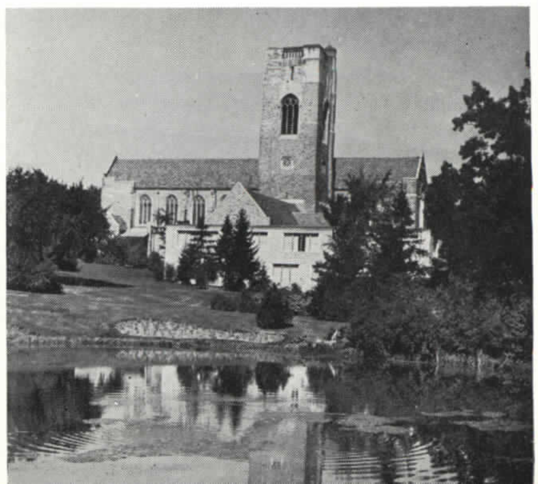
The $100,000 Chicago Tribune Competition in 1922 produced 263 design expressions. Howells & Hood won with this Gothic tower.

1917-1930 design result

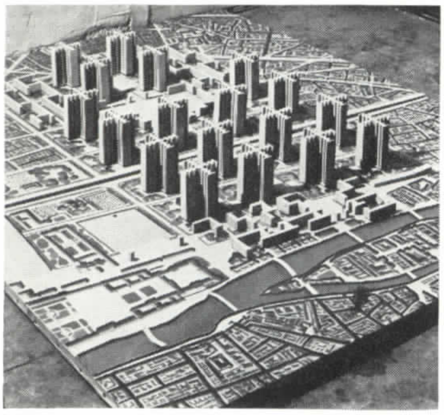
The boom in construction and all the new building types of the period put a poser up to the designers. No longer could one rely in every case on time-honored styles for the ready-made answer. When the planning problem was one peculiar to our own times and when construction methods and available materials were equally new; one had to contribute originality and creative enterprise, or turn to other than classic sources. In many instances the architect solved his problem well in plan but remained satisfied, as he had been earlier, to apply a veneer of familiar fragments. For instance, the best of the housing projects for shipyard workers—as at Bridgeport and Yorkship Village—set new standards for over-all planning and achieved principles of livability that are still valid, however superficial was the stylism of the individual buildings.

One of the foremost experimenters of the period was Raymond Hood. In the Daily News Building he treated the skyscraper as a pier, with all the vertical elements emphasized; the next year, in the McGraw-Hill Building, he emphasized the floor levels in a composition of bold horizontal layers. Almost nobody, though, seemed to remember how directly Sullivan had expressed a convincing grillage in the Schlesinger-Mayer (now Carson-Pirie-Scott) Building, way back in 1900.

With its lavish *moderne* creations, the Paris Fair of 1925 was at least an effort to find new solutions to old problems—and it had its effect on



Search for appropriate expression ranged from rationalized to romanticized attempts. (Right, Daily News Building, New York, by Howells & Hood; beyond, Christ Church, Cranbrook, Mich., by Eliel Saarinen.)

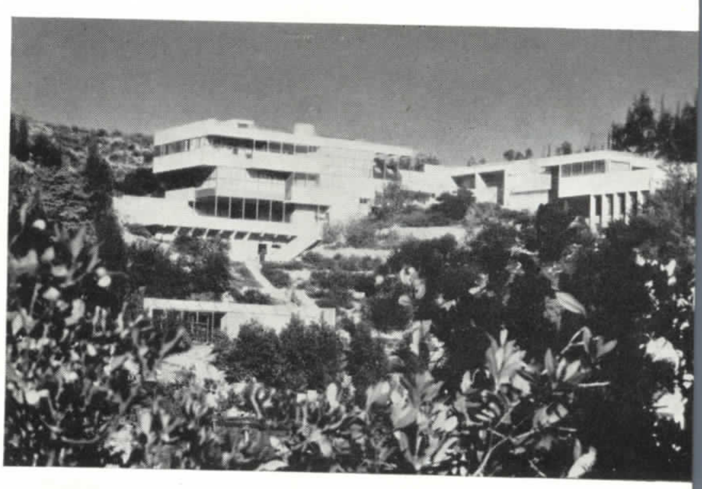


Fresh stimulation came from knowledge of the advanced work being done overseas. (Left to right: Plan for Paris by Le Corbusier & Jeanneret; living quarters, The Bauhaus, by Walter Gropius; Tuberculosis Sanitorium, Finland, by Alvar & Aino Aalto.)

architecture and decoration in the United States. Translated, it led a busy, if rather futile, existence by loading over-door treatments, remnants of string-courses, and places where cornices and capitals used to be with an obscure haze of low-relief ornamentation. Other influences from overseas had more lasting value. The work of Gropius at the Bauhaus and the published works and lectures of Le Corbusier became known to American professionals, and to some laymen here. Architectural visitors from abroad came to us in increasing numbers and some of the best of them stayed, foreshadowing the larger groups who were to come a decade later. Neutra, Schindler, and Lescaze, for instance, soon established themselves on these shores and began to do important work. Eliel Saarinen, already noted for his non-premiated design in the Chicago Tribune tower competition, began his extensive work at Cranbrook.

All of these factors influenced native architects in the United States, among whom a number of highly personal design talents were exercised. Meanwhile, the work of Cret, for instance, and of Goodhue, proved that new approaches were possible within the discipline of the traditional. And Wright kept adding invigorating new pieces to the concept of organic design he had long been supporting. Along with more serious interest in planning and a great interest in the use of technical advances started in the earlier period, there was evident promise of more forthright design.

More direct solutions to functional problems then appeared in this country. (Below, left, Ford Laboratory, Dearborn, Mich., by Albert Kahn; immediately below, Lovell Health House, Los Angeles, by Richard J. Neutra.)



Reminder of the late boom was the huge planned commercial community, Rockefeller Center, New York, which was opened in the depression years.

New Deal called attention to city slum conditions; the government launched a dual program of slum clearance and low-cost housing.

Depression hit small communities as well as major cities. NRA parades celebrated the government's attempt to control business practices.

1931-1941 the scene

important events

1931: Failures and gloom. By end of year, 12,000,000 unemployed.
1932: Franklin D. Roosevelt elected President.
1933: Bank Holiday. Germany renounces League of Nations and disarmament conference; Hitler in power. Prohibition repealed. National Industrial Recovery Act. (Gen. Hugh Johnson). Act setting up Tennessee Valley Authority passed.
1934: Hull's Reciprocal Trade Agreements. Dionne quintuplets born.
1935: Social Security Act. Joe Louis knocks out Max Baer. Neutrality Act. Works Relief Bill signed.
1936: C.I.O. formed. First urban expressway (St. Louis) opened. F.D.R. reelected. Neutrality Act renewed. Edward VIII gives up British throne to marry Wallis Warfield Simpson, of Baltimore. Okies and the Dust Bowl.
1937: U.S. Housing Authority set up by Wagner-Steagall Act. Dirigible Hindenburg explodes over New Jersey base. F.D.R. Chicago speech warning of war.
1938: Chamberlain visits Munich. German troops march into Austria and Czechoslovakia.
1939: World War II: Germany invades Poland. Spanish war ends in Franco victory. Fairs in New York and San Francisco.
1940: U.S. population 131,669,275. F.D.R. wins again. France, Holland, Belgium fall to Hitler. U.S. Selective Service Act. Pennsylvania Turnpike opened.
1941: London air raids. Lend-Lease for "defense." Pearl Harbor. Germany and Italy declare war against U.S.

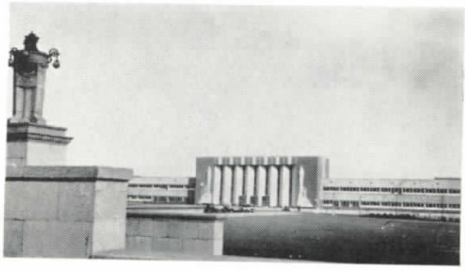
Apple-sellers and breadlines . . . Social Unrest . . . New Deal . . . NRA . . . USHA . . . PWA . . . WPA . . . Social Security . . . Wall Street Controls . . . TVA . . . Conservation . . . Dictators Burst Boundaries . . . Quarantine of the Aggressors . . . World War II.

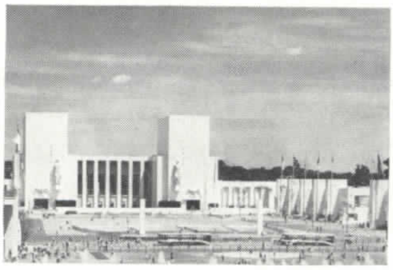
Architects without clients made measured drawings for the Historic American Buildings Survey, stock brokers jumped out of windows, and the great town houses and country estates cut down to fewer servants. Society's needs, which had been calling for attention as an increasingly insistent simmering even through the period of great prosperity, reached a near-explosive boil as this period opened. The garment workers' show *Pins and Needles* featured the tune, "Sing Me a Song of Social Significance," but the Hoovervilles weren't funny. We had been deluded by the dreams of empire; we had invited excessive immigration to hold labor costs down; we had pushed westward again to open new industrial areas; we had hidden social ills from ourselves with an inflationary blanket. Now unemployment soared and the banks took a holiday. Franklin D. Roosevelt unmasked the enormity of the crisis; he pointed out that one third of our wealthy nation's people were ill-fed, ill-clothed, ill-housed.

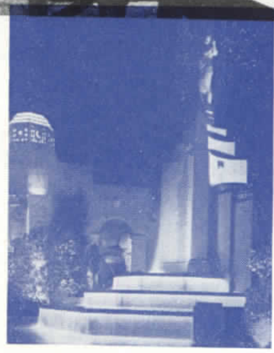
Launching his first administration with the confident words, "The only thing we have to fear is fear itself," Roosevelt and Congress and the New Dealers gathered in Washington boldly applied both specific expedients and full-scale surgery to the national economy. There were federal efforts, such as direct relief, CCC, and WPA, including the gleefully criticized leaf-raking; there were partially successful attempts at regulation, such as the NRA; there were other Acts which have carried over and become a recog-

Blatant commercialism and traffic congestion, ills of the motor age, were partly relieved by controlled traffic ways.

Thousands of sightseers saw progressive architecture for the first time in World's Fairs held (below, left to right) in Chicago, New York, and San Francisco.







nized part of our present scheme of things—systematized rights of collective bargaining, bolstering of the RFC method of loans to private enterprise, federal and state housing programs. Banks reopened, standard of wages and hours were set, Roosevelt was re-elected, and in time building as well as other business activity seemed to be steadying to a somewhat sobered, somewhat more realistic level of activity. The economy had been saved: opinions differed as to the cost and permanence of the recovery.

Meantime, as the domestic troubles seethed, Europe was setting the stage for a paranoiac repeat performance of *Gotterdamerung*. The U.S.S.R. since 1917 had been an unlimited dictatorship. Now Germany and other sick countries fell under the spell of demagogues who amplified the old tunes of chosen races, imperialist dreams (theirs), and goosestep conformity. Germany and Italy began to implement their warlike boasts; Europe burst into flame and the U.S. aided, within the concept of "steps short of war," the cause of the attacked. As assembly lines pushed out munitions and materiel, the arms embargo was repealed, lend-lease was instituted, and Roosevelt and Churchill drafted an Atlantic Charter. Ambassadors Kurusu and Nomura arrived in Washington from Japan to discuss the deteriorating Far Eastern situation. December 7, 1941, the talking stopped and the bombs dropped on Pearl Harbor.

It was in this turbulent scene that architects found themselves. Necessity, rather than grandeur, became a prime goal of building—whether for the social concept of public housing; as "pump-priming" in public works; or toward the end of the period in the hard, functional problem of providing an optimum environment for speedily making implements of war.

technical developments

1931: Laboratory established for development of glass fiber insulation. First foil photoflash lamp. Acrylic plastics make initial appearance. Development of "low heat" portland cement for dam construction.

1932: George Washington Bridge completed at New York, prestressed suspender ropes used. Photoflood lamp for interior photography. Copper tubing used in place of iron pipe in heating systems.

1933: Acoustical plaster announced. Split-ring connectors for timber construction. Open caisson sunk through 90' of water and 80' of sand for Huey Long Bridge, New Orleans.

1934: First streamlined train, Diesel driven; automobiles streamlined immediately following.

1935: Internal vibrators for concrete construction patented. First major installation of glued laminated arches at Forest Products Laboratory.

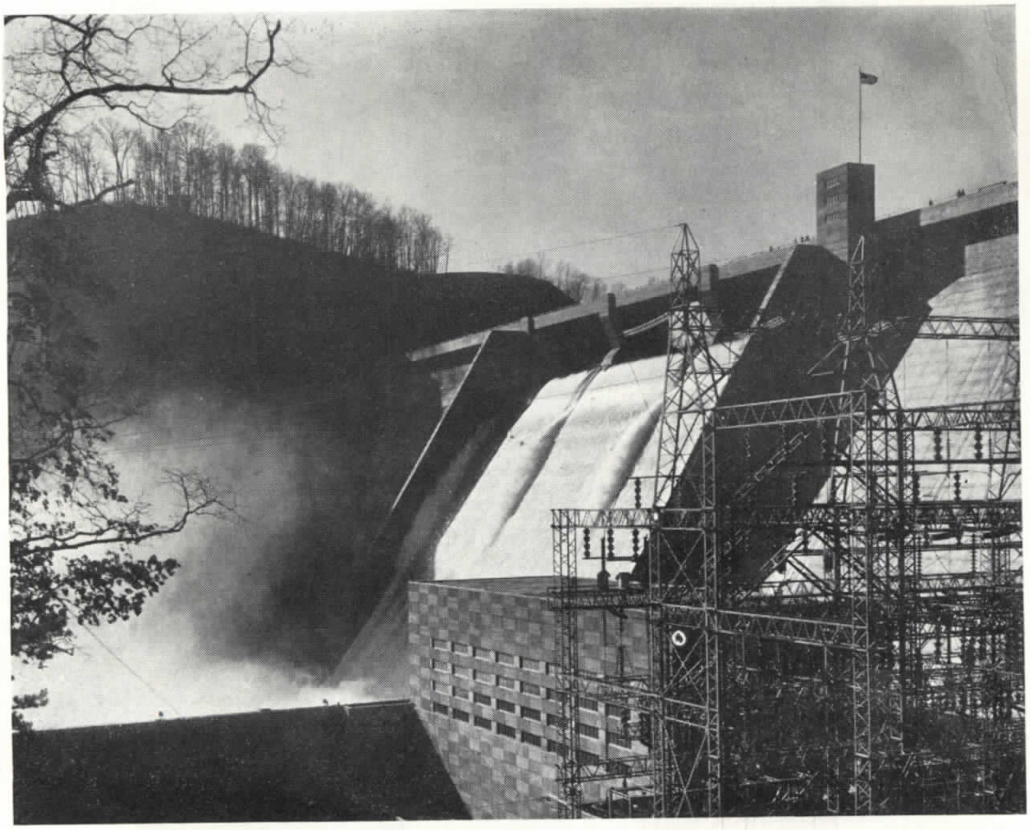
1936: Construction of Inter-American Highway begun. Open caissons 80' x 135' carried to record depth of 242' for Bay Bridge, San Francisco. Bonneville Dam Constructed using puzzolanic admixtures with cement.

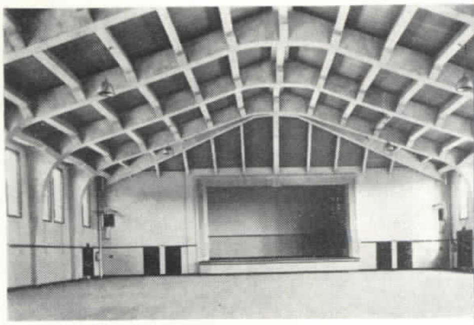
1937: Golden Gate Bridge, San Francisco, designed with rigid frame towers. Patent applied for sealed beam auto headlight lamps. First all glass doors manufactured.

1938: Polystrene plastics appear for first time.

1939: World's largest activated-sludge installation begun at Chicago.

1940: Low-pressure carbon dioxide fire-extinguishing equipment introduced. Construction begun on Brooklyn-Battery tunnel. Scaling of concrete pavements reduced by addition of air-entraining agent at Hudson, N.Y. Steel H-piles driven to record depth of 194' by 16-ton hammer at Potomac River bridge. Fort Peck dam in Montana, largest man-made structure, completed.





Concrete engineering was applied to rigid frame bents.

Great public works demanded heavy concentration of construction forces, equipment, and techniques. (Norris Dam, Tennessee.)

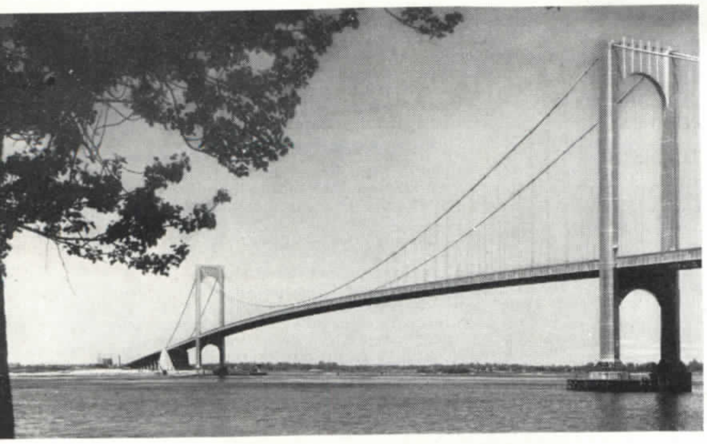
1931-1941 construction methods

During the depression years, as there was relatively little construction, there were but few advances in construction methods. Yet there was continued study—particularly in the development of the statically indeterminate structure—and when building again started in the United States, there was a good deal of native experiment and also adaptation of systems developed in Europe. By the time World War II came, all of the new technological knowledge that had been accumulating for 60 years was ready for use in the defense construction program.

A number of important bridges were built during this decade. At Tacoma in 1940 what had been termed "an agreeable undulation" caused a dramatic failure. This was found to be the result of incorrect wind-weight analysis, and no reflection on the engineering knowledge of the time.

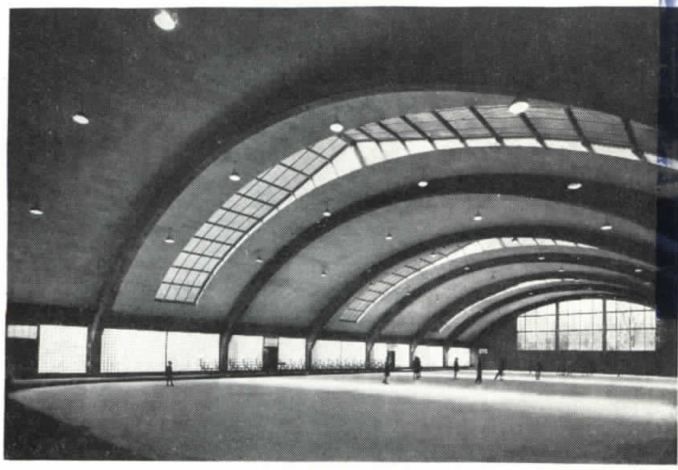
In concrete design, European designers and engineers were still influential. A most significant construction method brought from abroad was the Zeiss-Dywidag system. Especially suitable for large areas and wide spans, this system of analysis and reinforcement, used in thin shell domes and

Suspension bridges, attenuated in design, became more flexible and graceful. (Bronx-Whitestone Bridge, New York, as originally built.)



Built-up segmental steel arches spanned great widths.

Wright's novel construction system at the Johnson Wax Office Building, Racine, Wis. (below).



Period saw introduction of patented concrete construction methods for thin-shell barrel vaults and domes. (Upper left, U.S. Naval Model Testing Basin, Carderock, Md.; left, skating rink at Ardmore, Pa.)

barrel vaults, was capable of mass production and resulted in high erection speed. As were other technical developments of the time, this method was first demonstrated here at Chicago's Century of Progress Exposition, in 1934. In concrete as in steel and wood construction, the further development of the rigid frame resulted in an obviously closer relationship between column and lintel; hollow rigid frames were tried successfully. At this time there was also pioneering in circumferential prestressing.

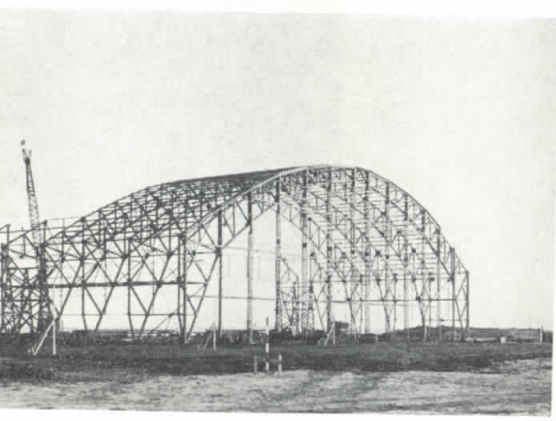
Although laminated wood arches and beams were used—mainly in the midwest—during that decade it was in steel arch construction that the big advances came. Two-hinged steel arches, tried in the previous period, became common. Arches of great span were fabricated of structural steel beam segments, cut at appropriate angles to form flat parabolic shapes.

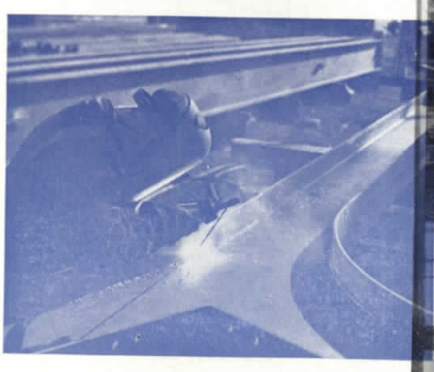
How quickly this accumulated knowledge and skill might have been brought to fruition in peacetime is debatable; certainly the rapid application of technical skills and priorities granted for speeded construction, presaged a sharp advance in construction methods.

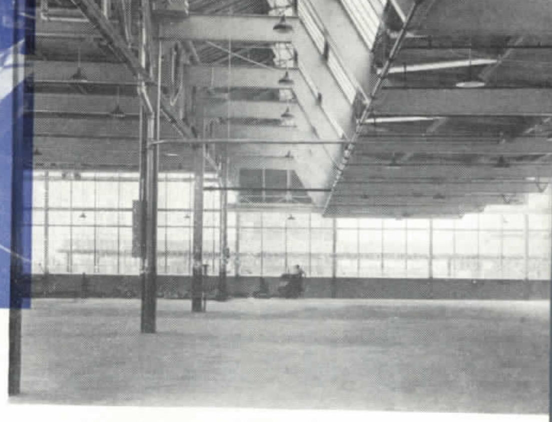
American Houses' prefab experiment.

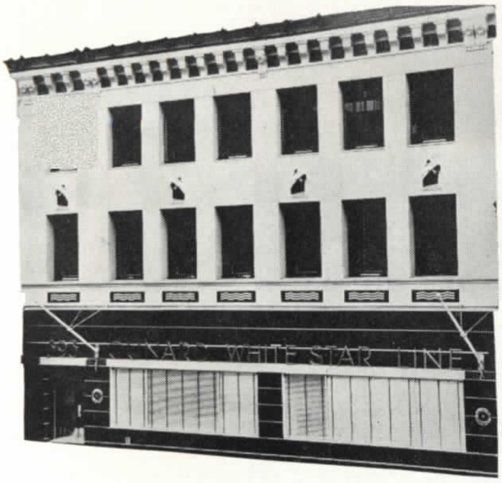
Continuous frame design (below) and factory welding of rigid frame columns brought refinements in steel construction.

Three-hinged arch construction housed larger aircraft.







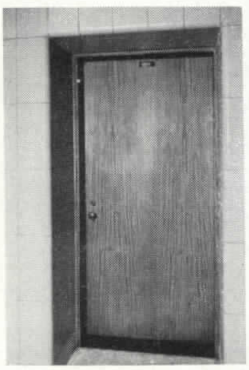


Porcelain-enamel surfacing appeared on many a Main Street building.

Inherent qualities of new materials were sometimes overlooked in an attempt to simulate familiar ones. (Above, electric candelabra, 1/50" veneer panelling, and resilient tile flooring.)

Further integration of light and air control resulted in one fixture.

1931-1941 materials and equipment

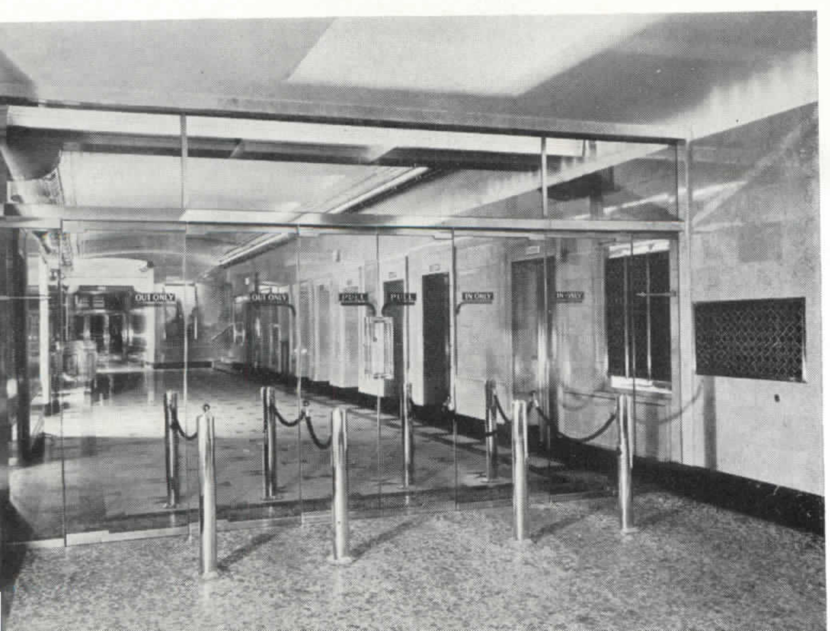


Because of the smaller volume of building, the development of materials and equipment progressed rather slowly during the first part of this period. After the impact of the several important expositions, however, it became clear that a good deal of research and development work had been going on unnoticed.

Glass products moved forward in importance as new uses of glass were suggested. Glass blocks had a period of great popularity and sometimes effective use. The all-glass door appeared and was soon widely favored. Windows made of twin glass sheets separated by an air space were produced to reduce heat loss through the popular large window areas. Structural glass competed with other materials for store front use; glass fibers were widely used for insulation by the end of the '30s.

Early in the period, wood began to meet the competition of metal substitutes for millwork by the application of protectives against warping, swelling, and decay. Pentachlorphenol preservatives came on the market. Through the development of phenolic resins, plywood was made waterproof.

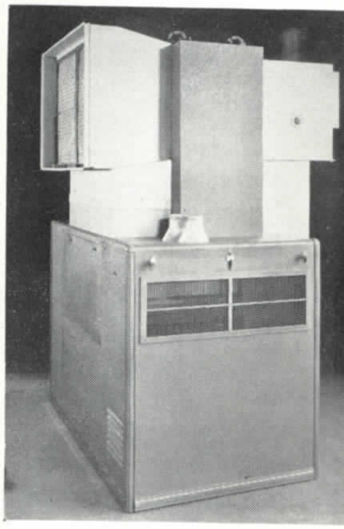
Architects began to use the flush door (above). All-glass doors appeared (below). Plastics were used architecturally (stair enclosure at right).



Bathroom equipment shown at the New York World's Fair.

Better sanitary equipment for factory workers included the new group washfountain.

Improved were the "all-year" air conditioner . . .



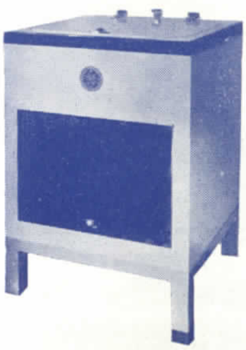
Among other uses, it was found suitable for concrete forms. Flush wood doors gained popularity. Knotty pine, a depression-born product, continued to be widely used through the decade. In structural work, wood regained importance with the invention of the split-ring connector.

Porcelain enamel became an accepted surfacing material for small office buildings, bus stations, store fronts, and the like. There was a tremendous use of plastics for minor architectural purposes—table tops, counter tops, stair enclosures, etc. Significant developments in acoustical correction resulted in many varieties of sound-absorbent tiles and the increased production of acoustical plaster. The color range of asphalt tile was widened and a method devised for marbleization; rubber tile was made harder and denser and given a higher modulus of elasticity.

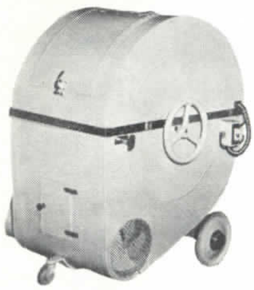
There was a growing use of double-hung aluminum windows, and while corrugated aluminum was used principally for roofs, extruded shapes found minor structural uses. Stainless steel and the "white" metals gained in popularity. Concrete, as a material, found wide usage through the development of precast concrete beams, girders, and columns.

Some new and improved items of equipment appeared. The deep freeze unit was developed for home use about 1935, although it did not receive wide acceptance until later. Kitchen planning studies instituted at this time, plus the appearance of new pieces of equipment, such as the garbage disposer, directed closer attention to that part of the house. In the control of environment, lighting made perhaps the greatest advance. It was the time of the "better sight through better light" movement; visibility meters were devised and a new method for rating task efficiency conceived. The first commercial fluorescent lamp was marketed in 1938. There was a tendency toward closer integration of lighting units with other environmental and protective factors: air diffusers, sprinklers, acoustical panels, etc.

As the decade ended, most of these products were fully developed and were used with surprising efficiency and skill in the great war program.



. . . and the electric dish washer.



The clothes dryer was invented.

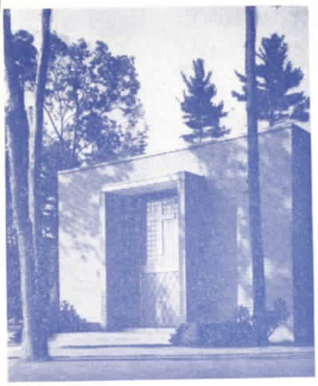
PWA commissions and public-housing projects provided work for the architect. (Left, Library of Congress Annex, Washington, D.C., by Pierson & Wilson; Alex G. Trowbridge; right, Queensbridge Houses, New York, by Ballard, Churchill, Frost and Turner.)

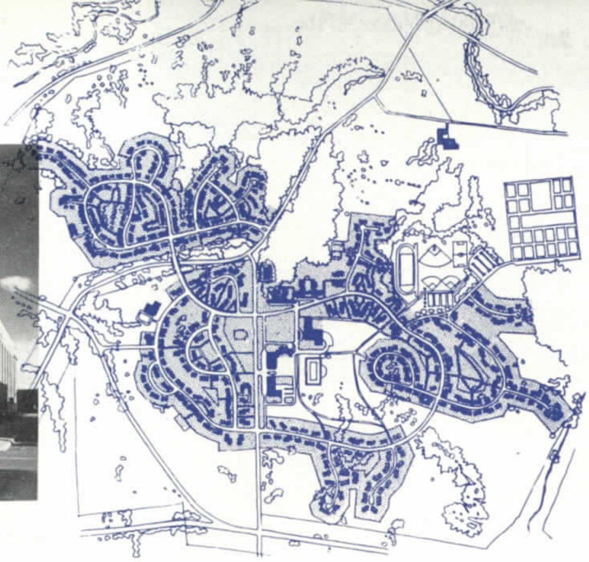
1931-1941 architectural practice

The decade opened as a time of pavement-pounding for hopeful draftsmen, with architects closing the doors of more than a few established offices. A few "plums" were available, but offices from Seattle to Savannah generally found themselves entering competitions (or politicking) to obtain commissions for federal-financed buildings. Architects hastily "boned up" on FHA regulations and on acceptable public-housing standards.

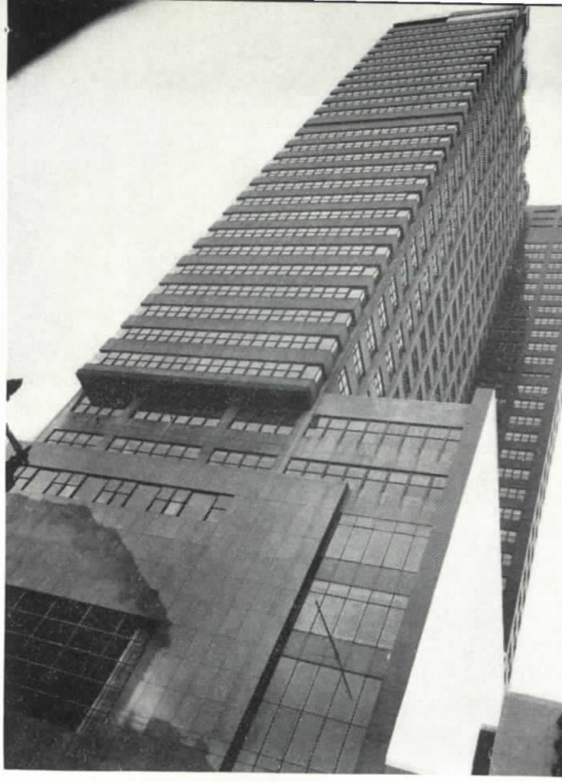
Naturally, the politicians awarded fat commissions to those professionals who had been politically faithful. But it should not be overlooked that a number of public jobs were quietly given out to selected firms and some design competitions were conducted for government works. Furthermore, the discipline of working on the design of, say, a public-housing project, acted as a vigorous eye-opener for many. Public funds were not unlimited; thus the problem of turning out a suitable number of dwelling units, community centers, nurseries, etc., with little or no budget for "prettifying," meant working down to fundamentals. Because of the scale of the projects, many professionals for the first time had the challenge of planning a large area as an integrated design and had to consider some of the problems of optimum land use. In some cases, such as the Greenbelt towns and the notable migratory camps done for FSA, entire communities were planned from scratch. Surely the most vast and socially significant instance was the giant reclamation of an entire valley in Tennessee, with healthy land replacing erosion, floods controlled, electric power developed,

Schools and hospitals continued as active types; an occasional church was built. (Left, High School, Kensington, Md., By Rhees E. Burket; below, left, St. Mark's, Burlington, Vt., by Freeman-French-Freeman; below, right, Triboro Hospital, Jamaica, N.Y., by Eggers & Higgins.)

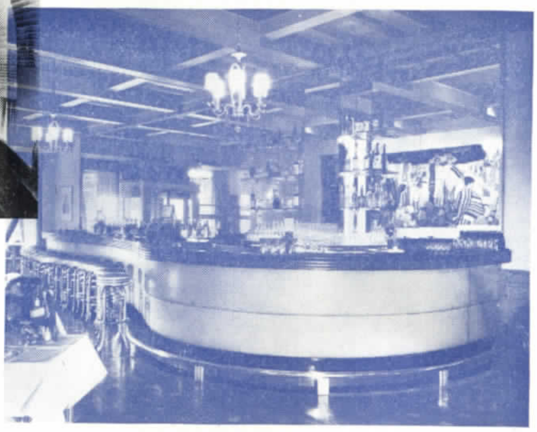




Federal commissions included numerous post offices and a few planned communities. (Left, Post Office, Gary, Ind., by Howard L. Cheney; right, plot plan, Greenhills, Ohio), by Wank, Cordner, Hartzog, and Strong.



Philadelphia Saving Fund Society Building (Howe & Lescaze) was one of the few skyscrapers built; taxpayers like the one below were common.



Radio City Music Hall, New York, represented a peak in theater design for size, lighting, and acoustical problems. A more usual commission was the design of the bar-restaurant (right) following repeal.

Brand-new building types grew out of the needs of the radio industry. (CBS Studios, Los Angeles, by Lescaze; Heitschmidt.)

waterways provided, and public buildings of a high order built.

There were also private buildings of almost every category, though in smaller quantities than in earlier years. Technology had again advanced to pose brand-new design problems. Many of the larger radio buildings—RCA in New York, WGN in Chicago, CBS and NBC in Los Angeles—were built at this time. With the repeal of prohibition, the "handling" of the reopened saloon (with women patrons, now) became as much a problem for the design professional as for the proprietor. Commercial work was usually on a smaller scale. The two-story taxpayer appeared even on expensive downtown property in major cities. As aviation expanded, some of the country's most important air terminals—La Guardia in New York, Washington National, etc.—went ahead near the end of this period.

In the residential field, the extremes of the time were as pronounced as in other building types. Much of the most distinguished work in California was done in these years. In other parts of the country, as well, houses of all sizes—even including great country retreats—again were built toward

Residential designers found more work in the speculative field (left, model house for Wood Conversion Co., St. Paul, Minn.) than for private clients. (Above, Marin County house by Gardner A. Dailey.)

the end of the period. Many worried speculative builders also were at work but, with small profits in sight, some of the most hideous little mockeries of home the world has ever seen were halfway nailed together in a cheerless, emasculated stylism.

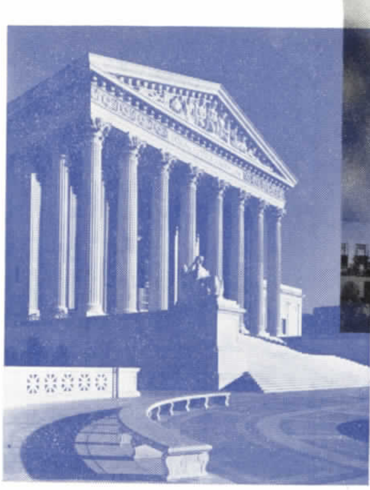
In the planning of schools, houses, and other building types, the restrictions of the times prompted experimentation in making space more useful. Increasingly, floor and ceiling finishes were made continuous between supporting walls, and intermediate partitioning became independent. This produced the possibility of "open planning"; it also brought to other building types the factor of flexibility, to anticipate future shifts in use, that had been important in the design of commercial rental structures ever since the introduction of standard, movable partitions. A companion trend was increased use of window walls that made small areas appear larger.

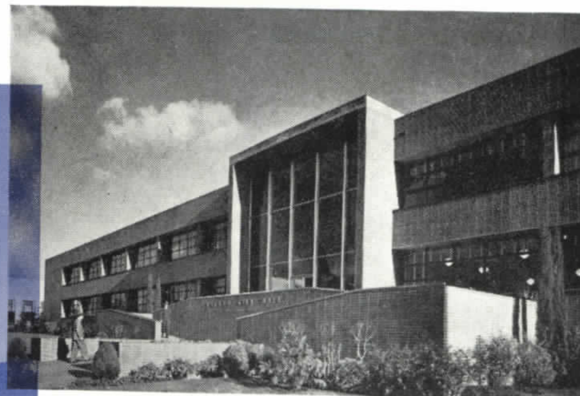
All in all, it was a period of professional shake-up. More designers learned that survival might lie in designing efficient, simple architecture and that the profession had social responsibilities.

The booming aviation industry required vast metropolitan terminals—since outgrown. (La Guardia Field, New York, Administration Building, by Delano & Aldrich.)

Industrial commissions included research laboratories as well as factories. (Above, Forest Products Laboratory, Madison, Wis., by Holabird & Root; left, Chrysler-Dodge Plant, Detroit, by Albert Kahn.

Two Museums: above, Museum of Modern Art, New York, by Goodwin & Stone; above, right, National Gallery, Washington, D.C., by the Office of John Russell Pope; Eggers & Higgins.





Two Public Buildings: left, Supreme Court Building, Washington, D.C., designed by Cass Gilbert; above, City Hall, Fresno, Calif., by Franklin & Kump and Associates.

1931-1941 design result

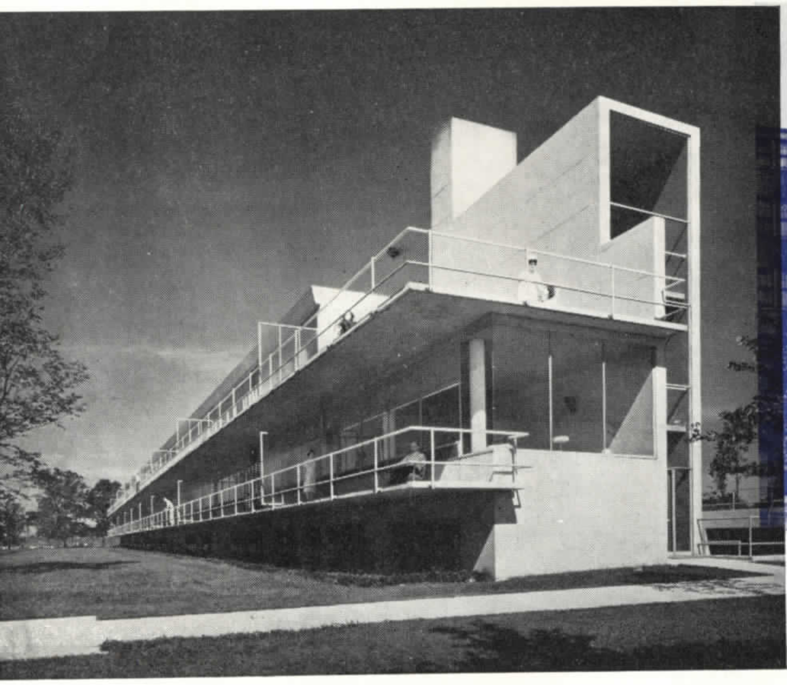
The cessation of building in the first years of the depression gave everyone a chance to think about many things. When construction started again, a fresh design approach was more evident than it had been at any time since the beginning of the century. For every eclectic solution, there was a comparable attempt at a contemporary one.

No longer did experiment and originality run as footnotes to the main story. The issue was drawn—the contrasting pictures on this page bring this into sharp focus: two museums, two public buildings (and over page there are other pairs), built in the decade that we are studying.

The work which began to be labeled *modern,* or *contemporary* or *modernistic* (quite correctly in many cases), was not all of a type. The progressive examples on this page aptly represent divergent points of view in the search for contemporary expression as well as honest architectural forms. The museum is, again, fairly reverent toward an overseas importation; while in the city hall one has the sense that an original, possibly regional, form is in the making.

There were twin impulses, both strong. The exciting contemporary work being done in Europe by such leaders as Gropius, Breuer, Le Corbusier, Mendelsohn, Mies van der Rohe, Aalto, the Tecton group, and others, was influential and gained power as many of the greatest came to the United States, found work, and stayed. There was, at the same time, the native, sometimes consciously regional searching in this country, for forms and expressions consistent both with modern technology and social betterment.

None of these periods can be passed over without a bow to the Master

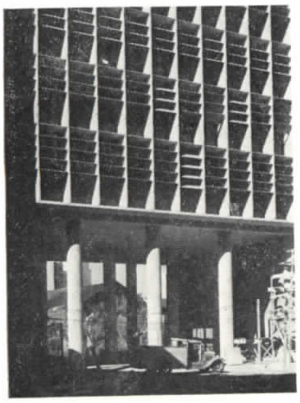


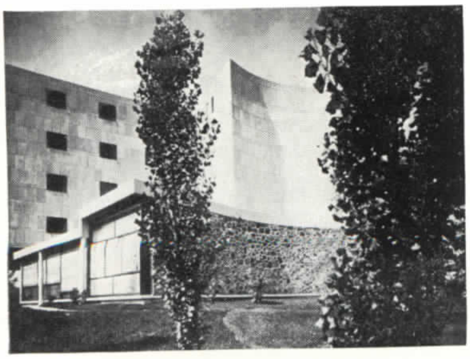
Two Hospitals: left, Lake County Tuberculosis Sanatorium, Waukegan, Ill., by Ganster & Pereira; above, Hospital of the Holy Family, Brooklyn, N.Y., by Crow, Lewis & Wick.

of Taliesin, who decade after decade, kept right on being Wright; swayed little, if any, by what others had to say but not unwilling to recognize certain parental obligations wherever good things appeared.

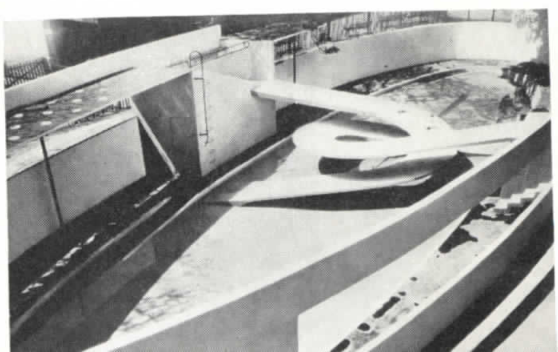
It was truly a kaleidoscopic moment. Here a Southern mansion would turn up looking, when the planting was developed, as if it had been built in the 1800's. There for another man of wealth would appear a home that was nothing short of experimental. Comfortable convention was at last having a good run for its money. It also must be pointed out that not all design was of the two extremes described; much of the cynically commissioned public work was frankly dull and without conviction of any sort. The cleaned-up Classic design which Cret had translated into a beautifully personal expression, in other hands degenerated rapidly into an anonymous public-works standard perpetrated in sufficient quantity to fill a large official book (architects unnamed).

Architects had a choice—clearly marked. It all depended on how one stood in respect to two points of view—technical and social. Crystal chande-

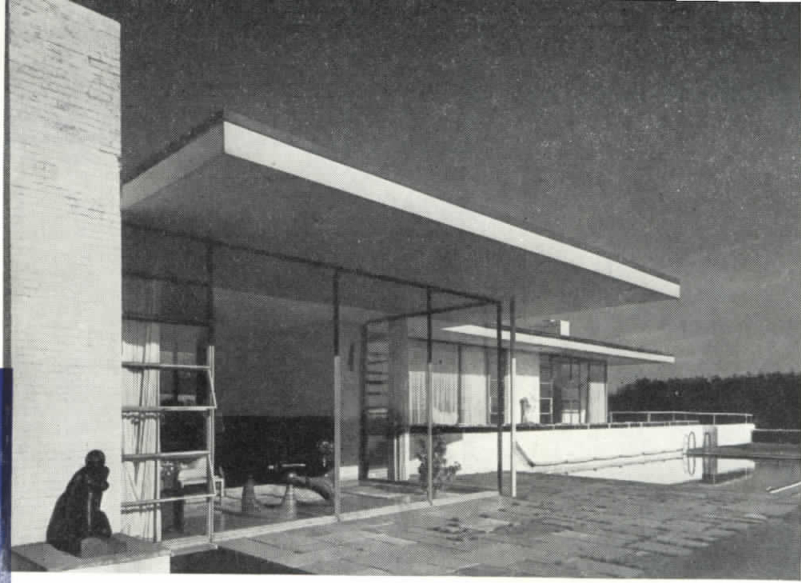




More architects looked to work abroad for inspiration: left, above, Ministry of Education and Health, Rio de Janeiro, by Le Corbusier, Costa, Niemeyer, Reidy, Leao, Moreira & Vasconcelos; left, Swiss Building, Cite Universitaire, Paris, by Le Corbusier & Jeanneret; below, Penguin Pool, Regent's Park Zoo, London, by Tecton; right, Dormitory, Pondichery, India, by Antonin Raymond.

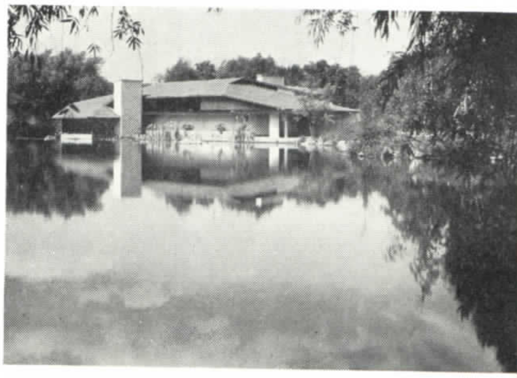


Two Residences: below, "Clay Hall," Yemassee, S.C., by Scroggs & Ewing; right, house at Old Westbury, Long Island, by Edward D. Stone.

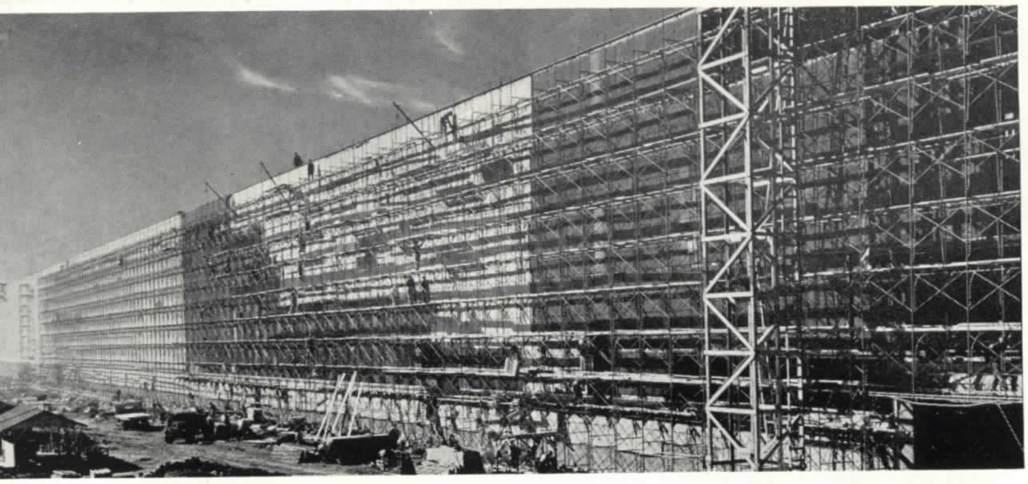


liers wired for electricity were hardly consonant with the new knowledge of lighting and were counter to the new possibilities of integration of lighting, structure, and finish. Monumental stairways as a prelude to the public schools, hospitals, or town halls seemed to deny their usefulness for those who were paying the bills. Even the most preoccupied professional now could recognize that architecture was at a crossroads. If one clung to Roman forms—or Egyptian, for that matter—it was at least clear that he chose to do so. Some contemporary alternatives had been well stated.

It is only fair to remember that the choice was not always the architect's alone. General public understanding of new forms, new structural possibilities, and new esthetic concepts was not quickly developed. The architects themselves were probably to blame for this. News of the profession was mostly about inner conflict. Too often the impression got around that the freedom which was opening up had been captured as the esoteric property of an exclusive few. It would take some time to break down all this promoted misunderstanding, at the professional as well as the lay levels.



Progressive work appeared in many parts of the country: below, Longfellow Building, Washington, D.C., by William Lescaze; right, "Falling Water," Bear Run, Pa., by Frank Lloyd Wright; right, above, House in Bloomfield Hills, Mich., by Alden Dow.



World War II drafting rooms produced endless buildings for defense, endless streams of weapons for war.

1942-1950 the scene

important events

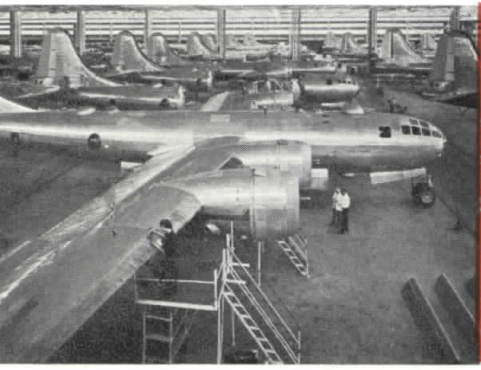
1942: Americans land in Africa. Boston nightclub fire: 491 killed. Liquidation of WPA.
1943: Allies invade Italy.
1944: F.D.R. wins again. France invaded by Allies.
1945: F.D.R. dies; Truman becomes President. Mussolini executed. Hitler proclaimed dead. U.N. Conference on International Organization meets in San Francisco. MacArthur heads Japanese government.
1946: Relations between U.S. and U.S.S.R. deteriorating. League of Nations votes itself out of existence. LaSalle Hotel (Chicago) fire: 61 killed. Bikini Atoll atom bomb test. Wallace ousted as Secretary of Commerce. U.N. General Assembly meets at Flushing Meadows, N.Y. U.S. controls on prices, wages, and salaries dropped. Winecoff Hotel (Atlanta) fire: 121 killed. J. D. Rockefeller, Jr. gives U.N. $8,500,000 plot in N.Y. Truman proclaims end of hostilities of World War II.
1947: Control of atomic energy transferred from Army to Atomic Energy Commission. Al Capone dies. Harry Thaw dies. Theodore Bilbo dies. Big Four meet in Moscow. Loyalty check-up of Federal employees ordered. Henry Ford dies. Taft-Hartley Act passed. Marshall plan announced. India's Independence Day, August 15.
1948: Mohandas K. Gandhi assassinated. Communists in complete control of Czechoslovak Government. Jan Masaryk, a suicide. Truman signs bill authorizing European Recovery Program. State of Israel proclaimed. Count Folke Bernadotte, U.N. Mediator, assassinated in Israel. Netherlands troops invade Indonesian Republic. Truman re-elected.
1949: National Housing Act passed. About 40,000,000 telephones. Autos, trucks and busses: estimated 43,298,000. Wright receives A.I.A. Gold Medal. Marshal Tito defies Moscow. La Guardia and Washington airports pronounced too small for increased air traffic. Eleanor Roosevelt clashes with Cardinal Spellman on school aid proposal. U.N. Secretariat dedicated by Truman.

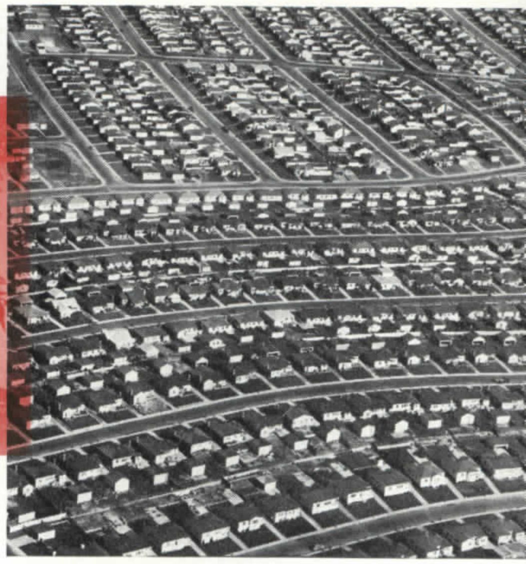
World War II . . . Priorities . . . Black Market . . . the Atom Bomb . . . Dream of One World . . . United Nations . . . Television . . . the Fair Deal . . . Cold War . . . Marshall Plan.

Though the U.S. did not officially go to war until the attack on Pearl Harbor, the "steps short of war" that had preceded had turned most minds and talents—including those of architects—to achieving victory. Selective Service had been in operation since 1940; army camps and naval training stations were in full swing; bigger and bigger war plants were forging the tools of war; shipyards were ablaze throughout the night; and the first years of this final period saw all of this activity grimly accelerated.

Dewey argued that "now is the time for a change," but in 1944 the American voters thought otherwise and sent Franklin Roosevelt back to the White House for a fourth term. Priorities were clamped on almost everything; rationing and ration-evasion were the order of the day; and the greatest supply lines in history fed, clothed, amused, and armed the allied armed forces. The services proceeded with daring and boldness—Mediterranean-hopping in the European Theater, island-hopping in the Far East. Just as victory was within grasp, Roosevelt died and Truman became the nation's top executive. Eastern and western allies met in Germany; our atom bomb was dropped on Hiroshima; and occupation forces moved in. In the hour of victory, the dream of One World was given its lease on

More people, more buildings, more automobiles were produced after the war's end. (Right, Freeway at Dallas, Texas, a not uncommon sight near many towns and cities. Far right, largest of U.N.'s headquarters buildings began to dominate New York's crowded skyline.)





Symbol of military control of wartime activities was Pentagon Building, Washington, D.C., above; multitudinous subdivisions became symbol of postwar relaxation of controls.

life at the U.N. charter meeting in San Francisco.

Politically, the U.S. government continued sponsorship of the over-all social planning that had been typical of New Deal days. Unemployment figures were not alarming as the country neared the mid-century point. Truman won re-election despite the press and party machines. His proposal of a broad democratic program suggested the likelihood of continuing social amelioration. The National Housing Act was passed in 1949.

The international political situation as 1950 approached was a potentially dangerous one. The U.S.S.R. had assumed a periphery of "new democracies." In America, more and louder voices rose to damn communism. Nations of Europe sought, each in her way, to stave off economic collapse with U.S. help. Asia seethed with change and potential communism. Gandhi and Nehru engendered the isolated spiritual force of the new India. The most heartening element in the postwar reaction was the continued existence of—and, toward the end, the building of a permanent home for—the United Nations.

Atomic energy seemed to typify the determinant force of the time. Potentially capable of enormous good, it was more widely known for its tremendous destructive power. The peoples of the world marked time, while their governments debated its use.

technical developments

1942: 10,000-ton cargo ships completed from keel-laying to launching in 4⅔ days; launching to delivery in 8 days. Work on Alcan Highway begun. Cellular-glass insulation available. Polyester plastics and synthetic cellulose produced commercially. Puffed-up sand, called silica aerogel, introduced as insulation material. V-mail carried on micro-film. Improved, underfed stoker utilizes heavily-coking bituminous coal in household furnaces.

1943: Scientific application of color to machine parts. Although developed earlier, secrecy removed and radar announced. Tubeless tires. Non-skid, fireproof plastic material produced for decks and floors. Cement-water paint found highly efficient to prevent rain penetration through concrete walls. Stainless steel sheets stitched together with "electric needle." Alcan Highway opened. Simplified, lightweight air-conditioning unit developed for small homes.

1944: Delaware aqueduct, 85-mile rock tunnel, completed to bring water to New York. 225-ton cyclotron put into operation. Sawdust and sawmill wastes yield new plastic. Anthracite furnace makes use of steel tube as combustion chamber. High-pressure mercury-vapor lamps developed. Find spread of colds checked by triethylene glycol vapors.

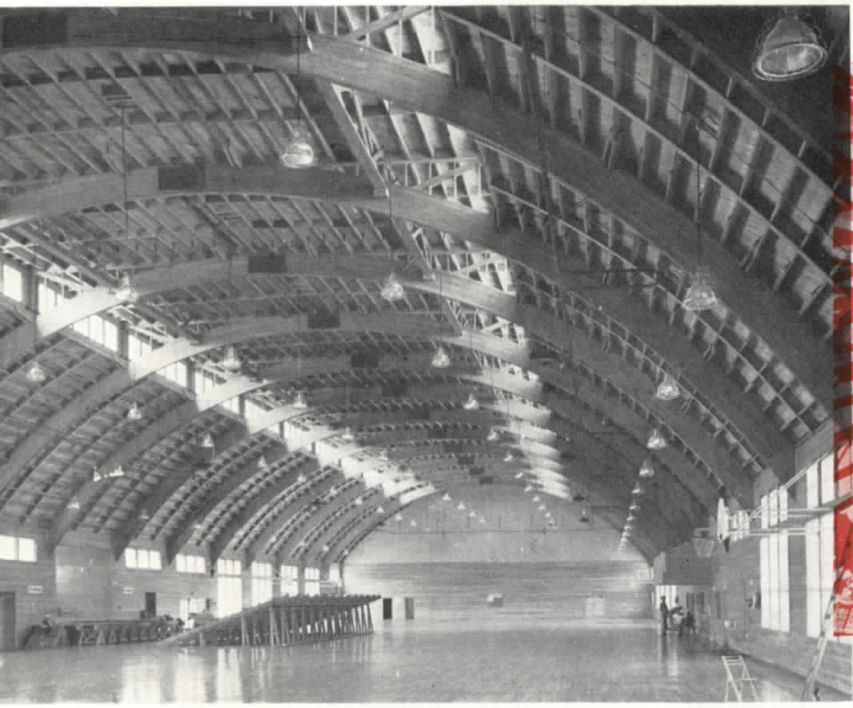
1945: First circular-tube fluorescent lamp introduced. Artificial paint brushes made from casein. New type motion picture theater with screen on ceiling and reclining couch seats designed. Synthetic-organic-cements developed. First atomic bomb.

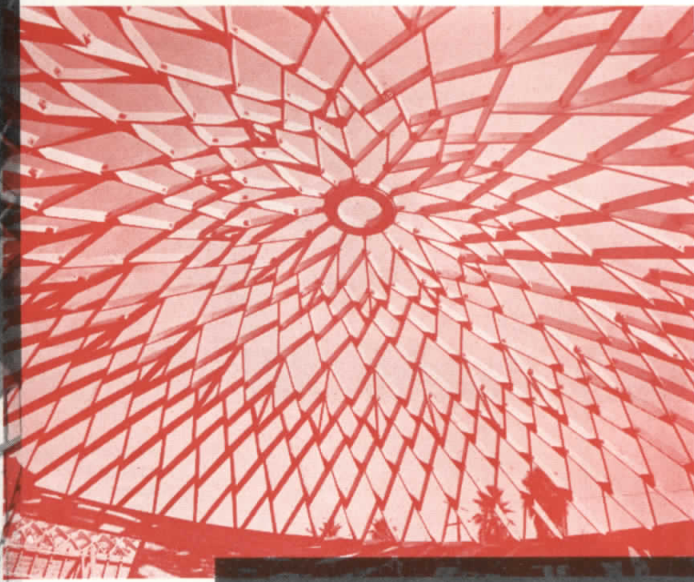
1946: Air-entrained concrete used for dam construction. Heat absorbing, color transmitting glass produced to protect television actors from intense heat of lights. Aluminum powder added to priming coats improves fire retardant properties of paint. Flight of stratosphere rockets traced by high-frequency radio waves. Radio telephone installed in taxis, busses, and service vehicles. Color television demonstrated. Push-button telephone keys designed to replace dialing. Motor fuels made from corn cobs and peanuts.

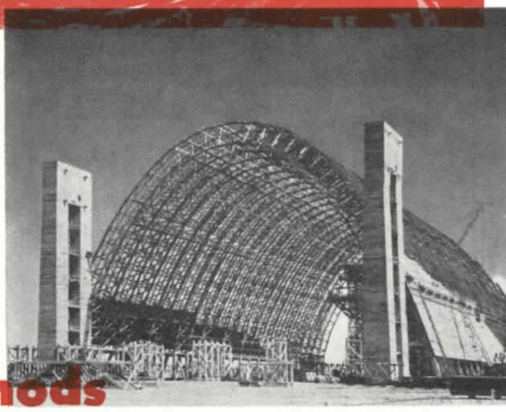
1947: 24-story all-welded steel structure erected at Houston. Keyless, residential door knob with secret combination introduced. Man-made snowfall accomplished by scattering dry-ice fragments through supercooled cloud. Paints developed from lactic acid. New fire-alarm system activated by ultra-violet rays from fire rather than by heat waves.

1948: Federal stream pollution control law enacted. First completely synthetic varnish prepared from propylene gas. 98' structural aluminum railroad girder erected at Messena, N.Y. Plastic protection against corrosion for all types of building materials developed.

1949: Expanded perlite aggregate used in concrete blocks. Ductile cast iron announced. Magnesium wall forms fabricated. Turbo-hearth method employed to produce steel. Grease resistant rubber floor tiles appear.







War stimulated development of wood arch and dome systems. (Above, left to right: glued laminated wood arches; lamella arch dome; and built-up timber arches.

1942-1950 construction methods

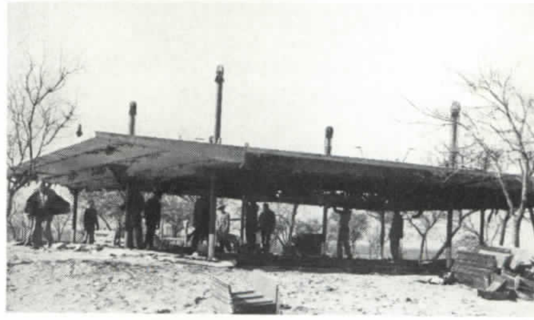
Few prefabrication systems for houses gave promise of wide success. Among most likely to succeed were General Panel's wood house (above), and Lustron's porcelain-steel house (below).

All of the technical knowledge developed during the preceding half century was utilized in the vast construction program of World War II. To accommodate gigantic, long-range bombers under one roof, extremely wide structures without interior supports were required. These widths were spanned by steel, concrete, and wood structural methods whose origins have already been noted. To reduce waste cubage, the flat parabolic forms were admirably suitable. Reinforced concrete ribs and thin shells made possible fireproof, rapidly erected, efficient structures of great width and length. Steel rigid frames developed depths remarkably shallow, considering the magnitude of the spans achieved. Two- and three-hinged steel-arch structures were frequently employed.

Glued laminated-wood trusses, beams, and arches were fabricated for hangars, drill halls, and recreation buildings. In wood-arch construction, the spans obtained were largely possible through the development of special connectors. For structures requiring smaller spans (chapels, service clubs, and theaters) boomerang-type laminated-wood arches lent grace as well as stability. Lamella arches were employed with greater facility and developed remarkable strength for barrel vaults, domes, and semi-dome structures. In the defense plants, countless miles of steel trusses, spanning bays as large as 40′ x 60′ were erected. Here again the *steel rigid* frame was most suitable to house the assembly line production of airplanes, tanks, trucks, jeeps, etc. Perhaps the most dramatic concrete industrial structures were those which used the Z-D system to roof warehouses and industrial buildings. In all of these instances, expense was secondary to speed of erection.

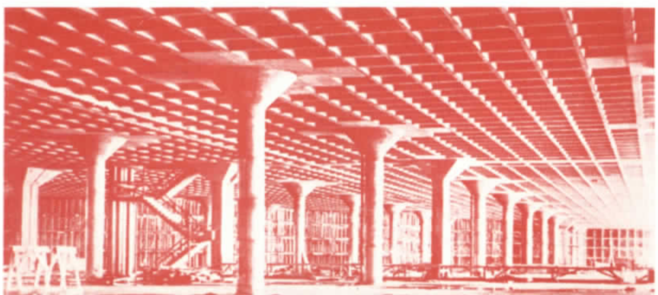
During the postwar reconversion and adjustment, building costs were vastly inflated; and in order to build, all conceivable methods and devices were utilized to reduce costs. Some of these efforts led to new and prophetic variations in construction methods. Sandwich walls, consisting of two panels separated by a core material, were studied for durability and permanence. By installing large wall panels, the number of "passes" required by workmen to complete a given wall area was greatly reduced. Wood, steel, aluminum, concrete, and plastic industries all sought to apply their products to this type of wall construction. The insulation industry applied its materials as the separating agent.

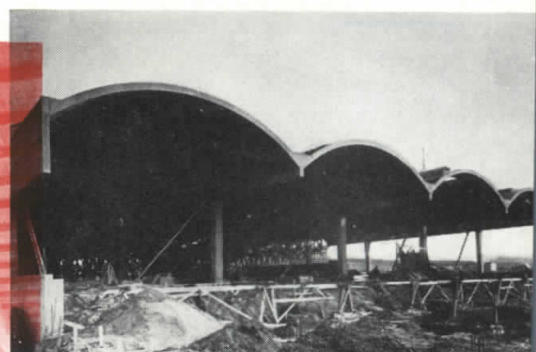
Some of the most significant construction methods developed in the postwar period were in the use of concrete. Insulated precast slabs for walls and floors were employed on dormitories and factories; the principle of densification was recommended to overcome cracking caused by shrinkage. Road building methods were applied to low cost housing construction, and roof slabs poured over floor slabs at ground level were hoisted up columns and anchored at the desired level. The latter method was planned to be employed on a multi-story structure for a university. Circumferential prestressing, long employed for industrial storage tanks, was schemed for a dome covering the merchandising area in a community department store to be finished 1950. For the first time in the United States, in 1949, a linear prestressed concrete girder was stressed, poured, and tested for a bridge construction requiring a 160′ span. During these postwar years, great use was made of expanded vermiculite and perlite as lightweight aggregates and insulation materials. Controlled concrete was more often specified for economic, durable, and weatherproof concrete. Air entrainment received much attention to kill porosity and to increase durability. Light-gage cold-rolled steel sections, introduced to the architect in 1910, enjoyed renewed popularity in this search for lighter building materials. Light-gage steel corrugated panel floors and roofs also contributed to lighter and more rapid construction.



Among new concrete systems were tilt-up wall panels (University of Connecticut dormitory, top picture) and lift-up floor slabs (experiment at Southwest Research Institute, San Antonio, Tex., lower picture).

First linear prestressed concrete girder in United States (Walnut Lane Bridge, Philadelphia, Pa.).





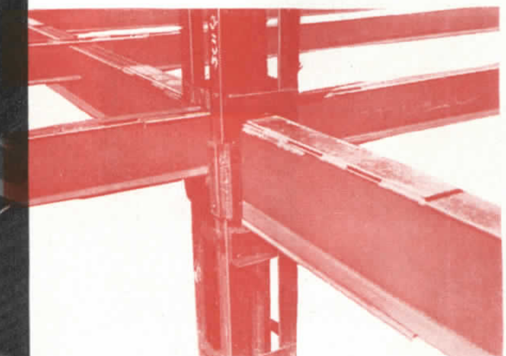
Other important concrete developments included: (counter-clockwise) modified flat-slab floor construction; flat parabolic arch ribs; hollow rigid frame; and thin-shell barrel vaults repeated to cover wider areas.

Rigid frame design analysis improved erection and construction techniques, and light members were combined to produce graceful steel structures as in transit shed at Long Beach, Calif. (left).

1942-1950 construction methods

In industrial buildings, the amount of required steel was successfully reduced with the use of the umbrella truss: a system employing a supported Warren truss from which light, downward-sloping trusses, connected at the panel points, join their counterparts extending from an adjacent Warren. Mobilar structures, combining tubing and special pin connections, suggested a possibility for the future. Welded structures were erected with specially designed connections and columns to take maximum advantage of continuity in steel skeletons. There were structural uses of aluminum accomplished, but it was predicted that this material would find its best use when no longer designed by steel theories, but with the inherent properties of the material itself employed to best advantage. Aluminum used as a skin material, as in airplane construction, indicated a possibility for architectural construction.

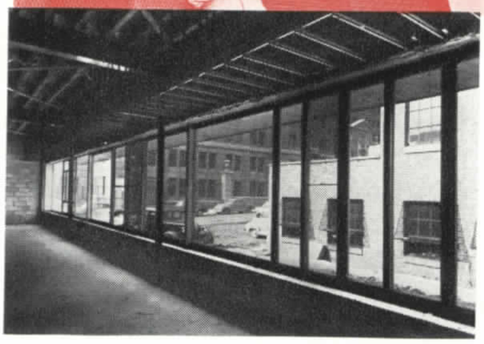
Cavity walls, long known abroad and laid up 60 years ago in the midwest, were again frequently erected to reduce heat loss and vapor transmission. Modular co-ordination, which anticipated a tremendous future in the immediate postwar years, had still to find general acceptance by either architect or manufacturer. More skillful methods for the production of the prefabricated house had been developed, although many producers had to depend on federal assistance for continued operation.



Corrugated-steel floor panels allowed increased use of lightweight framing (far left). Advanced welding design produced maximum continuity of steel structures (left).

Louverall ceilings gave impression of co-ordination of equipment for control of environment. (U.N. Council Chamber, Lake Success, N.Y.)

Continuous-strip fluorescent fixtures combined with air diffusers (above); acoustical ceiling panels combined with lighting units and diffusers, brought visible equipment into closer relation (left).

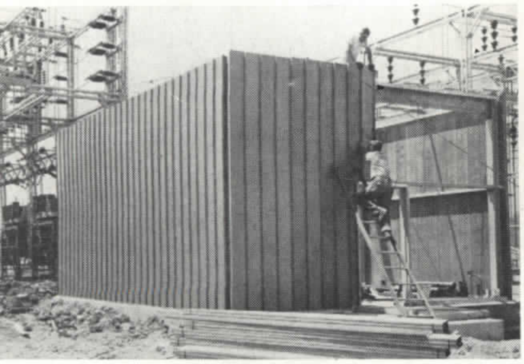


Metal windows of various materials and designs were tested for N.Y.U.-Bellevue Medical Center.

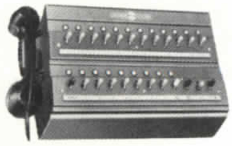
1942-1950 materials and equipment

Countless new products developed during the war and postwar emergencies afforded the architect an exciting assortment of new materials and equipment in the last period. Stainless steel was structurally used for framing, column facing, window mullions, etc. Its use for insect screens also grew. Carbon steels were still very widely used, and attention was again directed to the use of lightweight and junior structural steel sections. Aluminum was manufactured in many extruded shapes, corrugated sheets, tubing, and as sheeting for ducts, shingles, clapboards, and foil for reflective insulation. Prefabricated panel construction for walls, floors and roofs, commonly employed all three metals.

Synthetic lumber, made from wood waste and phenolic resins, was employed as building board and for doors, sash, and cabinet work. Plastic-surfaced plywood, another product developed during the war, was widely marketed and found excellent for concrete forming. Varied structural slabs were made from excelsior and wood fibers, bonded together with portland cement.



Metal wall panels surfaced with aluminum, stainless steel, or carbon steel alloys were available in several forms—sometimes as insulated units, sometimes as surfacings for other materials.



Intercommunication system equipment became more efficient.

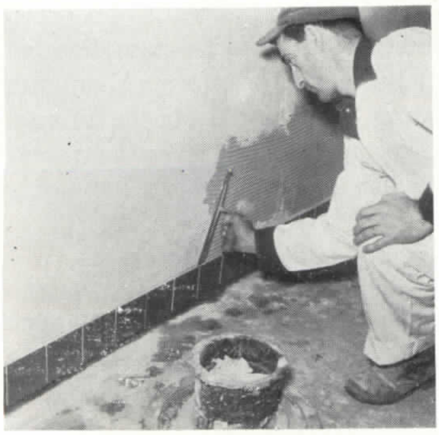
1942-1950 materials and equipment

There was a freer use of plastics of all types. Plastic screening, a wartime choice for replacement of metal screening in the tropics, was used on many homes. Heat-absorbing glass was found in many structures; a plate glass was available to screen the fading and damaging ultra-violet light; directional glass blocks were popular for day-lighting classrooms. Glass fibers and cellular glass formations had been marketed for insulating uses.

Although known and even employed before 1900, *cold cathode lighting* was rediscovered and used in many installations. Manufacturers of fluorescent tubes added additional color to their lighting spectrums, and produced luminaires to provide a more complimentary light for the human skin. Louverall lighting became popular for lighting schoolrooms, drafting rooms, clothing stores, book stores, etc. A thin glass with sealed-in louvers was manufactured to direct and diffuse light from either incandescent or fluorescent sources. Modular principles were applied to luminaires, so that practically any commercial lighting requirement could be met. A general interest was stimulated in natural lighting, again, and many studies were made to gain maximum advantages of its effects, as well as to eliminate undesirable features.

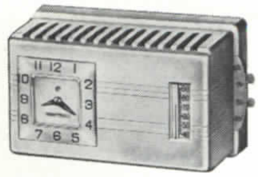
The major development in heating during the period was with the radiant heating principle. Although a few pioneer installations were designed as early as 30 years ago, the emphasis on this method did not come until the end of the war. Radiant heating coils carrying hot water were most frequently installed in floors and ceilings. Prefabricated heating coils were introduced to help reduce the cost of installation. Warm-air

Factory-made wall and roof panels of chemically mineralized wood shavings and portland cement, and factory-made large sheets of wood-fiber wall boards signalized trend to larger units of construction and finish materials (above). "Thin-setting" method simplified installation of tile (below).



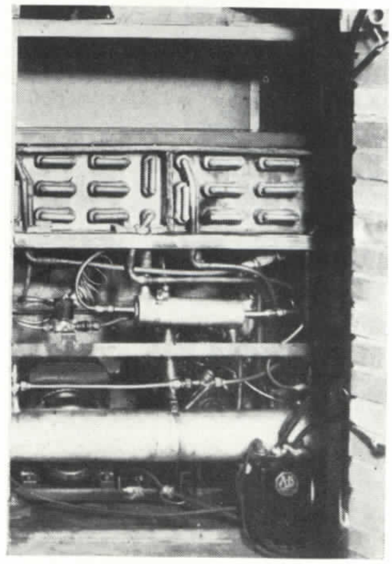
Developments in moving stairway design included automatic fire protection roll-curtain.

Classroom seats were an example of modification of equipment to satisfy new-found functional and physiological requirements.



Furnaces and boilers (left), automatic controls (above), and air-conditioning units (bottom of page) were styled to meet requirements of clean simplicity.

Kitchen equipment improved integration and correlation of units.



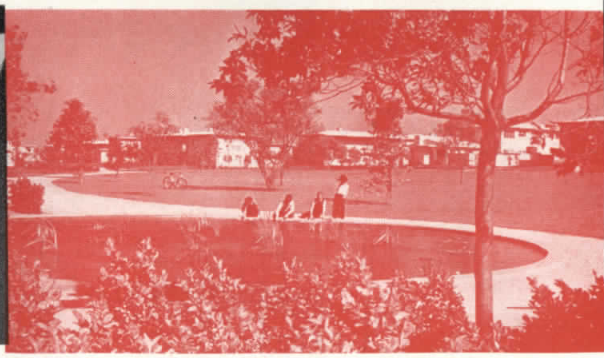
Panel heating became an accepted and proven technique; the heat pump was successfully installed in a few instances.

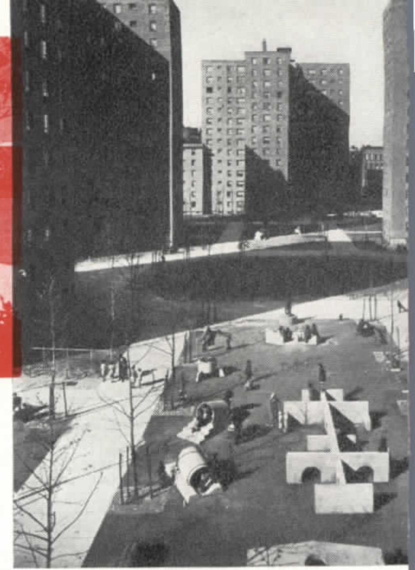
radiant systems generally employed an overhead plenum; a variation carried warm air through structural clay tiles embedded in the floor to registers near window areas. Electric radiant heating was accomplished by special cables placed in walls, floors, and ceilings; by conductive rubber panels; and by radiant heating glass panels. Radiant baseboard heating was developed during this period, and baseboard radiation using convectors became popular. New heating devices included the anthratube and the heat pump. There were tentative panel cooling installations. Solar heating and electronic heating, although quite workable, were still experimental.

Community sanitary facilities provided for military dormitory groups and for defense plants during the war, had an influence on the standard of similar equipment for temporary housing or barracks, for motels, and trailer camps.

Almost totally automatic control of high-speed elevators arrived; moving stairways were fireproofed.

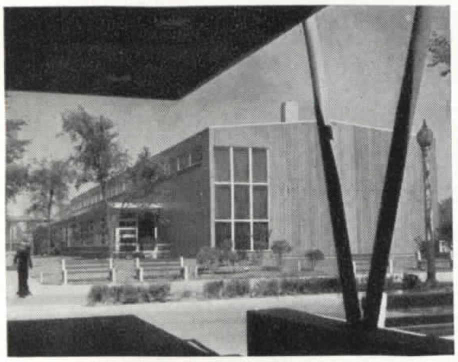
Thus as 1950 arrived, the products which had been new at the beginning of the century were still being improved. In the meantime a host of additional products had been introduced, ready for the designer of the next half century to use if he found them good.





Multiple-housing problems occupied architects during the war, and remained an important field of activity. (Left to right: Aluminum City Terrace, near Pittsburgh, Pa., war housing by Gropius & Breuer, 1942; Baldwin Hills Village, Los Angeles, war project which remains outstanding, by Johnson, Wilson, Merrill, Alexander, and Stein, 1942; James Weldon Johnson Houses, New York, public housing project with landscaped and sculptured open areas, by Whittlesey, Prince, and Reiley, 1948.)

1942-1950 architectural practice



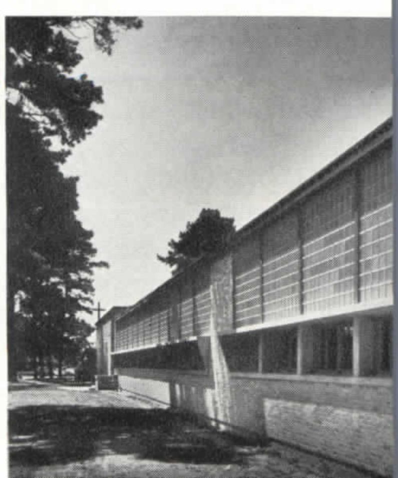
The wartime architect-engineer combinations produced a staggering amount of work, some of excellent quality. (Above, USN Recreation Building, Great Lakes Training Center, Ill., by Skidmore, Owings & Merrill.)

Like other citizens, the architects went to war in one way or another. Many were in the armed services; others were in auxiliary branches, helping with needed building; and yet others helped build the housing and the factories—or the planes, tanks, guns, or ships—that were needed for victory. In any case, during the war years, the professional choice was not great, since only essential building was possible. Materials were restricted by law, and even in the postwar period, with its reconversion difficulties, the profession continued to operate with limited supplies. Just as things relaxed a bit, construction costs zoomed, and this brought further aggravations and delays.

The period of working on short rations had done much to school the architect in resourceful planning and economical use of materials—essential elements in serious architecture of any time. Though he could not build as much as he would have liked, he did have time to reconsider his approach to design. And while this necessary stock-taking was going on, a great deal of new and specific data was being tabulated by research, and became available for his use when work started. To mention only a few: problems of classroom design, especially from the point of view of lighting, were being resolved by Darrell Boyd Harmon and others; research groups such as the Pierce Foundation produced exhaustive studies on "family behavior, attitudes and possessions" in an effort to find out how people prefer to live; the Committee on the Hygiene of Housing of the American Public Health Association produced a series of studies basic to the standards of housing, in relation to mental and physical health; and the United States Public Health Service added to its desirable standards for health-care facilities.

In fields not so directly related to architecture itself, much research had

Many communities awoke to the need for churches, museums, and other noncommercial structures. (Left, above, Christ Lutheran Church, Austin, Texas, by Fehr & Granger; left, Des Moines Art Center, by Saarinen; Swanson; Brooks; Borg.)



Promising trends in housing included the combined "garden type" and multistoried project (left, Fresh Meadows, New York, by Voorhees, Walker, Foley & Smith); and better-designed subdivisions of detached houses (right, "Providence Forest," McLean, Va., by Harry E. Ormston).

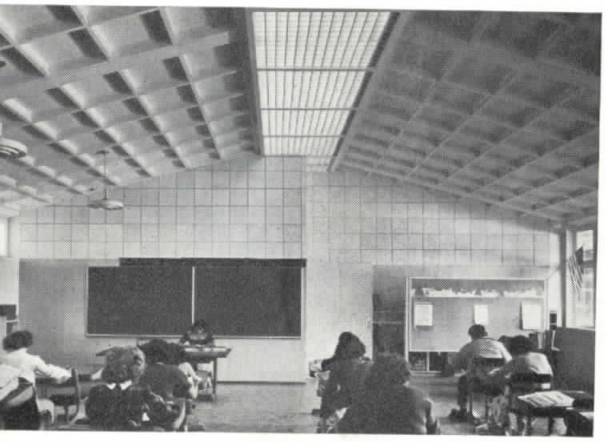
Individual house commissions occupied many offices. (Below, house in Carmel, Calif., by Wurster, Bernardi & Emmons.)

Privately financed apartment houses again became common commissions. (Above, Phillips Apartments, Washington, D.C., by Berla & Abel.)

been conducted which began to be reported. Psychologists as well as lighting engineers had been making studies of desirable and practical light standards. While philosophers and critics had been studying the problem of esthetics, psychologists and physiologists had been digging more deeply into the question of visual perception and its influence on human action. At the same time, a number of particularly research-minded architects had studied in detail and with great care the functional requirements of specialized building types—libraries in relation to their most effective use; schools in relation to community needs and modern educational methods; hospitals in relation to current therapies; housing in relation to living and community planning, etc.

All these moves, in combination with the numerous refinements in materials and methods—some of them by-products of war needs; others, like the moves to standardization and modular design, the culmination of earlier efforts—had amassed a significant and rich new reference library for the designer's use.

In addition to the need for absorbing an increasing amount of technical knowledge and investigating disciplines impinging on his own, the architect was face-to-face with a widened social responsibility and a field of activity at least potentially greater than heretofore. The concept of the architect-planner was an appealing one, especially as the design profession saw the new field of community and regional planning slip into the hands of a new professional group, largely untrained in co-ordinated design. Housing on a large scale was a concept that was here to stay and it required a planner's point of view. At the other end of the scale, one found many architects taking part in the design of products for industry. In the furni-



School programs, attempting to catch up with mounting needs, demanded much study. Far left, Parochial School, Houston, Texas, by Golemon & Rolfe, embodied Harmon's "coordinated classroom" principles; left, Elementary School, Santa Clara County, Calif., by Kump & Falk, indicated search for well-diffused light from multiple sources; right, Elementary School, Cicero, Ill., by Perkins & Will, illustrated protected window-walls.

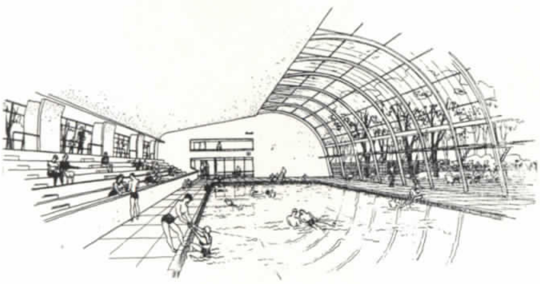
Study of new power-age building types and improvement in solution of ages-old problems progressed together. (Left, Rural Cooperative Diesel Plant, Cambridge, Minn., by Long & Thorshov, Inc.; right, Community Hospital in Luverne, Ala., by Sherlock, Smith & Adams, Inc.)

ture field alone, consider the contributions of George Nelson, Charles Eames, Alvar Aalto, and Eero Saarinen. Thus the architect's sense of responsibility, in some cases his actual participation, expanded in two directions—both toward the larger environment, beyond the walls of the building, and toward the individual objects which furnish the immediate environment.

There are various estimates of the way the architect faced up to this more difficult and more responsible job that he had partly chosen and had partly thrust upon him, but there is little question that the architect in 1949 showed a greater interest than he did earlier in the century in his widening responsibilities. Meetings of the A.I.A., a much-broadened organization, were likely to highlight seminars on technical or functional planning matters. There *were* architect-planners, and architect-industrial-designers, even though some others of the profession refused to admit that theirs were architectural roles. There was closer integration of architecture and engineering; closer contact between the specifiers of products and the users of products.

Schools were built which were better places for learning than any we had previously; there were hospitals built which in themselves assisted the curative process. There was need for much more housing and many of the projects built were undeniably grim. But architects were *concerned* about housing. Land overcrowding in the cities continued and land-use in the open areas still was haphazard; but architects were *concerned* about urban redevelopment and community and regional planning. The fields of practice were wide and in many cases new; the data were available for an invasion of all of them; participation had been started by some leaders. Others hung back, undecided, reluctant, or belligerent. How fully the architect could win for himself an important place in our mid-20th century society remained to be seen.

Building for public recreation constituted a hopeful, though not frequent, field of practice. (Below, Community Center, Hickory, N.C., by A. Raymond and L. L. Rado.)

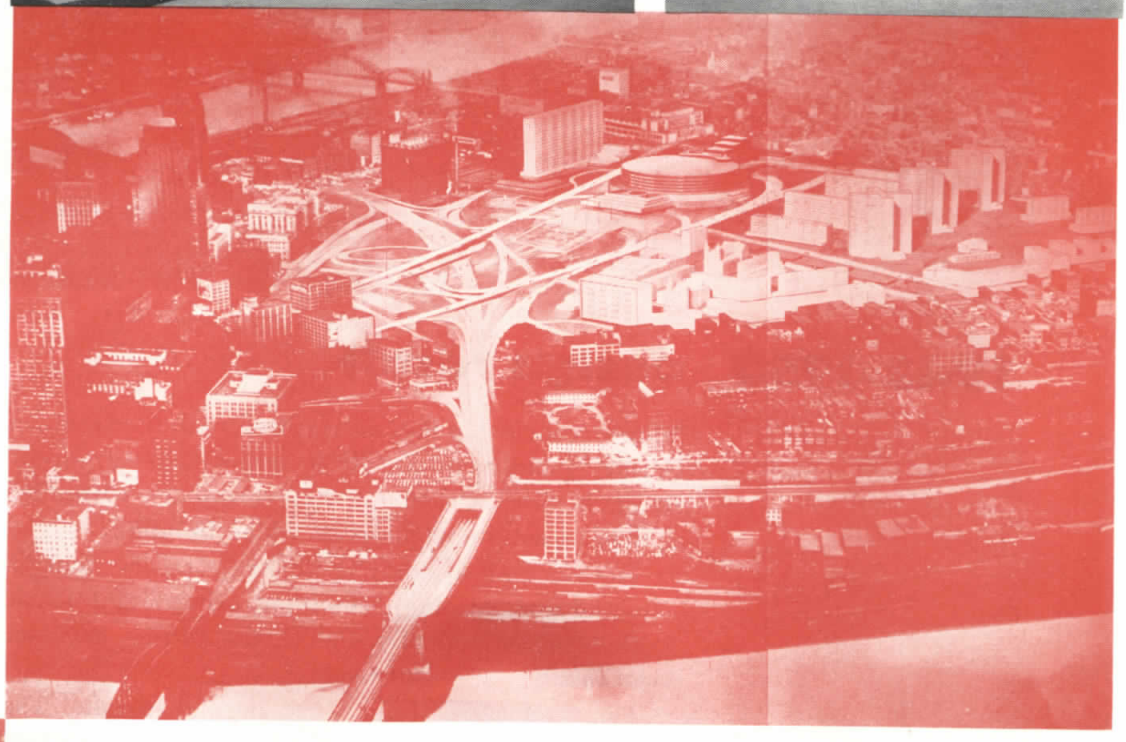


Remodeling of theaters furnished an increasing amount of work. (Below, Victoria Theater, New York, by Edward D. Stone.)

College building became active, with study and advance slow but very obvious. (Below, Miami University Recreation Building, Coral Gables, Fla., by Robert Law Weed and Associates.)

Supermarkets and many types of stores and shops were near the top in activity. Open fronts, well-designed equipment, and studied lighting were sharp trends. (Left to right: Supermarket, Oklahoma City, by Joseph N. Boaz; Specialty Shop, Sacramento, Calif., by Gruen & Krummeck; Shoe Store, New York, by Ketchum, Gina & Sharp.)

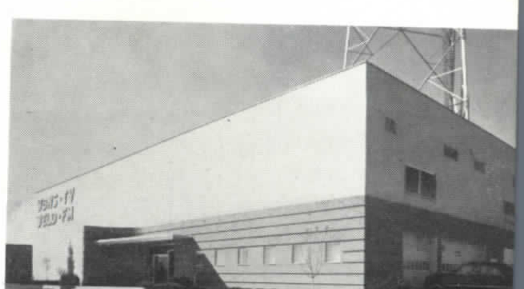
Automobiles and airplanes required ever more specialized service structures. (Right, auto service station, Los Angeles, by William F. Hempel; far right, Air Terminal, Merced, Calif., by Ernest J. Kump Co.)

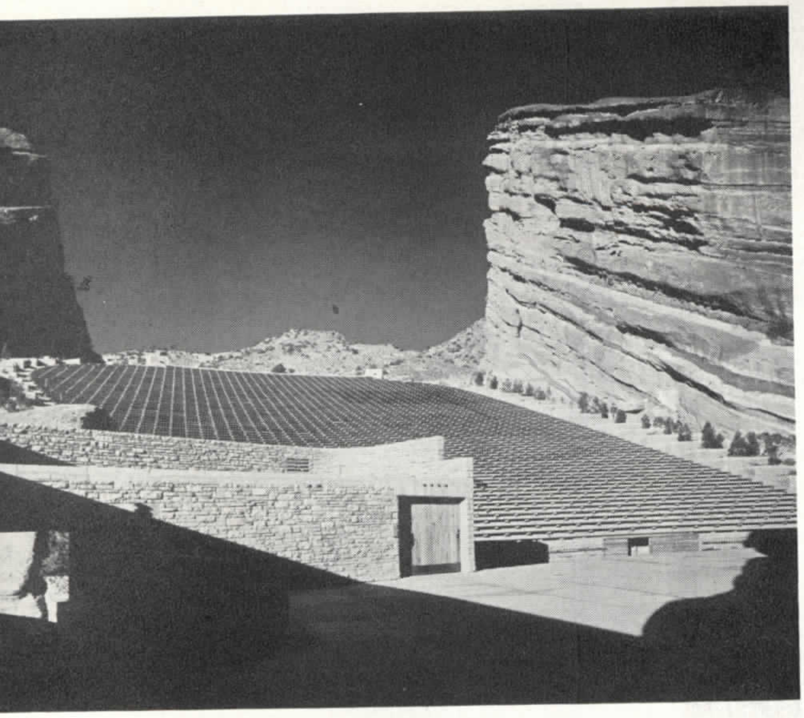


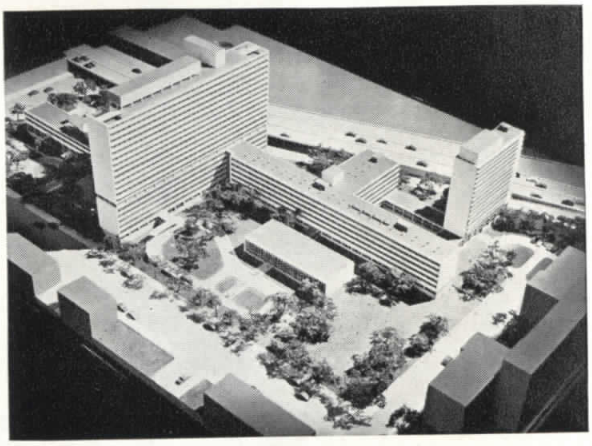
Huge urban redevelopment programs in many cities attacked the ills inherited from earlier uncontrolled growth. (Right, Pittsburgh, Pa., replanning study by Mitchell & Ritchey, with Pittsburgh Regional Planning Association.)

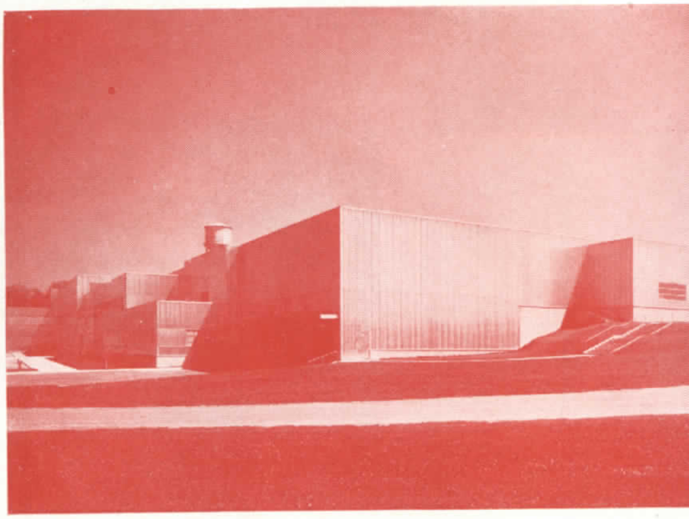
Large, small, and medium-size office buildings again began to rise. (Far left, 100 Park Avenue, New York, by Kahn & Jacobs; left, American Stove Co. Building, St. Louis, by Harris Armstrong.)

Television called for another new building type. (Below, TV Station, Columbus, Ohio, by The Austin Co.)









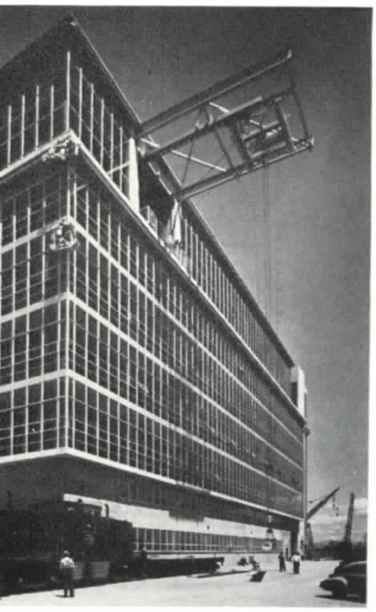
Above: Red Rocks Amphitheater, Denver, Colo., by Burnham Hoyt. Above, right: N.Y.U.-Bellevue Medical Center, New York, by Skidmore, Owings & Merrill. Right: Nylon Throwing Mill, Winston-Salem, N.C., by Lacy, Atherton, Wilson & Davis. Above, far right: Naval Ordnance Building, San Francisco, by Kump & Falk.

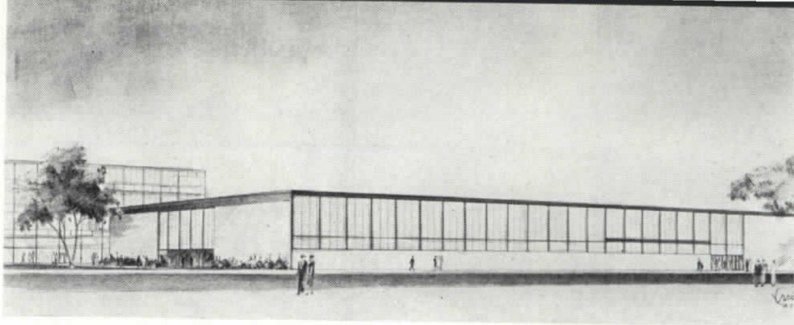
1942-1950 design result

While a conclusion that all was well with the architectural world at the half-century point could hardly be supported—eyesores that arise everywhere defeat more than the hope of it—there are, within today's concept of design approach, solid new bases on which to build.

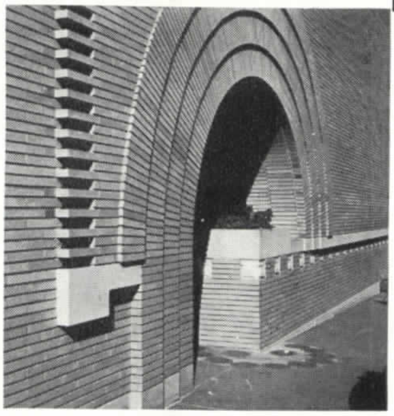
Rather than attempt to illustrate on the final pages of this review an array of fine buildings which one critic might consider the best of today's work, another violently dislike, the editors have selected buildings which seem to *typify* present trends.

One fact seems established beyond dispute. Today's architecture—as of January, 1950—is based on a simple, direct expression of both the program and structure. That is the starting point. This survey surely reveals that it is very different, conservative and ages-old as it is, from the premises which obtained 50 years ago and through much of the first half-century. Not always is it as simply stated as in the Red Rocks Amphitheater of Burnham Hoyt, where the architect took what God gave him and, with a minimum of devices, developed an impressive monument. More typical, perhaps, is the directness of the other jobs illustrated at the top of the page: a hospital complex that is in itself an analysis of the program, at the same time that it is a solution; a factory that quite simply clothes industrial activity with one of the newly available materials; a naval

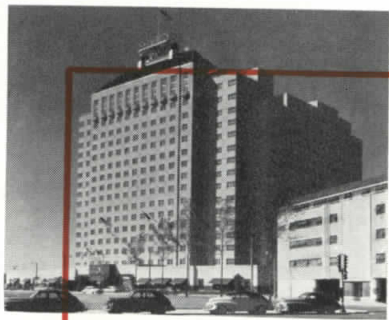


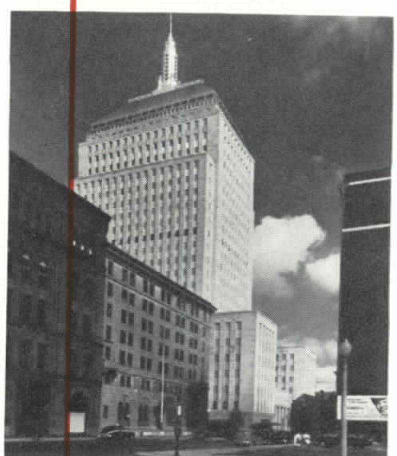


Above, right: Library and Administration Building, Illinois Institute of Technology, Chicago, by Mies van der Rohe. Right, House in Ross, Calif., by Henry Hill. Below, Shop, San Francisco, by Frank Lloyd Wright.



Below, top: Shamrock Hotel, Houston, Tex., by Wyatt C. Hedrick. Bottom: John Hancock Life Insurance Co., Home Office, Boston, by Cram & Ferguson.





ordnance building that employs today's technology to erect a frame standing undisguised.

Restless critics of today's work—some who are impatient to find monumentality, symbolism, a new fixed style—remind us that function, technology, good materials and economical structure are not enough to make an architecture. For their satisfaction and for the speculation of all, there are illustrated, at the right above, three recognizable trends in conscious design expression. Mies van der Rohe's scheme for the Illinois Institute of Technology is among the most convincing of recent designs created within the discipline of the purists: a highly rationalized and ultra-refined direct statement of technic and purpose. Frank Lloyd Wright's recent V. C. Morris shop in San Francisco surely represents the opposite end of the scale: a highly personal romantic approach to organic architecture. And the skillfully designed house near San Francisco, by Henry Hill, represents a happy fusing of design approaches. It makes conscious and sympathetic allowance for the psychological need for texture, for color, and essentially livable qualities. These three tendencies are so marked in today's work that the critics have already given them style labels. In addition other designers over the country are creating a multitude of buildings that do not fit easily into any one of these categories; but seem to indicate an infinite variety of possibilities within the extremes of the work already accomplished.

For the record, the footnote pictures indicate, briefly, that all sorts of other things are still going on. Where do we go from here?

15-STORY

APARTMENT BUILDING HEATED BY REVERE COPPER RADIANT HEATING COILS EMBEDDED IN CONCRETE FLOORS

1350 Astor Street, Chicago. Ralph C. Harris, Architect; Bueter & Wolff, Engineering Consultants; Gallaher & Speck, Inc., Heating Contractors; The Davies Supply Company, Revere Distributor.

According to recent building reports, the "Gold Coast" in Chicago has been chosen for the location of several very fine, new apartment buildings. Among them is 1350 Astor Street.

One of the interesting features of this outstanding building is that apartments on all fifteen floors will have the comfort and convenience of radiant panel heating. The heating coils are imbedded in the concrete floors. They utilize over 52,000 feet of Revere Copper Water Tube . . . nearly two-thirds of a mile of tube per floor.

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Manufacturers' Literature

★ *Editors' Note: Items starred are particularly noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.*

AIR AND TEMPERATURE CONTROL

1-330. Type HU Anemostat Air Diffusers (Bul. 28), 4-p. illus. bulletin on diffusers for projection unit heaters. Types and combinations, typical installations, photos, accessories. Data available for duct applications with central systems. Anemostat Corp. of America.

1-331. Comfort Cooling (Unit X6266), 12-p. illus. booklet showing attic and window fans, accessories. Advantages, general data, specifications, dimensions, photos. Emerson Electric Mfg. Co.

Two 4-p. booklets, one on coils for radiant panel heating, the other, on "fin pipe" coils for industrial and institutional heating. Descriptions, ratings, installation photos. Kritzer Radiant Coils, Inc.:

1-332. Kritzer "Fin-Tube" Radiant Coils, AIA 30-C-44 (596)
1-333. Kritzer Commercial "Fin-Pipe" Coils for Heating, AIA 30-C-4 (591)

1-334. The "Midget" Louver, folder describing small aluminum louvers with weatherproof screening; tension slots and swedge fasteners to assure tight, permanent anchorage, for installation in gable ends, eaves, etc. Advantages, typical installations, photos. Midget Louver Co.

1-335. Functional Heating Design (559), 4-p. booklet describing advantages of baseboard forced hot water heating system. Illustrations, ratings, shipping information. National Radiator Co.

1-336. All-Year Air Conditioner (OAC-7902), 8-p. illus. booklet on gas-operated units providing all functions of all-year air conditioning. Description, dimensions, operating and installation data. Also evaporative water coolers for use with conditioners. Application data. Servel, Inc., Air Conditioning Div.

1-337. Thrush Flow Control System (CC-549), 8-p. illus. catalog describing forced circulating hot water heating system and components, including circulators, valves, pressure tanks, etc. Capacities, dimensions, conversion table. H. A. Thrush & Co.

1-338. Trane Unit Ventilators (Bul. S-340), 12-p. illus. catalog on cabinet-enclosed units providing filtered, fresh, heated air. Advantages of use in classrooms, method of operation, construction features, 4-color plates, other photos. Trane Co.

1-339. Worthington Compressors and Dry Vacuum Pumps (H-620-B30), 16-p. illus. catalog. Compressor selection, sizes and ratings, technical data, photos, miscellaneous accessories. Worthington Pump & Machinery Corp.

1-340. Convector-Radiators, AIA 30-C-4 (Cat. 4049), 16-p. illus. catalog on free-standing, wall-hung, partially- and fully-recessed units for use with steam or hot water systems. Types, dimensions, capacity tables, typical piping connections. Young Radiator Co.

CONSTRUCTION

3-123. Dur-O-waL, 4-p. folder describing new patented steel reinforcing for masonry walls to prevent cracks. Advantages, general information, specifications. Cedar Rapids Block Co., Dur-O-waL Div.

Booklet and folder giving general information, properties, and uses of Georgia marble. Photos. Georgia Marble Co.:

3-124. The Story of Georgia Marble (RB6-96½D)
3-125. Georgia Marble Quarries and Mills, AIA 8-B-1 (A5-73½ DP)

3-126. The Keystone System, AIA 21, 44-p. illus. manual demonstrating procedure for application of steel reinforced stucco and plaster wherever open mesh steel reinforcing is required. Detailed drawings, good building design and construction, ingredients, mixing, application, curing, and texturing of stucco, photos, diagrams, table of contents. Keystone Steel & Wire Co. ($1.00 per copy; make check or money order payable to Keystone Steel & Wire Co.)

Two 4-p. folders, one on six types of steel framing units for practical spanning of unobstructed areas, the other, describing lightweight roof trusses, jig-welded wall panels, load-bearing partitions, and bar steel floor joists. Drawings, loading table, photos. Macomber, Inc.:

3-127. Macomber Longspans, AIA 13-G
3-128. Macomber Steel Framing

3-129. "Blueprint Folder," 4-p. folder illustrating one-hour fire-rated solid partition, with over-all 1/12" thickness, for nonload-bearing wall construction. Advantages, test results, photos, sections, details. Metal Lath Mfrs. Assn.

DOORS AND WINDOWS

4-239. The Original Rite-Lock, AIA 27-B, 4-p. illus. folder describing lock designed for sliding doors. Advantages, specifications, illustrations of other hardware. Adams-Rite Mfg. Co.

4-240. Standard Aluminum Entrances, AIA 16-E, 12-p. booklet on extruded aluminum door frames finished in Alumilite. Standard sizes and details, specifications, availability for immediate delivery. American Art Metals Co.

4-241. Wood Fire Doors, AIA 16, 4-p. folder on wood doors with built-up core thoroughly impregnated with fire-retarding Protexol. Fire ratings, construction, heat transmission, tests, performance, photos. Fox Bros. Mfg. Co.

Three booklets describing wood awning windows. Advantages, construction, sizes, typical details, specifications. Gate City Sash & Door Co.:

4-242. Awning Windows in Wood (85)
4-243. Awning Windows in Wood, AIA 19-E-1 (82)
4-244. Awning Windows by Gate City

4-245. Kawneer Entrances (48022), 16-p. illus. booklet illustrating variety of Alumilited stock entrances. Types, sizes, descriptions. Kawneer Co.

4-246. Kwikset Locks, 4-p. illus. folder describing key-in-knob and keyless locking sets for modern and traditional residential structures. Descriptions, parts, general specifications, advantages. Kwikset Locks, Inc.

4-247. Dor-O-Matic, AIA 27-B, 4-p. illus. folder on concealed door control which eliminates extra accessories required on comparable door controls. Logan Engineering Co., Dor-O-Matic Div.

Three booklets on sliding doors with accordion construction and action, functioning as movable partition or space saving closure. Advantages, method of operation, uses, typical installation photos, technical data on details, elevations, stack dimensions. Modernfold Door Co., Inc.:

4-248. Modernfold Doors, AIA 16-M (148-A)
4-249 Modernfold Doors (149S)
4-250. Modernfold Doors, AIA 16-M (146-I)

4-251. Kaiser Aluminum Shade Screening, AIA 35-P-1 (SS103), 16-p. illus. booklet demonstrating lightweight aluminum screening, consisting of small horizontal louvers tilted at downward angle and its effectiveness against solar radiation under maximum conditions. General and technical data, charts, advantages. Permanente Products Co.

4-252. Winco Aluminum Ventilators and Windows, AIA 26-A-1, 8-p. illus. brochure on ventilators, windows, and fans for use with glass block in commercial and residential buildings. Types, sizes, applications, specifications, installation data, details, elevations. Winco Ventilator Co., Inc.

ELECTRICAL EQUIPMENT, LIGHTING

Three bulletins on industrial and commercial fluorescent lighting fixtures. Types, descriptions of parts and accessories, photometric data, list prices, drawings. Day-Brite Lighting, Inc.:

5-232. Day-Line Industrial Fixtures, AIA 31-F-2 (Bul. 30-A-3)
5-233. Luvex for Slimline Lamps, AIA 31-F-2 (Bul. 10-M)
5-234. The All Metal Lenox-2, AIA 31-F-2 (Bul. 10-E-1)

5-235. Duro-Test 10,000 User Hour Fluorescent Lamps, 6-p. illus. folder describing new fluorescent lamp said to give 220% more light life; employs four cathodes—two at each end—to split current, consuming no more current than single cathode of standard lamps. Advantages, properties, comparison chart, total lumen hour formula, ratings, specifications, prices. Duro-Test Corp.

5-236. Powerstat Light Dimming Equipment for Schools (9491), 8-p. booklet on use and advantages of light dimmers in schools. Selection of different types, standard ratings and specifications table. Superior Electric Co.

FINISHERS AND PROTECTORS

6-182. How to Make Basements Dry and Beautiful, 8-p. brochure. Classification of basements in degree of dampness, corrective measures, instructions and specifications for application of cement paint and rubber base coating. Medusa Portland Cement Co.

★ **6-183. Rust-Oleum** (249), 16-p. catalog illustrating rust-preventive coatings and finishes made from blend of pigments and fish oil. Directions for use, applications, resistant qualities, drying time, thinners, color samples, index. Rust-Oleum Corp.

Two brochures, one on color harmony and color combination suggestions for industrial buildings, the other, on air-entrained waterproofing paste, color aggregate, and masonry coatings. Descriptions, properties, photos, drawings. Truscon Laboratories:

6-184. Color Harmony, AIA 25-B-2, 25-B-5 (746)
6-185. Data from Truscon Laboratories (749)

INSULATION (THERMAL, ACOUSTIC)

9-143, Loxit Acoustical Sytems, AIA 39, 4-p. booklet on steel suspension systems for application of acoustical finish. Description, typical specifications, drawings. Brief descriptions of moldings, acoustical wall trim, and other systems. Loxit Systems, Inc.

★ **9-144. Duct Insulations,** AIA 30-A (IN6.A1), 12-p. illus. brochure describing three types of thermal and acoustical Fiberglas insulations for ducts and duct systems. Thermal conductance, product data, applications, finishing of duct surfaces, specifications. Owens-Corning Fiberglas Corp.

9-145. Foamglas, AIA 37-B (G91051), 24-p. illus. booklet on rigid cellular glass insulating material for industrial and commercial applications. Advantages, installation methods, sizes and thicknesses, typical application data and photos, available shapes, accessory materials, details. Pittsburgh Corning Corp.

9-146. Sono-Therm, 8-p. booklet on structural insulating board, composed of wood fibers chemically treated with fire-resistive cement, molded into slabs, and cut to various thicknesses. Properties, uses, typical construction details. Sono-Therm Co., Inc.

SANITATION, WATER SUPPLY, DRAINAGE

19-497. Durcopumps (Bul. 816), 4-p. folder describing self-priming, corrosion-resisting pumps, made in various metals. Features, design and performance, priming and other data, photos. Duriron Co., Inc.

19-498. Zurn Floor Drains, AIA 29-C-3, 6-p. folder illustrating number of floor and area drains, valves, traps. Brief descriptions, types, uses. J. A. Zurn Mfg. Co.

SPECIALIZED EQUIPMENT

19-499. Art in Iron, 40-p. illus. catalog describing various forms of wrought iron work, including railings, grills, balconies, steel stairs, fire escapes, etc. Brief descriptions, drawings, photos. Artcraft Ornamental Iron Co.

19-500. 50th Anniversary Catalog, 26-p. illus. catalog presenting line of streamlined pencil sharpeners, lettering and drawing pens, inks, linoleum cutters, steel clips. Index. C. Howard Hunt Pen Co.

19-501. The Greatest Name in Quality Sinks, AIA 29-H-6, 4-p. folder describing and illustrating line of stainless and galvanized steel cabinet sinks and tops, drinking fountains, surgical instrument cases. Advantages, specifications. Just Mfg. Co.

19-502. Schiffer Prints (Cats. No. 1 and 2), two 4-p. catalogs illustrating collection of modern decorative fabrics for drapery and upholstery use. Brief descriptions, photos, names of designers. Schiffer Prints Div., Mil-Art Co., Inc.

19-503. Viking Sprinkler Equipment, portfolio of bulletins and other literature describing sprinkler systems and equipment for commercial and industrial installations. Types, dimensions, diagrams, sections, operation, fitting lists, installation data, drawings. Viking Corp.

SURFACING MATERIALS

19-504. Outstanding Wall Coverings, AIA 28-C, 4-p. illus. booklet describing four decorative surface coverings: pliable wood veneer (Flexwood); transparent plastic sheeting with suede-like backing (Kalistron); one-inch squares of plywood bonded to flexible backing (Checkwood); and specially treated genuine leather tile (Leatherfloor). Uses, advantages, photos. U.S. Plywood Corp.

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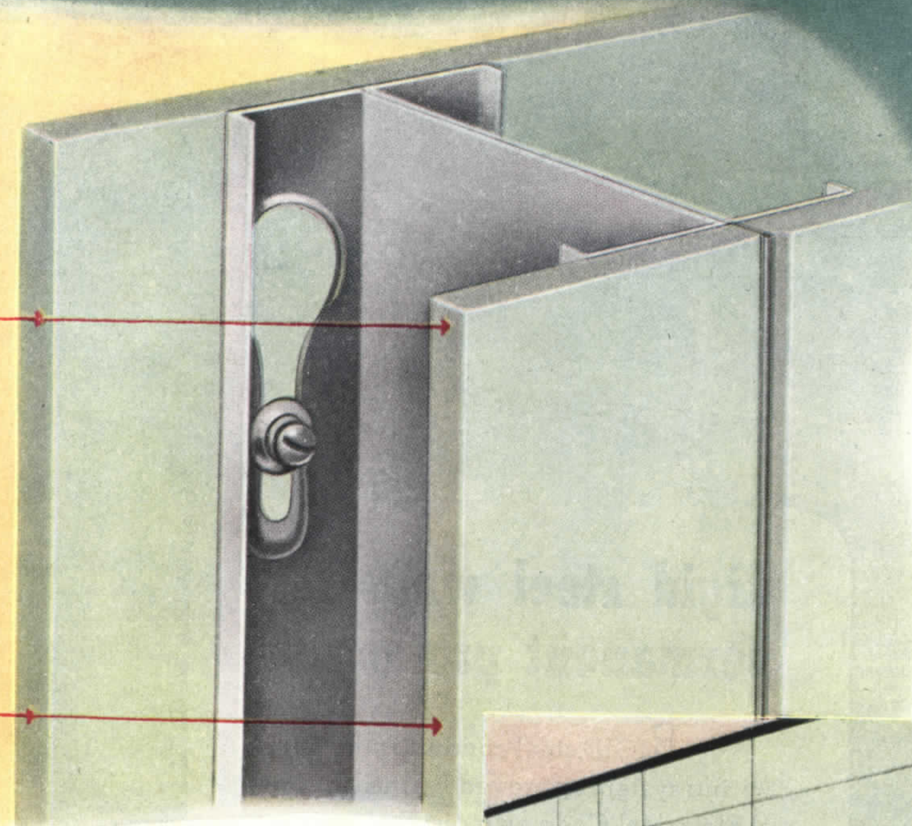

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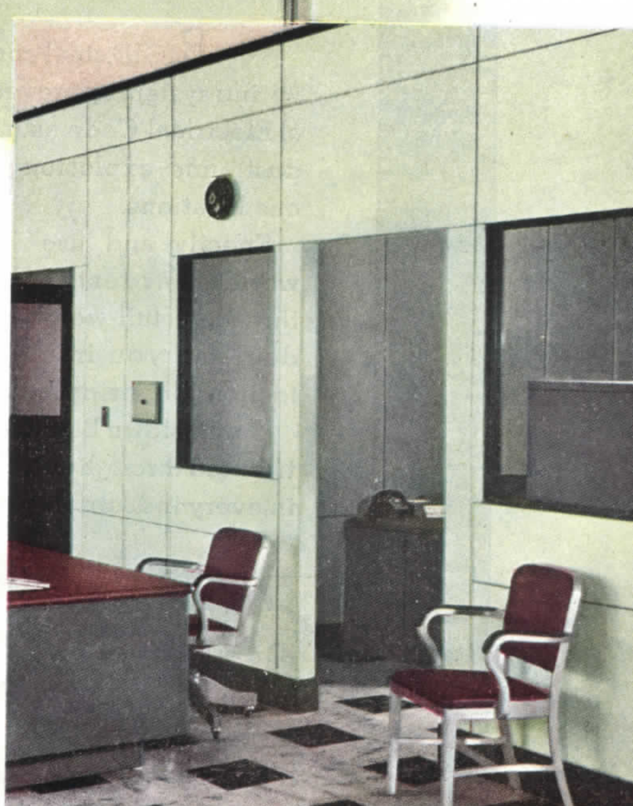

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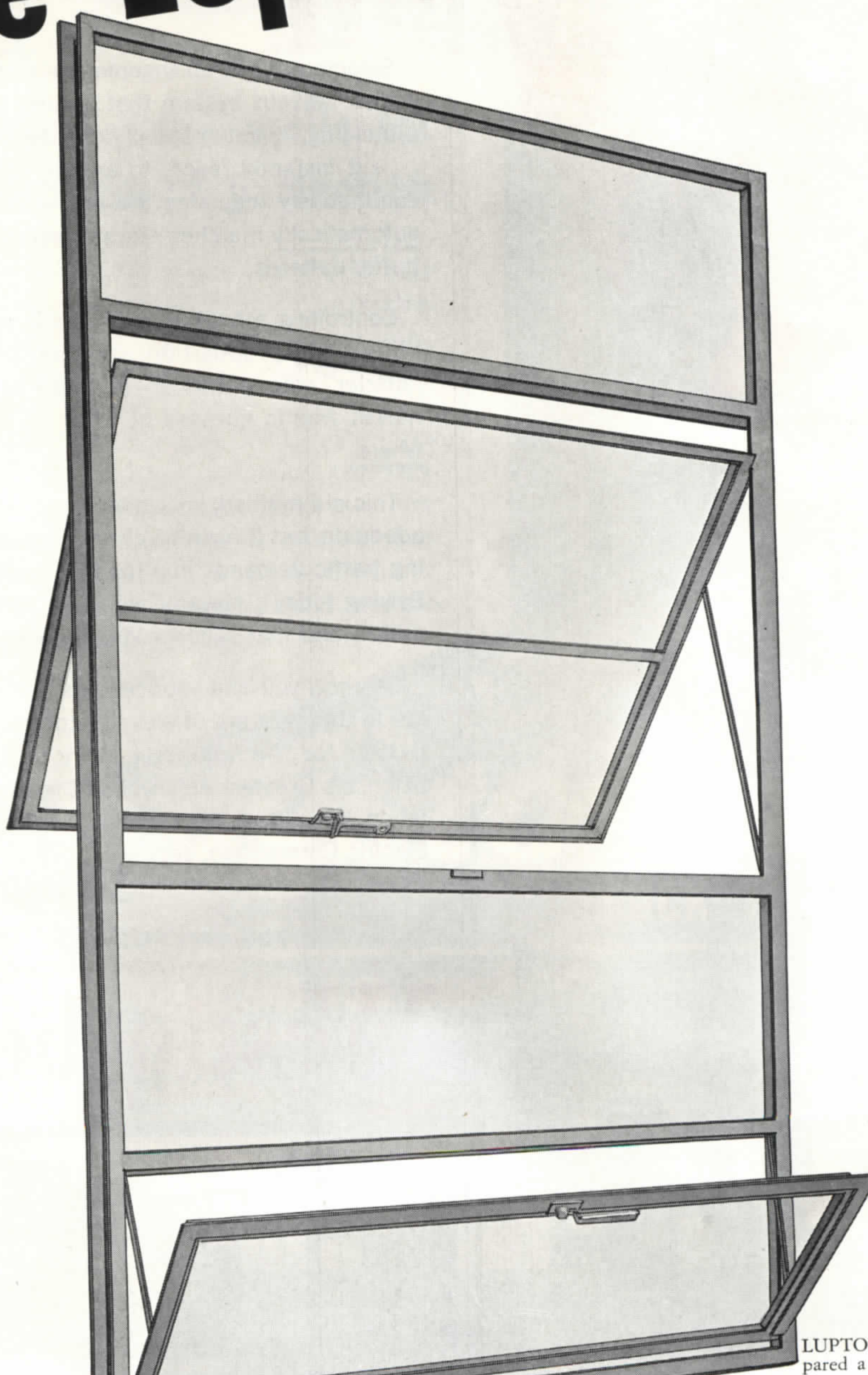

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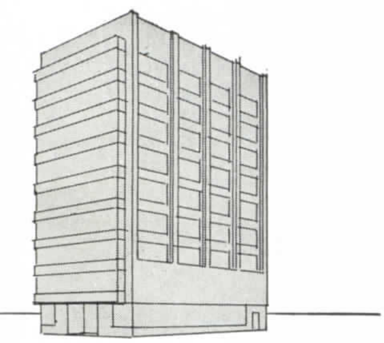

A really important development in window design — the new Lupton "Master" Aluminum Window.

From a design standpoint, it opens up great new opportunities in window planning—better appearance, minimum infiltration and a greater adaptability to modern building design.

From a construction standpoint, it sets new standards of high durability and low maintenance costs.

Check these features of the new Lupton "Master" Aluminum Window:

(1) NEW DEEP SECTIONS — both frames and ventilators 1-5/8 inches — sturdier without sacrificing lightness — added strength in this new Lupton Window.

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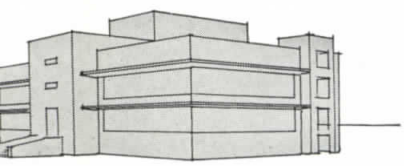

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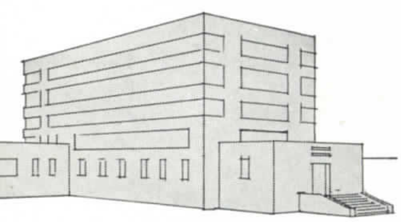
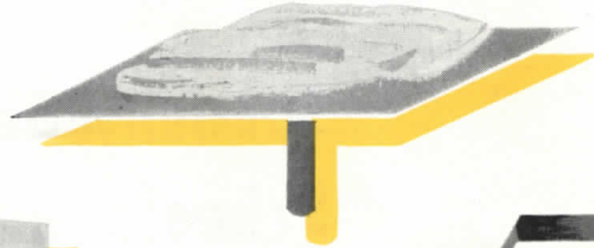
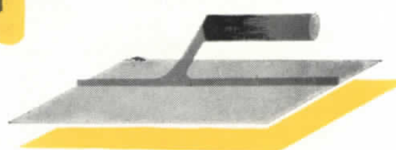


LUPTON

METAL WINDOWS

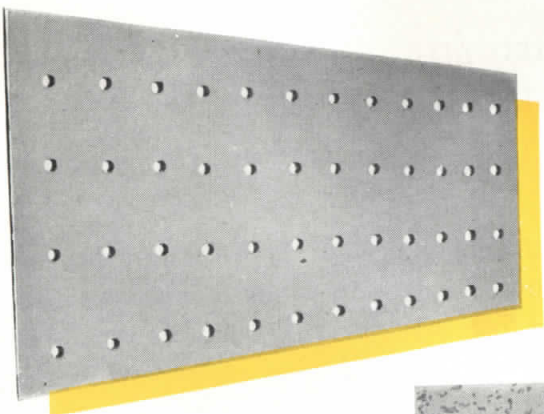


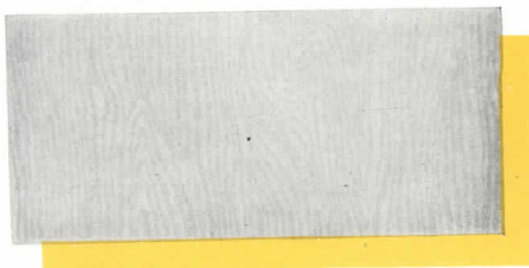


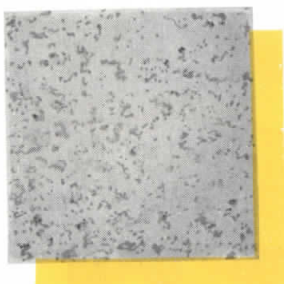
1900-1910: One of the famous "firsts" introduced by U.S.G. was PYROBAR, lightweight fireproof gypsum tile for non-load-bearing partitions. Its many advantages over clay tile were immediately recognized. Thanks also to U.S.G., gypsum plaster of uniformly fine quality was made available nation-wide. It soon replaced lime plaster in most architects' specifications.

Five decades of Progress with the **Architects**

1930-1940: U.S.G. research made some of its greatest forward strides in new developments and refinements of old standbys. GLATEX asbestos cement siding made its appearance along with Perforated and Insulating ROCKLATH, Wood-grained and Insulating SHEETROCK, the PERF-A-TAPE Joint System, TEXOLITE Standard, Imperial and Exterior paints, pressure hydrated lime.

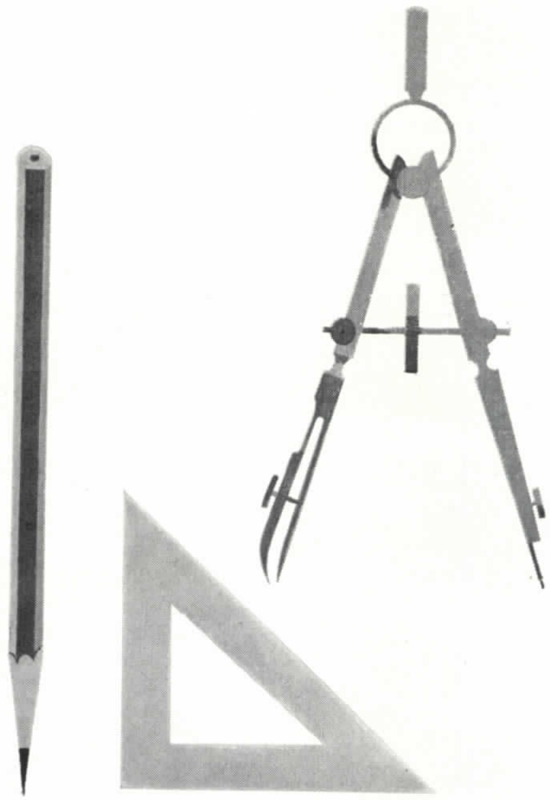




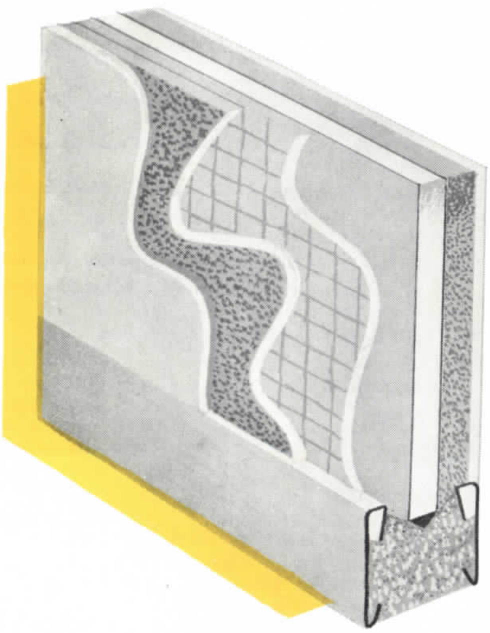


1920-1930: Many outstanding advancements were introduced by the entire building profession. Among U.S.G.'s contributions was ROCKLATH, fireproof gypsum lath plaster base. Almost overnight it became an accepted standard. Others were: fine-grind, easy working RED TOP plaster; SABINITE acoustical plaster; ACOUSTONE mineral acoustical tile; gypsum sheathing; TEXTONE plastic paint.

1910-1920: U.S.G. developed SHEETROCK, the fireproof gypsum wallboard. Architects soon were specifying this revolutionary conception of dry-wall interior construction. During this decade, too, U.S.G. pre-cast reinforced roof decks contributed much toward better commercial building.



who Build America



1940-1950: The last ten years have been a decade rich in U.S.G. firsts. For example, 2″ Solid ROCKLATH partitions. Others were: the BRACE-TITE System for attachment of ROCKLATH plaster base, Laminated SHEETROCK, WEATHERWOOD Twin-Tile insulation board; and those two great TEXOLITE paints, Seven Star Imperial and Semi-Gloss Enamel.

For the past five decades, U.S.G. and the architects of America have advanced—together—contributing their combined resources and knowledge to better building for better living. What of 1950 and the years to come? Architects can look to U.S.G. research scientists and engineers—working in one of the nation's largest and best equipped building material laboratories—for the latest in materials and methods, for up-to-date refinements of established products and their uses. U.S.G. will continue to devote its vast facilities to the excellence of its products and systems—*so America's architects can always specify with confidence when they specify U.S.G. . . .*

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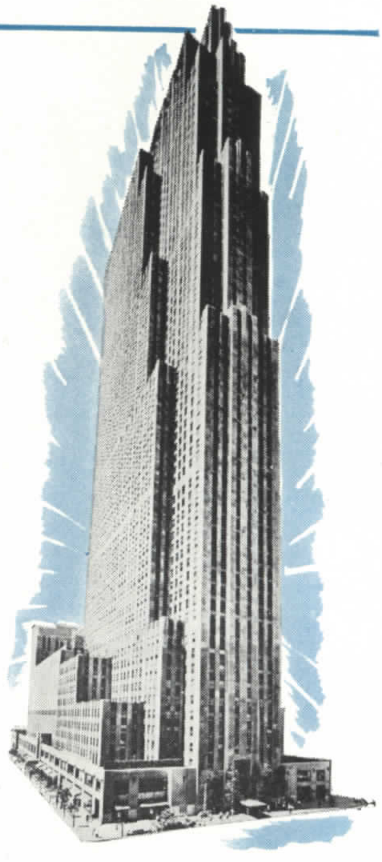
Now even the air has changed...

In 1902, when the Fuller Building was built (*better known in New York as the "Flatiron Building" left*), it was rightly considered an architectural masterpiece . . . although not air conditioned. Today . . . towering structures such as the RCA Building (right), one of the group in New York's famous Rockefeller Center, are air conditioned with equipment utilizing "Freon" refrigerants.



"YESTERDAY"—little more than twenty years ago—few buildings provided conditioned air. For one reason, there were no dependable, safe refrigerants. The big need was for a refrigerant with nontoxic, nonflammable, nonexplosive properties.

"TODAY"—through the untiring efforts of Kinetic Chemicals, Inc., "Freon" safe refrigerants meet this basic necessity. These refrigerants *are* nontoxic, nonflammable, nonexplosive, stable and inert. In addition, they are odorless and harmless to people, pets, foods, fabrics or finishes . . . important characteristics that explain why these refrigerants are rated in Group 1 of the A.S.A.-B-9 Code as entirely safe for all applications.

"Freon" safe refrigerants have made possible the practical, safe and economical air conditioning of all types of buildings . . . as well as the use of refrigeration in hundreds of commercial and industrial applications. "Freon" refrigerants are products of years of manufacturing experience. They embody the results of technical "know-how," constantly improved chemical and physical control of production, and extensive research.

So now . . . through this development of "Freon" safe refrigerants . . . the use of air conditioning is steadily becoming more wide-spread. Now considered a modern refinement for better living, air conditioning is heartily approved by everyone, everywhere. For now, safe, dependable, economical air conditioning and refrigeration is well within the reach of all. Today, large and small systems operated with "Freon" refrigerants are readily available to serve every air conditioning and refrigeration requirement.

"TOMORROW"—who knows? Kinetic's program of research is a continuous one. Product development and the simplification of complicated manufacturing processes may well lead to the introduction of yet unknown chemical compounds. These also may contribute to a still wider use of air conditioning and refrigeration. This leadership in the field of refrigerants explains why more and more architects and consulting engineers are now recommending the installation of systems designed to operate with "Freon" safe refrigerants. Specify such equipment. It will help safeguard your client's investment.

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out of school

By CARL FEISS

We honour founders of these starving cities,
Whose honour is the image of our sorrow.
W. H. AUDEN

All I know about the history of architectural education in the United States is the buildings which have resulted from it.

Let us look at the record as it is written down the street—a typical street in any city in the U. S. Sherman Street in Denver, between 16th and 18th, will do. The state capitol closing the south axis has a golden dome on an elongated Italian Renaissance gadget of horrid proportion; then in rapid succession, as we move north, come a Colonial house, an Art-Nouveau apartment house, an insurance office building in white glazed terra cotta using dynamic symmetry, a Richardsonian Methodist Church of red sandstone with a rather good Norman tower, and across the street a sumptuous men's club in yellow brick *alla palazzo Italiano*. Then a large apartment house, German 1927, with flat roof and horizontal fenestration, across the street from which, another, even larger with polychrome Egyptian ornament (King Tut 1922). A few feet on, the Masonic Temple of Moorish style, with horseshoe-arch doors and windows, and topped with bulbous domes. Across the street a gasoline station with red-painted imitation tile Chinese roof. The whole street is a splendid history of architecture in real life, better than the University Prints every time. What an archeo!

•

There is actually a very short history to the formal teaching of architecture in this country. Even though Thomas Jefferson gave the first lectures on architecture in the country, at the University of Virginia about 1820, no formal schooling began until the opening of the Department of Architecture at the Massachusetts Institute of Technology in the fall of 1865, a mere 84 years ago. The French had a head start of more than 200 years in opening their first Academy of Architecture in 1671, inaugurating a system of training at that time which we have had trouble shaking off ever since we took it on. During these 81 years some 60 architectural schools have been created in this country, and any number of academies, ateliers, and specialized architectural training centers. Actually, a lot has been accomplished in this short time through diligence and serious intent. That 40 or more years, or half the time, was wasted in a sorry effort to transpose an alien system to our shores can only be chalked up to experience and viewed with tolerant regret.

Not many of you will have read the exhaustive treatise, "The History of Collegiate Education in the United States," by Arthur Clason Weatherhead, a Ph.D. thesis for Columbia written in 1941. The facts, herein rearranged, are from this book; the opinions are my own, although I find myself in full agreement with Weatherhead on his analysis of eclecticism in our training.

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No story of the history of our architectural education can avoid the Beaux

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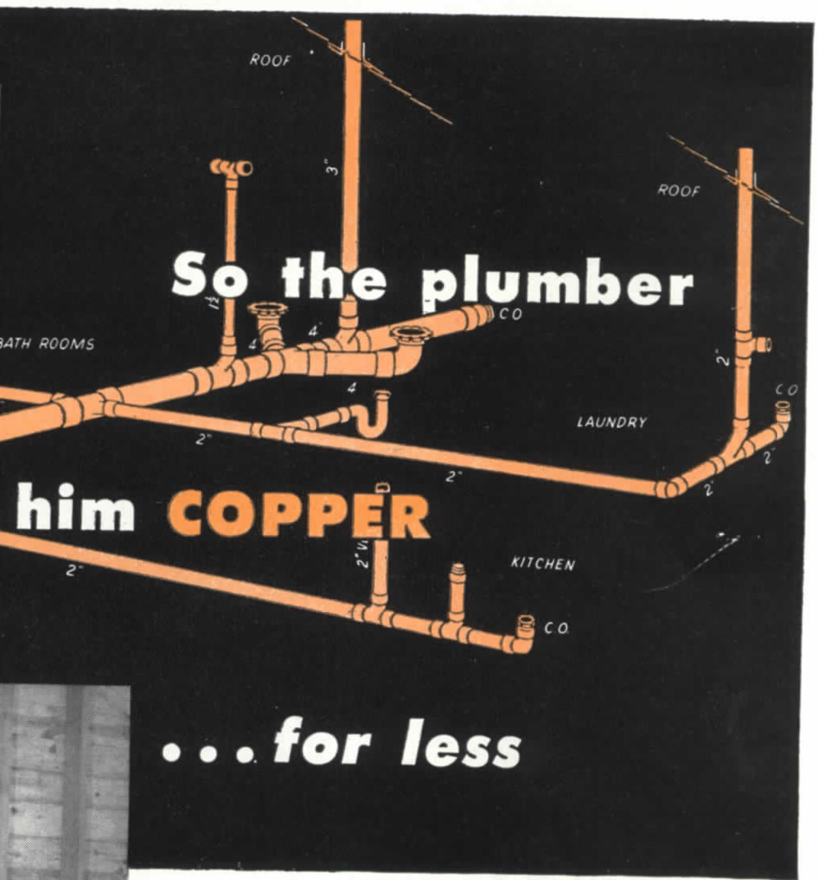
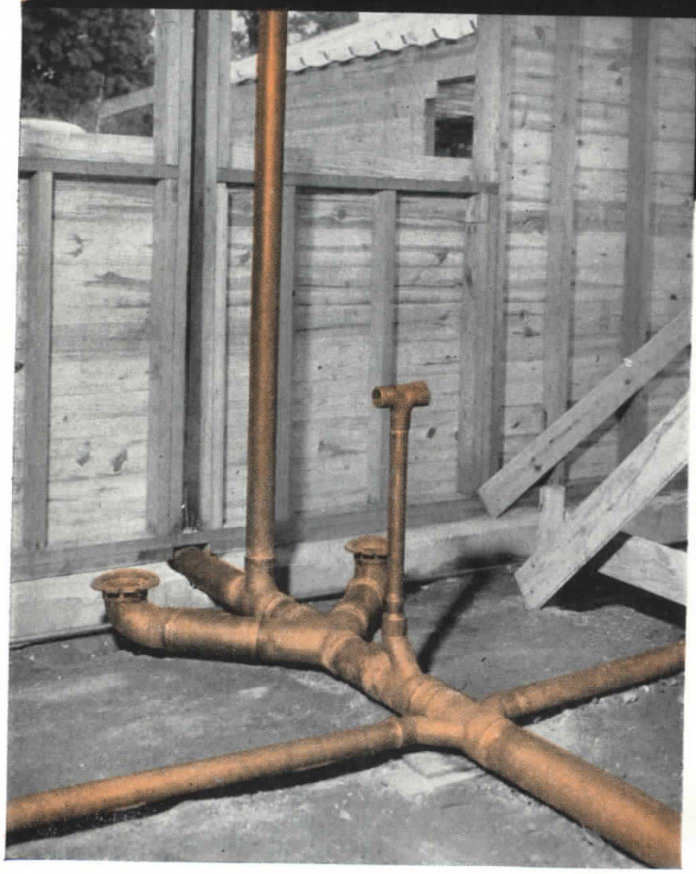


So the plumber gave him COPPER ...for less

Schematic drawing for complete drainage system.



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The original bid on a cast iron and steel system was $961.04. The plumber refigured the job in ANACONDA Type M Copper Tube and came up with a bid of $948.64—or $12.40 less. The installation involved 105 feet of tube from 1¼" to 4" nominal diameters.

You can give your clients a lifetime all-copper plumbing and heating installation at a cost usually comparable to conventional materials by specifying ANACONDA Copper Tubes. Would you like us to send you complete data on ANACONDA Type M Tube for sanitary piping and on ANACONDA Water Tube for plumbing and heating piping? Just write to The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario. 5018A

**An actual case. Owner's name on request.*

For better plumbing... use ANACONDA COPPER TUBES

out of school

(Continued from page 116)

Arts. I shan't whip the dead horse. It ran a very full race at one time. It is strange to think that there are many students in many schools today who know next to nothing about a system of architectural education as widespread, as curiously illogical, and yet emotionally compelling as this one was. Those of us who came in on the very tail end of the period of greatest extent of the system can look back on it now with a fair degree of impersonality. Words are still in common usage in the language of the schools which still echo the period of the Francophile. *Charrette, esquisse, atelier, analytique, projet, hors concours.* They will probably remain in the mouths of babes as long as the project method of training remains the chief element in the architectural curriculum. No nostalgia for those lovely dream days in a floating architectural world can ever quite explain away the hypnotic influence of the Beaux Arts system on our hard-headed American businessman architect.

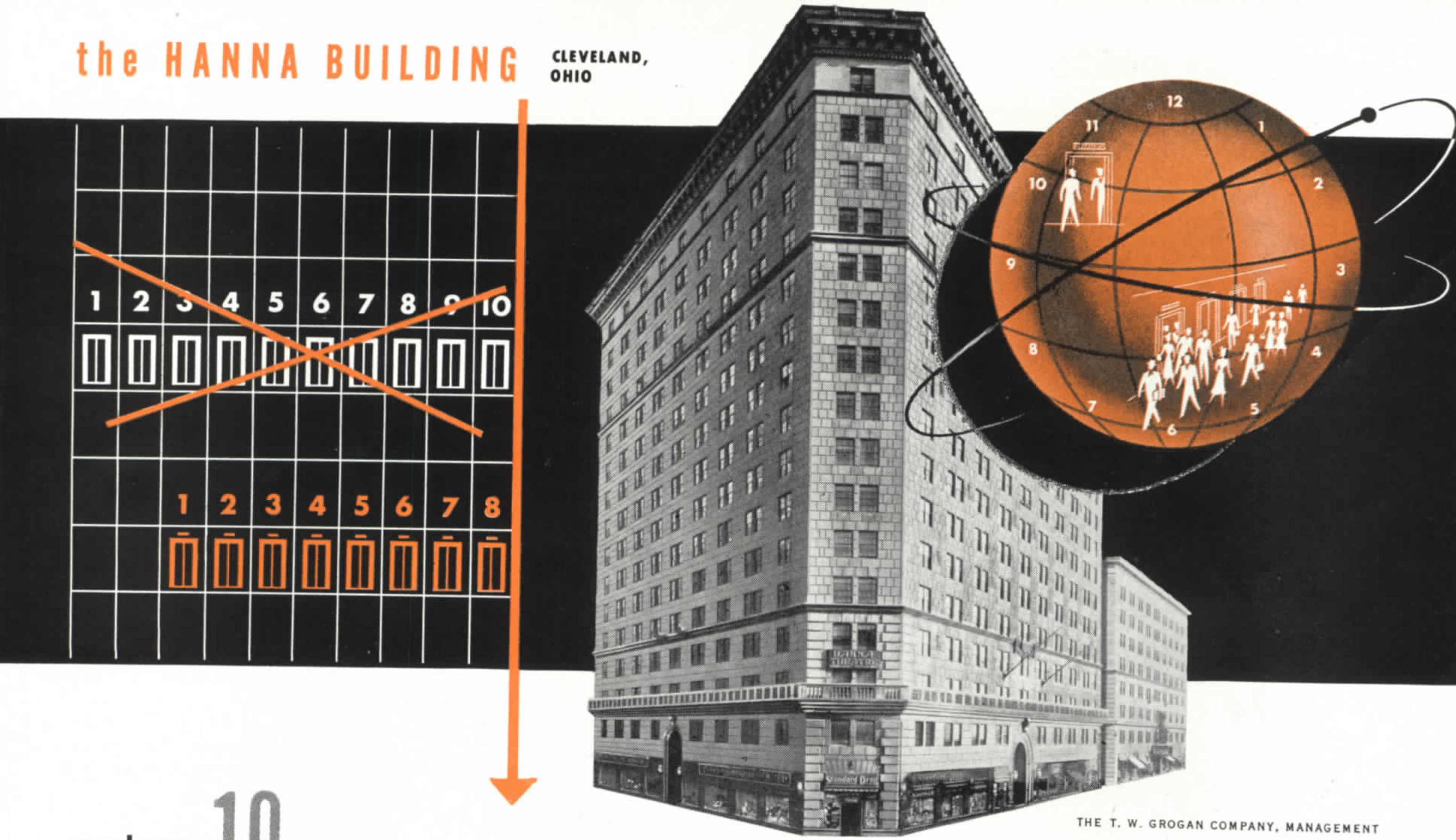
The major difference in the French Beaux Arts system and the American derivative was the fact that in France l'Ecole des Beaux Arts was the one and only place where an architect could be trained in his entire country, while here no centralized system could be achieved and only a compromise with the French system was possible. When William Robert Ware, the first director of the first architectural school in the United States, brought Eugène Letáng to M.I.T. in 1872, a movement was begun that resulted in a curious credo. By 1912 no architectural school in the country was considered of top quality unless it had on its staff a Frenchman or at least one graduate of l'Ecole in Paris. These urbane and charming gentlemen—in particular the Frenchmen—cultured and brilliant—formed a coterie around which revoled a formal dream world of architecture, classical in derivation and as imaginative as a Veronese or Poussin. Any reader who received a "crit" from Jacques Carlu, or Gabriel Ferrand, or Paul Cret knew genuine genius. For those of you who missed the experience of a *café fine* at the Deux Magots with old "Gummy" Gumaer, who always spent his summers at a particular iron-topped table facing the mellow tower of St. Germain des Prés, for those of you who missed this, I am sorry to say, life will never be a totally full experience. It was not architecture—the Grand Plan with its *poché* and mosaic, its mellow gourmets and sweet souls—it was a way of life.

•

Richard Morris Hunt began his career as the first American student at l'Ecole in 1845. Richardson and McKim were second and third respectively. By 1905, so many architects and teachers had been to l'Ecole that a very strong movement developed in which they tried to establish in New York a central school of architecture, patterned after l'Ecole, which would supervise all existing schools in the country. The Society of Beaux Arts Architects had been founded in 1893 with the express purpose of "preserving among ourselves the principles of taste required at l'Ecole des Beaux Arts; by endeavoring to propagate these principles among the rising generation of architects and the public in general; . . . and by working together for ultimate formation of an American School of Architecture modeled after l'Ecole des Beaux Arts." (Excerpt from report of the Committee on Permanent Organization, 1893.) One looks with fascinated terror at the proximity to success in these objectives, which the Society reached at its zenith, at about 1920, although the central school idea had long before been abandoned, the system was at its peak. Our own students at l'Ecole in Paris were so thoroughly in the swim that they were winning many of the *grands prix* and traveling scholarships. The strength of the program was augmented by the highly tantalizing prizes offered to brilliant students of the formulae. The Paris Prize, set up in 1904, a liberal award, provided funds for study at l'Ecole.

(Continued on page 120)

the HANNA BUILDING CLEVELAND, OHIO



THE T. W. GROGAN COMPANY, MANAGEMENT

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Hanna Building tenants and visitors will be delighted with the time-saving convenience of modernized service. For the new Otis AUTOTRONIC Elevators, with their traffic-timed automatic supervision, have been designed to reduce the elevator interval from 50 seconds to less than 25 seconds during the morning peak period. A similar speed-up of service will be applied to the other 5 traffic patterns of the day. So, with the time interval reduced through automatic supervision, 8 AUTOTRONIC elevators will serve all floors—and give far better service than the manually operated 5 Express and 5 Local cars they replace.

From the management viewpoint there's the increased prestige of unexcelled elevator service and the economy of installing and operating 8 instead of 10 elevators. Otis AUTOTRONIC ELEVATORING—already bought by 38 NEW and MODERNIZED office buildings, hotels, banks and department stores—is explained in Otis Booklet B-721-P.

Elevator service in the Hanna Building Annex is also being modernized by replacing 4 Car-Switch Elevators with 2 Otis ELECTRONIC Signal Control Elevators. Here, too, the modernization will be dramatized with Otis electronic "touch" buttons that summon cars as if by magic. Otis Elevator Company, 260 11th Avenue, New York 1, N Y

Otis

AUTOTRONIC
traffic-timed
ELEVATORING

out of school

(Continued from page 118)

Even more rewarding was the Rome Prize. The Neo-Classic movement in the United States under the leadership of Charles F. McKim pointed to study in Rome as the fountainhead of inspiration. L'Ecole also recognized this fact, but the American Schcol of Architecture in Rome, organized in 1894 and incorporated in 1897 as the American Academy in Rome, by-passed Paris on a straight road to Rome. The American Academy in Rome became the goal of all eclecticism in architectural training; and life in the Villa Aurelia on the Janiculum Hill must have been—must still be—most pleasant. Did you know that the Academy was endowed in 1905 to the tune of a million dollars, with contributions of $100,000 each from Yale, Chicago, Columbia, the University of California, W. K. Vanderbilt, James Stillman, H. C. Frick, and others? Times have certainly changed, not necessarily for the better, but you couldn't do it now.

•

The Beaux-Arts Institute of Design, organized in 1916, had the purpose of carrying the educational privileges of the charter of the American Society of Beaux Arts Architects to all the schools in this country. For a period of about 10 or 12 years it succeeded and the zenith of the period of free eclecticism in design training was achieved. Design in the schools was to a maximum extent a separate program from the construction, history, and other areas of training. It had to be, because the problems and program were all directed from a point outside of the school. This established an internal schizophrenia which is still the bane of the curriculum of most of the architectural schools in the country. This, along with the restrictions of the classic formulae, were among worst features of the system. (I will *not* beat the dead horse.)

For those of you unfamiliar with the methodology of the B.A.I.D. as it was practiced, a brief statement is necessary. Design problems for each grade were mailed from New York to each school and distributed to the students at specified intervals. Great secrecy as to the content of the problems was maintained at all times, and neither faculty nor students had prevision of subject matter, although from time to time a faculty member might be asked to write a program. The program was highly ritualistic in nature. The *analytique* or detail of classic order problems required of first-year students were sometimes written in the individual schools but they all followed a set pattern, even in method of presentation. The student was trained to grind by hand in a special slate mortar a stick of Chinese ink, which was then filtered into bottles. Only small quantities could be made up at a time as the ink spoiled quickly. Much time was consumed in this and other curious tasks such as the making of "stretches." Prepared illustration board was taboo or unknown.

Formalism increased as the problem grade advanced. The premiated problems of the B.A.I.D. judgments had to be well drawn and attractively presented, to show up well in the hundreds of problems being studied by a harassed and sometimes mellow jury in New York. Therefore rendering skills were highly developed and certain pat methods of indication were adopted and in almost universal use. On plans all wall thicknesses were "*pochéd*," or filled in with black and then picked out with a "snap line" to separate the wall from "mosaic," which was used to give pattern and scale to a plan. The design of the *poché* as a pattern too often became more important than the function of the plan. The formal type of program issued lent itself to symmetrical solutions into which both plan and elevation could be pictorially matched. Occasionally a more romantic asymmetrical note crept in with problems for summer palaces for exiled monarchs in the Pyrenees, monasteries in the Alps, or Archeology projects such as processionals of conquering Roman generals on the Appian Way. They were lots of fun. I used to get well paid by the top-grade men for my ability to do

(Continued on page 122)

Of 10,400 School Superintendents 78.4% Would Specify Individual Room Temperature Control!

"THE Ideal School — How Would You Build It?" That's the question *School Management* Magazine asked more than 10,000 school superintendents across the nation. And more than three of every four responses specified individual room temperature control. When asked which features would be eliminated for reasons of economy, individual room temperature control was the last to be mentioned!

Yet these facts are not surprising, for educators have long recognized their responsibility in molding the health habits of our country. And here is evidence that school authorities are fully aware of the need for controlled atmosphere — healthful temperatures, correct humidity and adequate ventilation. When you specify individual room temperature control for schools, educators will be quick to recognize the benefits.

If you would like to see the complete *School Management* survey, Minneapolis-Honeywell, 60-year leader in automatic control, will arrange for the publisher to send you a copy. Minneapolis-Honeywell, Minneapolis 8, Minnesota. In Canada: Leaside, Toronto 17, Ontario.

MINNEAPOLIS
Honeywell
CONTROL SYSTEMS

"Guarding America's Health with Controlled Atmosphere"

out of school

(Continued from page 120)

entourages—usually romantic mountain landscapes with cypress and stone pine, neither of which grow too well in Philadelphia. Claude Lorraine was good, too.

•

One of the most curious of all the B.A.I.D. rituals was the *Esquisse* or sketch required at the beginning of every problem. A specific time was allotted, beginning at the moment of issuing the problem, and the student was required to make a sketch plan, elevation, and section; to which he was then required to adhere, come hell or high water, for the duration of the problem. This was done *"en loge"* (or in privacy) and no criticism or references could be used. To those of us today who consider careful research and analysis of the purpose of a building essential before plans, design, and construction can be begun, this weird requirement appears as a complete negation of all sound educational principles. The explanation, to those of us curious enough to ask, was that it was a good discipline and made students think. We'll let that pass. The *esquisse* accompanied the final drawings to New York. If the student deviated too far from it, the problem was placed *hors de concours* and not judged. The top problems were published in the B.A.I.D. Journal with some commentary. Those who did not do so well had to guess why. The instructors at the *résumé*, held on the return of drawings from New York, usually had difficulty making guesses themselves.

I have spent this much time on the methods because they set the pattern for much that was unreal in American architectural education for many, many years. For instance, no one ever heard of an architect forcing himself to adhere to an *esquisse* in his office over a client's objections. I want to be fair, though: scholastic architectural design in this period was as stately as a 16th century pavanne, while student life in the *atelier* was gay and friendly. A *charrette* was something to look forward to—a Walpurgis Nacht coming every month or six weeks. The realities of practice and architectural movements outside of the ritual were not discussed. The architectural periodicals, in the same tradition, assisted in continuing the pattern. Architectural education itself was *en loge*.

A curious result of the system was the fact that great teachers of specialized subjects grew up side by side, though usually not integrated with the design critics. A.D.F. Hamlin, the historian at Columbia, and Thomas Nolan (of Kidder-Nolan), professor of construction at the University of Pennsylvania, are good examples of splendid teachers and competent technicians, who added scholarship and practical training to a program in which esoteric design played too prominent a part.

•

While Sherman Street in Denver is a typical result of the eclectic period of training we are discussing, and as such is a museum of little banalities, we look far and wide for the actual buildings or building groups which might be said to derive directly from the Beaux Arts Period of training. There is actually very little on any scale comparable to the dreams on the "double-elephant stretches" of my youth. The San Francisco Civic Center, the Roman Forum in Denver, the Cleveland Mall (an early example), and a few college campuses like Carnegie Tech and the University of California at Berkeley are about all we have to show for the Grand Plans which filled the ateliers. It was futile fun on the whole. (Don't *kick* the dead horse, Feiss.)

The breakdown of the Beaux Arts came suddenly and the dissolution was speedy. Even during the early days of the neo-romantic Collegiate Gothic of the campuses, the schools were not affected. Sullivan and Wright and the indigenous architects did not exist. A.D.F. Hamlin gave them early credit in his *History of Ornament* in 1923; but Banister Fletcher, whose *History of Architecture on the Comparative*

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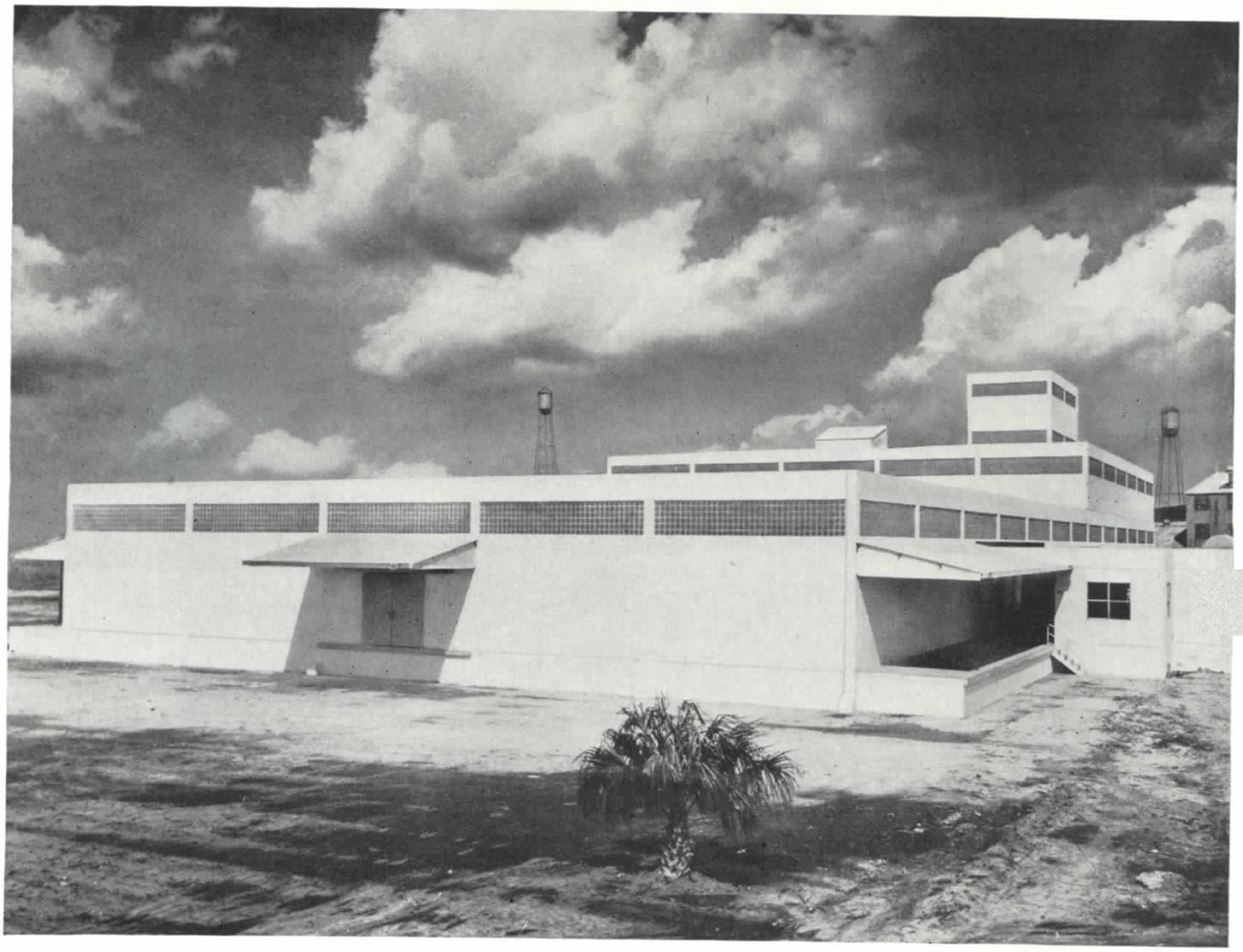

out of school

(Continued from page 122)

Method has been consistently the most widely used text in the schools, never mentioned them.

The break came from the outside. Goodhue and Saarinen both came as a surprise and swept their way into the vernacular of the Beaux Arts projects overnight. Then a few copies of Dutch and German publications on Wright and a few of the early European "moderns" hit the schools. The Exposition des Arts Decoratifs of 1925 in Paris, published in full in a series of attractive brochures, knocked the established ornament for a cocked *rinceau*, and poof—out the window went a system.

●

It was books, not teachers, that turned the tide of architectural education from 1925 to 1930—Yerbury, Tallmadge, Hitchcock, Edgell, plus Le Corbusier and Taut in translation. Primarily, it was pictures and more pictures in the foreign magazines. *Bau und Wohnung* for 1927 on the Stuttgart Exposition of Modern Housing made an indelible impression on me in my third year of Beaux Arts training at Pennsylvania. Some of us became quite a nuisance to our professors about that time. We knew nothing of the Bauhaus type of training but we were seeing pictures of things which were more exciting than the Bulletin of the Beaux Arts Institute of Design, which was the standard source for cribbing ideas. No school boy could afford to be without a subscription. (Don't *skin* the dead horse, Feiss.)

I'm just guessing now, but I'd like to lay a wager that it was the depression of 1929 through 1935 that knocked some real sense into the schools. Quietly, behind the design front, construction training and technical know-how had advanced. Much sound and practical work was being carried on in research on materials and methods of building. The direct approach to construction, as exemplified by Gropius and Van der Rohe, reversed the emphasis in favor of the practical fields. The cult of the Northern European replaced that of the Frenchman and continued our tradition of importing experts. These men, unfamiliar with the Beaux Arts system, found no sympathy with it and changed directions to the so-called "organic architectural education" of the present day.

The depression of the 30's brought social and economic needs to the fore in this country. Some of the schools slowly took on city planning and housing as part of their training. Many are still lagging in this broad architectural field, although European precedent, usually followed so avidly, antedates our own interest by 20 years or more. The socionomic approach to architecture is still weaker than the techno-design, but the melding of the two is obviously approaching.

●

A word has to be said here about the star system—or vaudeville system, if you prefer, in American architectural training. I am neither condemning nor praising—just pointing at. From the coming of Desiré Despradelle to M.I.T. in 1892, the schools have encouraged the star system, and under the inspiration of great prima donnas have gained students and reputation. The cycle of success and failure has too often been caused by the current fashion in names. Even the greatest of teachers and architects are mortal and the dependency of institutions on "king pins" and "name bands" has been and still is a weakness in the sound structure of education, which of course should be the program and curriculum. It is human nature for a young man to worship a leader rather than an idea. We have all had our crushes. The proper balance between popular name and sound curriculum is still to be found.

Architectural education, with all the vicissitudes of its history in this country, is still unfulfilled. No great building tradition has yet appeared from it.

This subject to be continued in the February issue. At this time we will discuss the development of contemporary architectural education. C. F.

it's the law

By BERNARD TOMSON

This month we don our bowler hat, stroke our chin whiskers, and discuss a leading case in the law of architecture decided in Louisiana at the turn of the century. A review of the judge's decision indicates that although time moves on and façades change, architects' relations with clients remain basically the same. The facts presented to the Louisiana court were as follows:

It was the intention of a theater owner to demolish his building and to erect a larger and finer one. He therefore employed the services of a company which was in the general architectural and building business. This company was a limited corporation. (It is of interest to note at the outset that today, in most states, corporations may not practice architecture.) The company made preliminary studies and prepared plans and specifications. Based upon these plans, bids were received indicating that the cost of the building would be approximately $100,000. However, the theater owner had a change of heart and decided to abandon the new construction.

There had been (alas) no specific agreement as to the architect's compensation and the architectural company billed the client $3,500 based upon a fee of three and one-half percent for a $100,000 structure. The client refused to pay this bill and the company instituted legal action. The trial court awarded the architect a judgment in the magnificent sum of $700. And feeling aggrieved thereby the plaintiff appealed.

•

In justification of its bill, the architect contended on appeal that the American Institute of Architects had promulgated a schedule of compensation for architectural work and that such schedule provided for a fee of three and one-half percent for preliminary studies, general drawings, details, and specifications. (Historically interesting is the full text* of this schedule which was as follows:

"For full professional services (including supervision), five percent upon the whole cost of the work.

For preliminary studies, one percent.

For preliminary studies, general drawings and specifications, two and one-half percent.

For preliminary studies, general drawings, details and specifications, three and one-half percent.

For warehouses and factories, three and one-half percent, upon the cost, divided in the above ratio.

For works that cost less than $10,000, or for monumental and decorative work, and designs for furniture, a special rate in excess of the above.

For alterations and additions, an additional charge to be made for surveys and measurements.

An additional charge to be made for alterations or additions in contracts or plans, which will be valued in proportion to the additional time and services employed.

Necessary travelling expenses to be paid by the client.

Time spent by the architect in visiting for professional consultation, and

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*Taken from Lloyd, "Law of Building and Buildings" (1888).

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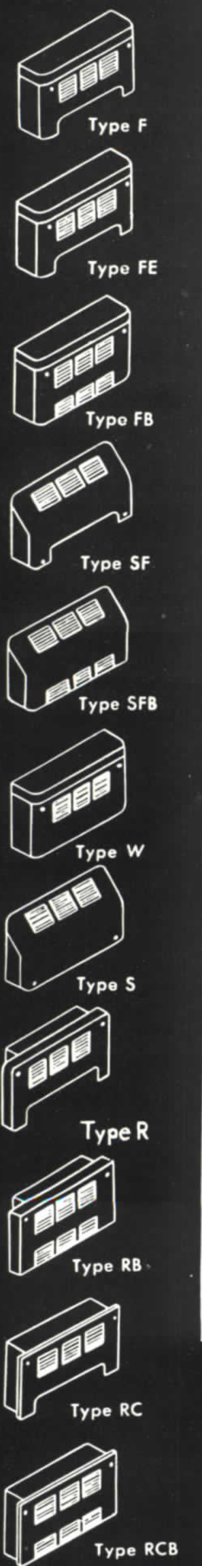

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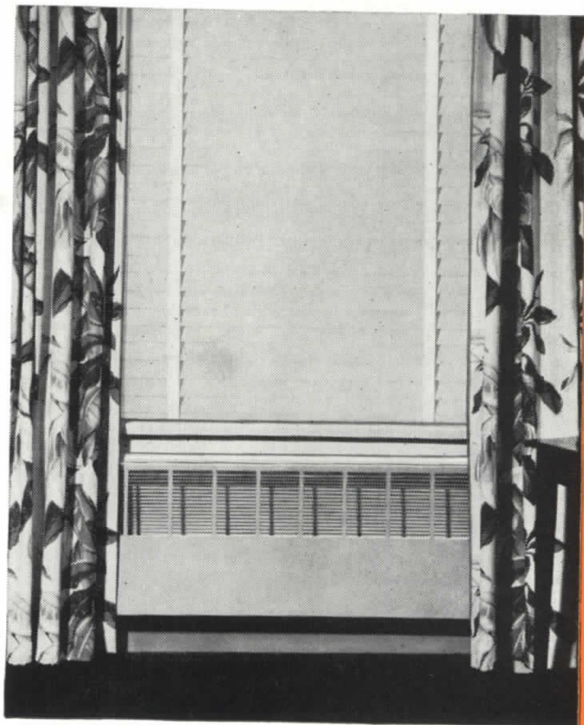

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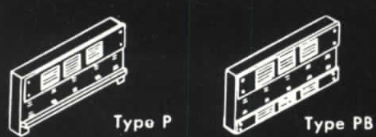

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in the accompanying travel, whether by day or night, will be charged for, whether or not any commission, for office work or supervising work, is given.

The architect's payments are successively due as his work is completed, in the order of the above classification.

Until an actual estimate is received, the charges are based upon the actual cost.

The architect bases his professional charge upon the entire cost to the owner of the building when completed, including all the fixtures necessary to render it fit for occupation, and is entitled to a fair additional compensation for furniture or other articles designed or purchased by the architect.

If any material or work used in the construction of the building be already upon the ground, or come into possession of the owner without expense to him, the value of said material or work is to be added to the sum actually expended upon the building before the architect's commission is computed.

Drawings, as instruments of service, are the property of the architect."

●

The Louisiana Appellate Court refused to be bound by the A.I.A. schedule. The court stated:

"The American Institute of Architects has promulgated a schedule of prices for architectural work, and plaintiffs' charges are based upon the same, one or more members of the firm being members or fellows of the Institute. But it is shown that very few architects doing business in the city of New Orleans are at this time members of the Institute, and it may not be said that any custom prevails there to charge for services according to the scale of the Institute. Defendant had not been apprised of this schedule, and had no knowledge of the same. Much less did he assent to it. The schedule of charges, then, of the Institute, may be useful in assisting the court to arrive at a proper estimate to be put upon plaintiffs' services, but can be given no greater weight."

(Moral: then as now, make certain the agreement specifically covers all contingencies as to compensation.)

The Court further said:

"The evidence shows that the custom obtaining among architects generally is to regulate their charges according to a rule of percentages. Thus, for preliminary studies, general drawings, specifications and details, and superintendence, where the building is erected five percent appears to be the usual charge; and a less percentage, according to the work done and skill and time employed, where the building is not constructed, or the architect's employment does not include superintendence. But courts will adopt with caution a rule which binds an employer to pay a percentage on a building such as the architect sees fit to figure out, and at a price which he, or the bidders to whom he sends the plans (as in this instance), put upon its probable cost. There is in such a rule too much inducement to architects to make the plan expensive for it to be readily accepted by those called upon to sit in judgment in matters of controversy between owners and architects." (Have we come a long way since?)

In considering what was a reasonable fee the Appellate Court first considered the estimated cost of the structure which was to be built. Although the evidence established such cost at $100,000 the court arbitrarily accepted a figure of $87,500.

The court then went on to determine that a fee of two and one-half percent for the plans and specifications prepared by the plaintiff was "not unreasonable." Applying this figure, which was one percent less than the schedule figure of the A.I.A., to the estimated cost of $87,500, the court came up with the figure of $2187.50. However it was still reluctant to grant this sum to the plaintiff and awarded it, as its full compensation for services rendered, $1750, apparently feeling that an architect is not entitled to what he has earned.

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Of course, since the determination of this case, the architects' situation vis-a-vis the law has improved considerably. A fairly comprehensive review of the

(Continued on page 130)

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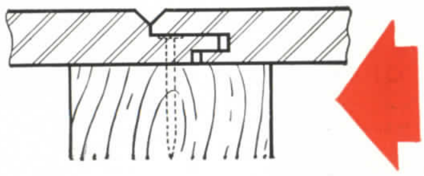

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Colors: Ivory, Pale Green, Woodtone Light, Woodtone Dark. (The two Woodtones in the Plank are cartoned, half light and half dark, to provide variegated effect in application.) **Texture:** Rough . . . highly durable. **Joint:** Plank employs new Insulite Joint (illustrated below); Interior Board has square edged joint. **Sizes:** Plank widths are 8″, 10″, 12″ and 16″ — Lengths 8′, 10′, and 12′. Interior Board — 4′ width by 6′, 7′, 8′, 9′, 10′, and 12′ lengths.

WEVELITE Interior Board

Color: Ivory White. **Texture:** Rough surface. **Joint:** Square edged. **Sizes:** 4′ width by 6′, 7′, 8′, 9′, 10′ and 12′ lengths.

SMOOTHLITE Interior Board

(Formerly SMOOTHCOTE). **Color:** Natural. **Texture:** Smooth. **Joint:** Square edged. **Sizes:** 4′ width by 6′, 7′, 8′, 9′, 10′ and 12′ lengths.

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Colors: White. **Texture:** Porous, giving a travertine stone effect. **Joint:** Butt Joint Edges Beveled and Kerfed. **Applied with:** Cement. **Sizes:** 12″x12″, 16″ x16″, 16″x32″.

*Reg. U. S. T. M.

Refer to Sweet's File, Architectural Section 10a-9

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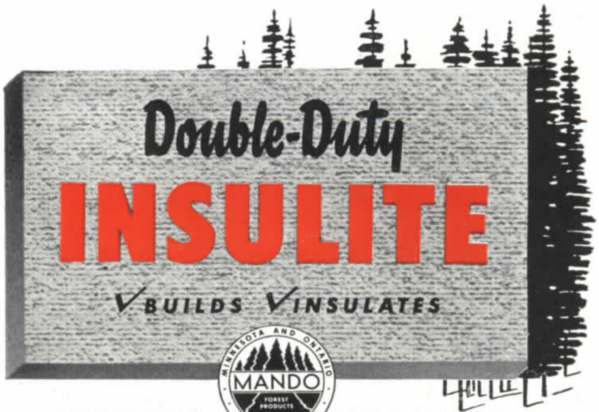

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licensing statutes indicates that in 1900 there were no legal impediments, in any of the states, to anyone calling himself an architect or practicing architecture, whether or not he was qualified. The New York statute, which is certainly one of the oldest, was enacted in its first form in 1910. Since 1900, the American Institute of Architects has helped advance the architects' position considerably. For many years it has made available its guides to ethical principles, its forms of agreements and "general conditions," and other aids which have been of substantial benefit to the profession generally and to the individual architect.

If a proper public relations program is initiated and conducted throughout the country, if the organizations representing architects keep pace with the times, if the individual architect also does, the next 50 years will find the architect assuming his proper place and his proper share of responsibility in the development of our country. Only then will the architectural profession be properly rewarded for its labor and credited with its contribution to our civilization.

U. S. ARCHITECTURE 1900-1950

the illustrations

The list below supplies more complete identification of the pictures in this issue. The name of the architect or designer appears in italics; photographer and source of each picture follows in parentheses.

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United Nations Secretariat, New York, by *U. N. Headquarters Planning Commission*, 1949 (J. Alex Langley)

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Living room, *ca.* 1900 (Robert L. Bracklow—Alexander Alland Coll.)

Original Wright Brothers plane, 1903 (Harris & Ewing)

United Air Lines Mainliner 300, *ca.* 1948 (Courtesy of United Air Lines)

Decorated telephone, made in Germany, 1901 (Courtesy of Museum of Modern Art)

Telephone, by *Henry Dreyfuss* for Bell Telephone Laboratories, Inc., 1949 (Courtesy of Henry Dreyfuss)

Gay Nineties Baby Carriage, by *Heywood Wakefield* (Courtesy of Museum of Modern Art)

Carry-Cart Baby Stroller, by *Robert Heideman* for American Products Co., 1946 (Courtesy of Museum of Modern Art)

Original Ford automobile, 1896 (Courtesy of Ford News Bureau)

Mercury automobile, 1949 (Courtesy of Ford News Bureau)

Stereoscope (The Bettmann Archive)

Television set, by *Marcel Breuer* for "House in the Museum Garden," Museum of Modern Art, 1949 (Ezra Stoller: Pictor)

Living room, Gordon Drake house, Los Angeles, Calif., by *Gordon Drake*, 1947 (Julius Shulman—P/A file)

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Cable Bldg., Chicago, Ill., by *Holabird & Roche*, 1899 (Chicago Architectural Photographing Co.)

Equitable Savings and Loan Assn. Bldg., Portland, Ore., by *Pietro Belluschi*, 1948 (Ezra Stoller: Pictor)

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Vacuum cleaner, 1949 (Courtesy of Lewyt Corp.)

Original Hoover vacuum cleaner, invented by *J. Murray Spangler*, 1907 (Verne Burnett—courtesy of Museum of Modern Art)

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Decorations for Mayor Low's banquet for Prince Henry of Prussia, 1902, Metropolitan Club dining room, New York, by *Stanford White* of *McKim, Mead & White*, 1894 (Culver Service)

Kitchen, 1905 (Culver Service)

Fern-leaf settee, *ca.* 1915 (Courtesy of F. P. Smith Wire and Iron Works)

Apartment house with standard steel stairway fire escape, *ca.* 1915 (Courtesy of F. P. Smith Wire and Iron Works)

Construction of company town, Gary, Ind., for U.S. Steel Corp., 1907 (Culver Service)

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The Grand Court at Night, Columbian Exposition, Chicago, Ill., 1893 (The Bettmann Archive)

Wire flower-pot stand, *ca.* 1915 (Courtesy of F. P. Smith Wire and Iron Works)

Street scene, Reynoldsville, Pa., 1909 (Library of Congress Coll.)

Dewey Arch, New York, by *Charles R. Lamb*, 1899 (Leonard Hassam Bogart Coll., Museum of the City of New York)

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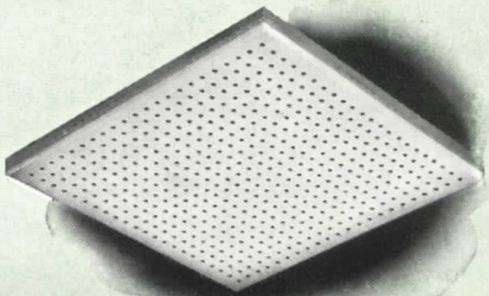

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Waiting room, Pennsylvania Station, New York, by *Charles F. McKim* and *W. S. Richardson* of *McKim, Mead & White*, 1910 (Culver Service)

Grand Concourse, Pennsylvania Station, New York, by *Charles F. McKim* and *W. S. Richardson* of *McKim, Mead & White*, 1910 (A. F. Sozio—courtesy of Pennsylvania Railroad)

Skyscraper clothed with terra cotta, Woolworth Bldg., New York, by *Cass Gilbert*, 1913 (Museum of the City of New York Coll.)

Steel skeleton building under construction, Flatiron Bldg., New York, by *Daniel H. Burnham*, 1902 (Brown Brothers)

Manhattan Bridge, New York, by *Henry F. Hornbostel*, architect; *Gustav Lindenthal*, engineer, 1909 (Leonard Hassam Bogart Coll., Museum of the City of New York)

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Concrete skeleton frame building, Hoboken Land and Improvement Co. Bldg., Hoboken, N.J., by *Charles Fall*, 1916 (Camera Craft—courtesy of Turner Construction Co.)

Flat-slab floor construction, Bay State Cotton Corp. Bldg., Lowell, Mass., by *Lockwood, Greene & Co.*, *ca.* 1916 (Courtesy of Portland Cement Assn.)

Window wall, Hallidie Bldg., San Francisco, Calif., by *Willis Polk*, designed in 1916 (Moulin Studios)

Precast concrete floor and wall slabs, Forest Hills Housing Project, Forest Hills, N.Y., by *Grosvenor Atterbury*, designed in 1916 (Courtesy of Architectural Book Publishing Co.)

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Bedroom heating, Octagon House, Delafield, Wis., 1900 (Courtesy of American Radiator Co.)

Bathtub, James Patten house, Evanston, Ill., 1901 (Johnson's Studio—courtesy of Plumbing and Heating Industries Bureau)

Vitreous china toilet, *ca.* 1900 (Johnson's Studio—courtesy of Crane Co.)

Grillwork for elevator enclosure, 1915 (Courtesy of F. P. Smith Wire and Iron Works)

Moving stairway, Kaufman-Baer Co. store, Pittsburgh, Pa., 1913 (Courtesy of Otis Elevator Co.)

Both interior lighting fixtures, *ca.* 1900 (Courtesy of General Electric Co.)

Welsbach burner and electric-lamp street lights, New York, 1900 and 1915 (Courtesy of Dept. of Water Supply, Gas and Electricity, New York)

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Electric range, 1913 (Courtesy of General Electric Co.)

Boiler, *ca.* 1900 (Courtesy of *National Radiator* Co.)

Motor-driven washing machine and wringer, *ca.* 1916 (Photo Art Studio—courtesy of *Electrical Merchandising*)

Stairway radiator, *ca.* 1900 (Courtesy of American Radiator Co.)

Air diffuser (manufacturer unknown), *ca.* 1900 (Courtesy of Barber-Colman Co.)

Automatic sprinklers, 1905-06 (Courtesy of Grinnell Co.)

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Pressed-metal ceiling and lighting fixtures, *ca.* 1916 (Courtesy of General Electric Co.)

Cast-aluminum stair enclosure, *ca.* 1900 (Courtesy of Aluminum Co. of America)

Ornamental wrought-steel porte-cochere, 1915 (Courtesy of F. P. Smith Wire and Iron Works)

Terra cotta factory, *ca.* 1910 (Courtesy of Federal Seaboard Terra Cotta Corp.)

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Carnegie Library, Montgomery, Ala., *ca.* 1906 (Library of Congress Coll.)

New Theater (Century Theater), New York, by *Carrere & Hastings*, 1909 (Museum of the City of New York Coll.)

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the illustrations

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Carson Pirie Scott store, Chicago, Ill., by *Louis H. Sullivan*, 1904 (Chicago Architectural Photographing Co.—P/A file)

Municipal Group, Springfield, Mass., by *Pell & Corbett*, 1913 (Courtesy of Convention and Visitors Bureau, Springfield Chamber of Commerce)

Chicago National Bank Bldg., Chicago, Ill., by *Jenney & Mundie*, *1900* (Chicago Architectural Photographing Co.)

McKinley High School, St. Louis, Mo., by *William B. Ittner*, 1902 (Courtesy of St. Louis Board of Education)

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Luxury apartment house, 998 Fifth Avenue, New York, by *W. M. Kendall* of *McKim, Mead & White*, 1911 (Museum of the City of New York Coll.)

Biltmore Hotel, New York, by *John McEntee Bowman*, 1913 (Courtesy of Biltmore Hotel)

"The $3000 House that Won the $1000 Prize," by *William G. Rantoul*, 1905 (Courtesy of *The Ladies' Home Journal)*

Clarence Mackay mansion, Roslyn, N.Y., by *Stanford White* of *McKim, Mead & White*, 1902 (Museum of the City of New York Coll.)

All Saints' Church, Peterborough, N.H., by *Cram & Ferguson*, 1925 (Paul J. Weber from Russell B. Harding)

Ford Motor Co. plant, Highland Park, Mich., by *Albert Kahn Associated Architects and Engineers, Inc.*, 1910-17 (Courtesy of Albert Kahn, Inc.)

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Hall of "Georgian Court," George J. Gould mansion, Lakewood, N.J. (Culver Service)

Senator William A. Clark mansion, New York, by *Lord, Hewlett & Hull*, 1903 (Philip G. Bartlett—Museum of the City of New York Coll.)

Farm house, Grand Traverse County, Mich. (Culver Service)

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City Hall, San Francisco, Calif., by *John Bakewell, Jr.*, and *Arthur Brown, Jr.*, 1915 (From *San Francisco Bay Cities* by Josef Muench, Hastings House, Publishers)

Singer Bldg., New York, by *Ernest Flagg*, 1908 (Museum of the City of New York Coll.)

St. Vincent Ferrer Church, New York, exterior by *Bertram G. Goodhue*, interior by *Elliott L. Chisling* (Courtesy of Elliott L. Chisling)

Lincoln Memorial, Washington, D.C., by *Henry Bacon*, construction begun 1915 (Horydczak)

University Club, New York, by *Charles F. McKim* o *McKim, Mead & White*, 1900 (Museum of the City of New York Coll.)

General Post Office, New York, by *W. M. Kendall* o *McKim, Mead & White*, 1913 (Leonard Hassam Bogart Coll.—Museum of the City of New York

House, Los Angeles, Calif., by *Greene & Greene*, 1907 (W. A. Martin)

Ascher, Edson Keith, and Gage Bldgs., Chicago, Ill., by *Holabird & Roche*, facade designed by *Louis H Sullivan*, 1898-1902 (Chicago Architectural Photographing Co.—P/A file)

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Unity Temple, Oak Park, Ill., by *Frank Lloy Wright*, 1906 (Courtesy of Museum of Modern Ar

Robie house, Chicago, Ill., by *Frank Lloyd Wrigh* 1909 (Courtesy of Museum of Modern Art)

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World War I camp scene (Harris & Ewing)

"Life Among the Cliff Dwellers," Los Angele Calif., 1920's (Underwood & Underwood)

Scene in a speak-easy (Culver Service)

McGraw-Hill Bldg., New York, by *Raymond Hood J. Andre Fouilhoux*, 1931 (McGraw-Hill Studios)

Chrysler Bldg. under construction, New York, *William Van Alen*, 1930 (Courtesy of Hill & Knowton, Inc.)

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the illustrations

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Michigan Boulevard, Chicago, Ill., 1917 (Ewing Galloway, N.Y.)

Frank E. Carpenter house, Greenwich, Conn., by *Frank P. Whiting,* 1927 (Culver Service)

Emergency Fleet Corp. Project, Bath, Me., by *R. Clipston Sturgis,* 1918 (Kenneth Reid—P/A file)

Houses, Detroit, Mich. (John Vachon for OWI—Library of Congress Coll.)

The Capitol, Williamsburg, Va., by *Perry, Shaw & Hepburn,* reconstruction begun 1928 (F. S. Lincoln—P/A file)

Veteran building hut (Culver Service)

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A first large all-welded steel frame, Westinghouse factory, Sharon, Pa., by *B. H. Prack,* architect; *Fish* and *Wessel,* structural engineers, 1927 (Courtesy of American Institute of Steel Construction)

Steel framing for addition to stadium, Harvard University, Cambridge, Mass., by *Coolidge, Shepley, Bulfinch & Abbott,* architects; *Stone & Webster,* structural engineers, 1929 (Braun Photo, Everett—courtesy of American Institute of Steel Construction)

Indoor tennis court under construction, Marshall Field estate, Huntington, L.I., N.Y., by *Warren & Wetmore,* 1923 (Courtesy of American Institute of Steel Construction)

Field House, University of Chicago, Chicago, Ill., by *Holabird & Root,* designed in 1930 (Hedrich-Blessing Studio)

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Wood lamella roof construction, Recreation Bldg., Uxbridge, Mass., by *A. C. Seagrave,* 1930 (Courtesy of Lamella Roof Associates)

Curtain-wall construction, Bell Telephone Bldg., Newark, N.J., by *Voorhees, Gmelin & Walker,* 1928 (Courtesy of Turner Construction Co.)

Monitor lighting in factory, Budd Wheel Co., Detroit, Mich., by *Albert Kahn Associated Architects & Engineers, Inc., ca.* 1920 (Courtesy of Albert Kahn, Inc.)

Steel-bar web joists, Shepherd Bldg., Houston, Tex., by *James Ruskin Bailey,* 1928 (Courtesy of American Institute of Steel Construction)

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Concrete skeleton frame and brick veneer, Atlanta Biltmore Hotel, Atlanta, Ga., by *Schultze & Weaver,* 1923 (Reeves—courtesy of Starrett Brothers, Inc.)

Reinforced-concrete church, First Baptist Church, Los Angeles, Calif., by *Allison & Allison,* 1927 (Courtesy of Portland Cement Assn.)

Ornamental concrete cast-in-place plaster waste molds, Wilshire Professional Bldg., Los Angeles, Calif., by *Arthur E. Hawey, ca.* 1925 (Courtesy of Portland Cement Assn.)

Concrete stairway corbel, Church of the Precious Blood, Los Angeles, Calif., by *H. C. Newton & R. D. Murray,* 1926 (Miles Berne—courtesy of Portland Cement Assn.)

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Classroom, Oak Lane Country Day School, Oak Lane, Pa., by *Howe & Lescaze,* 1929 (Courtesy of William Lescaze)

First use of glass blocks in U.S., Mandel house, Mt. Kisco, N.Y., by *Edward D. Stone,* designed in 1930 (Courtesy of Edward D. Stone)

A first example of light forming built-in architectural elements for exterior, Niagara Hudson store and office building, Niagara Falls, N.Y., by *Bley & Lyman,* 1930 (Courtesy of General Electric Co.)

Prismatic lenses for hospital (Holophane), 1920 (Courtesy of Frink Corp.)

Terrace Restaurant, Hotel New Yorker, New York, by *Sugarman & Berger,* 1930 (Culver Service)

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Bank of smokeless return flue portable boilers, Sisters of the Precious Blood Convent, Dayton, Ohio, 1922 (Courtesy of Brownell Co.)

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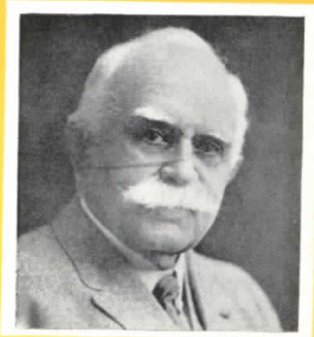

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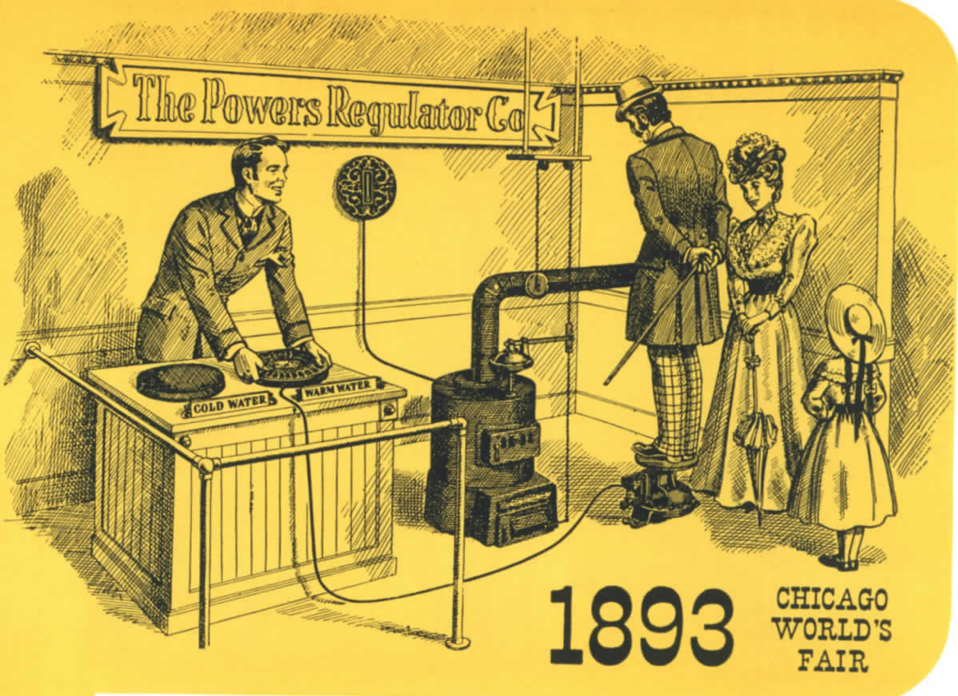

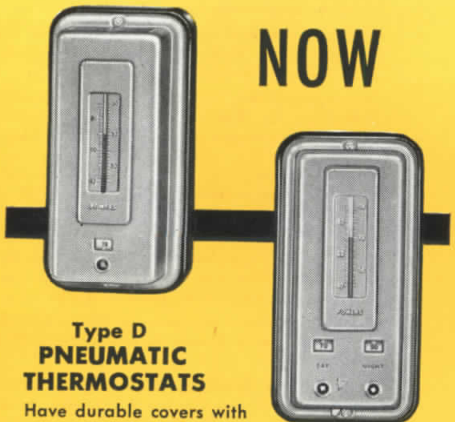

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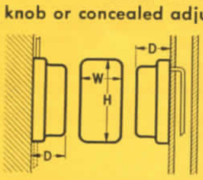
Can be furnished with removable key, attached knob or concealed adjustment.



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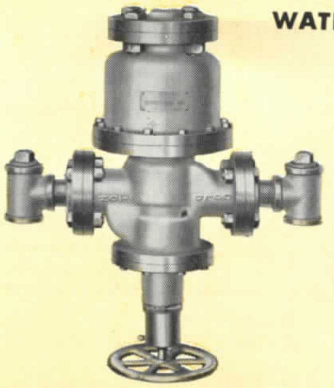

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for Individual Showers.

No. 11 REGULATOR for HOT WATER HEATERS, HEAT EXCHANGERS, etc.

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Adams Primary School, Phoenix, Ariz., by *Fitzhugh & Byron*, 1919-26 (Culver Service)

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Daily News Bldg., New York, by *John M. Howells and Raymond M. Hood,* 1930 (Thurman Rotan—courtesy of Museum of Modern Art)

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Court of Peace, World's Fair, New York, by *Howard L. Cheney,* 1939 (A. F. Sozio—P/A file)

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Dishwasher, 1932 (Courtesy of General Electric Co.)

A first automatic clothes dryer, made by hand by inventor, *J. R. Moore,* 1933 (Courtesy of Hamilton Co.)

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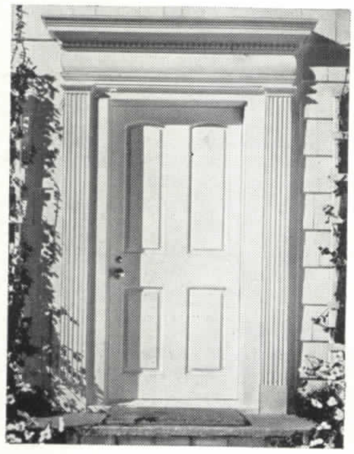

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Community Center, Queensbridge Houses, New York, by *W. F. R. Ballard, Henry S. Churchill, Fred G. Frost*, and *Burnett C. Turner* for New York City Housing Authority, 1939 (A. F. Sozio—P/A file)

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Ministry of Education and Health, Rio de Janeiro, Brasil, by *Le Corbusier*, with *Costa, Niemeyer, Reidy, Leao, Moreira*, and *Vasconcelos*, 1937 (G. E. Kidder Smith—P/A file)

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S. Gordon Saunders house, Bloomfield Hills, Mich., by *Alden B. Dow*, 1937 (Elmer L. Astleford)

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Thin-shell concrete barrel roof, Engineering Shops Bldg., Wright Field, Dayton, Ohio, by *Corps of Engineers, U.S. Army, Wright Field District*, 1941 (Courtesy of Portland Cement Assn.)

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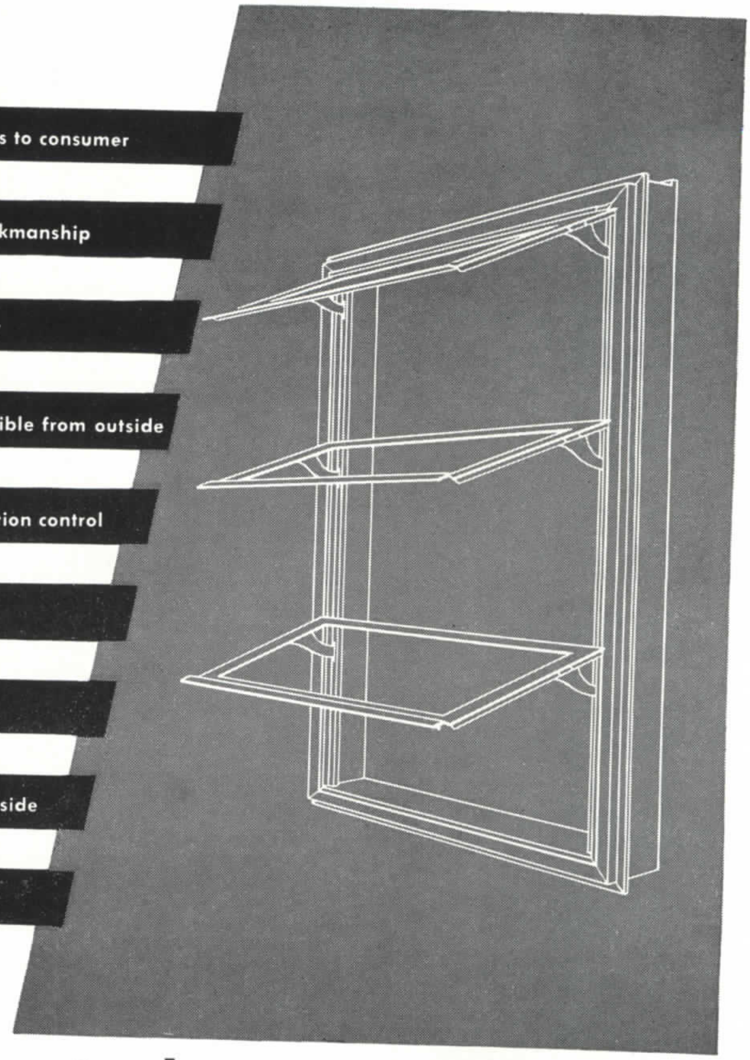

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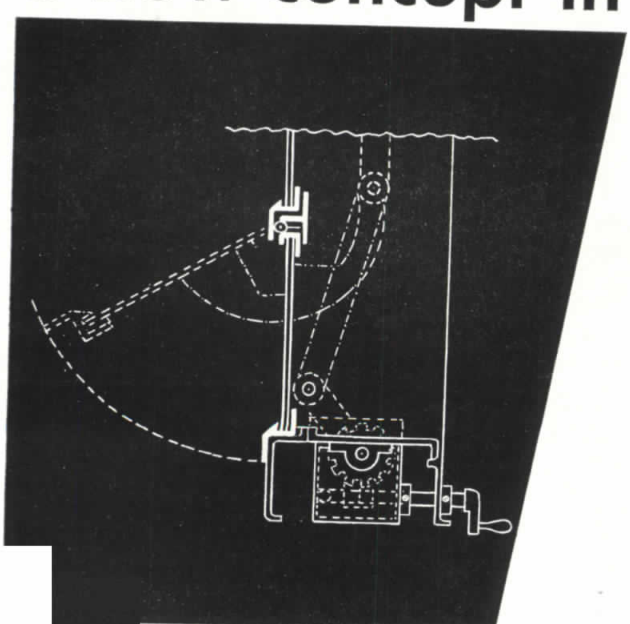

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Prefabricated radiant-heating coils, 1948 (Courtesy of Even-Ray Co.)

Heat pump, 1944 (Courtesy of Muncie Gear Works)

"All-Year" air conditioner, 1949 (Courtesy of Servel, Inc.)

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Aluminum City Terrace, New Kensington, Pa., by *Walter Gropius and Marcel Breuer*, 1942 (Gottscho-Schleisner—P/A file)

Baldwin Hills Village, Los Angeles, Calif., by *Reginald D. Johnson* and *Wilson, Merrill & Alexander*, associated architects; *Clarence S. Stein*, consulting architect, 1942 (Margaret Lowe—P/A file)

James Weldon Johnson Houses, New York, by *Whittlesey, Prince,* and *Reiley* for New York City Housing Authority, 1948 (Courtesy of New York City Housing Authority)

Recreation Bldg., Great Lakes Naval Training Center, Ill., by *Skidmore, Owings & Merrill*, 1942 (P/A file)

Christ Lutheran Church, Austin, Tex., by *Fehr & Granger*, 1948 (Photo Associates by Ulric Meisel—P/A file)

Des Moines Art Center, Des Moines, Iowa, by *Saarinen, Swanson, Brooks,* and *Borg*, 1948 (Hedrich-Blessing Studio)

St. Theresa of the Little Flower Parochial School, Houston, Tex., by *Golemon & Rolfe*, 1947 (Dorsey & Peters—P/A file)

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Fresh Meadows, Queens, N.Y., by *Voorhees, Walker, Foley & Smith* for New York Life Insurance Co., 1948 (Jerry Saltsberg—courtesy of New York Life Insurance Co.)

Providence Forest Housing Project, McLean, Va., by *Harry E. Ormston*, 1948 (Richard Garrison)

House, Carmel, Calif., by *Wurster, Bernardi & Emmons*, 1948 (Roger Sturtevant—P/A file)

Phillips Apartments, Washington, D.C., by *Berla & Abel*, 1942 (Rodney McCay Morgan—P/A file)

Jefferson Union Elementary School, Santa Clara County, Calif., by *Kump & Falk*, 1948 (Roger Sturtevant—P/A file)

Drexel School, Cicero, Ill., by *Perkins & Will*, 1947 (Hedrich-Blessing—P/A file)

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Diesel Plant Bldg. for Rural Cooperative Power Assn., Cambridge, Minn., by *Long & Thorshov, Inc.*, 1946 (Hedrich-Blessing Studio—P/A file)

Kendrick Memorial Hospital, Luverne, Ala., by *Sherlock, Smith & Adams, Inc.*, 1948 (Rodney McCay Morgan—P/A file)

Community Center, Hickory, N.C., by *Antonin Raymond* and *L. L. Rado* (Rendering by Leavitt)

Victoria Theater, New York, by *Edward D. Stone*, 1949 (Pictorial Services, Inc.)

Recreation Bldg., University of Miami, Coral Gables, Fla., by *Robert Law Weed & Associates, Frank E. Watson, T. Trip Russell, Herbert H. Johnson,* and *Marion I. Manley*, Associate, 1948 (Ezra Stoller: Pictorial Services)

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Clyde's Supermarket, Oklahoma City, Okla., by *Joseph N. Boaz*, 1948 (Meyers Photo Shop)

Joseph Magnin Store, Sacramento, Calif., by *Gruen & Krummeck*, 1946 (Roger Sturtevant—P/A file)

Florsheim Shoe Shop, New York, by *Ketcham, Gina & Sharp*, 1946 (Gottscho-Schleisner—P/A file)

Service Station for Craig Oil Co., Los Angeles, Calif., by *William F. Hempel*, 1946 (Julius Shulman—P/A file)

United Air Lines Terminal, Merced, Calif., by *Ernest J. Kump Co.*, 1947 (Roger Sturtevant—P/A file)

Pittsburgh Center for Pittsburgh Regional Planning Assn., by *Mitchell & Ritchey* (Newman-Schmidt Studios)

100 Park Avenue, New York, by *Kahn & Jacobs*, architects; *George A. Fuller Co.*, builders, 1949 (J. Alex Langley—courtesy of George A. Fuller Co.)

American Stove Co. Bldg., St. Louis, Mo., by *Harris Armstrong*, 1948 (Hedrich-Blessing Studio—courtesy of *The Architectural Forum*)

Television station, Columbus, Ohio, by *The Austin Co., Engineers and Builders*, 1949 (Courtesy of The Austin Co.)

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Red Rocks Amphitheater, Denver, Colo., by *Burnham Hoyt*, 1944 (Hedrich-Blessing Studio)

New York University-Bellevue Medical Center, New York, by *Skidmore, Owings & Merrill*, model by Theodore Conrad (Ezra Stoller: Pictorial Services—P/A file)

Nylon Throwing Mill for Duplan Corp., Winston-Salem, N.C., by *Lacy, Atherton, Wilson & Davis*, 1947 (Ben Schnall—P/A file)

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Ordnance & Optical Shop Bldg. for U.S. Navy Bureau of Yards and Docks, San Francisco Naval Shipyard, San Francisco, Calif., by *Kump & Falk*, 1948 (Roger Sturtevant)

Library and Administration Bldg., Illinois Institute of Technology, Chicago, Ill., by *Mies van der Rohe*, rendering by Krako (Courtesy of Illinois Institute of Technology)

Dettner house, Ross, Calif., by *Albert Henry Hill*, 1948 (Roger Sturtevant—P/A file)

V. C. Morris Shop, San Francisco, Calif., by *Frank Lloyd Wright*, 1949 (P/A file)

Shamrock Hotel, Houston, Tex., by *Wyatt C. Hedrick*, 1949 (Bob Bailey—courtesy of Shamroc Hotel)

Home office, John Hancock Life Insurance Co. Boston, Mass., by *Cram & Ferguson*, 1949 (Haskell

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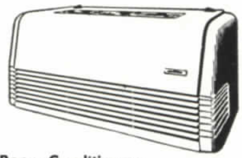

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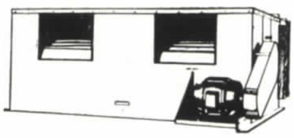

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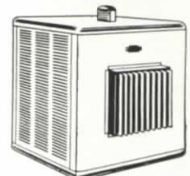

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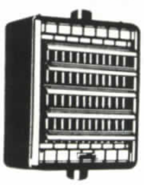

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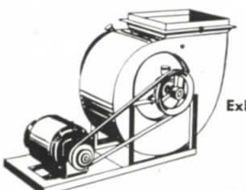

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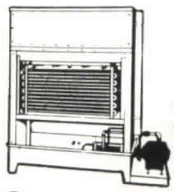

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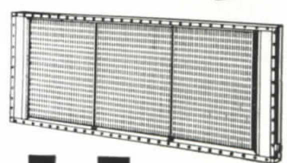

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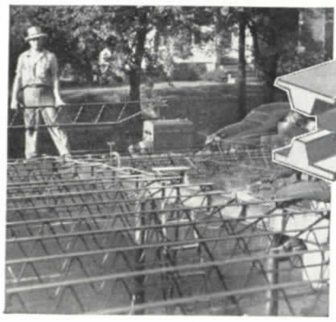

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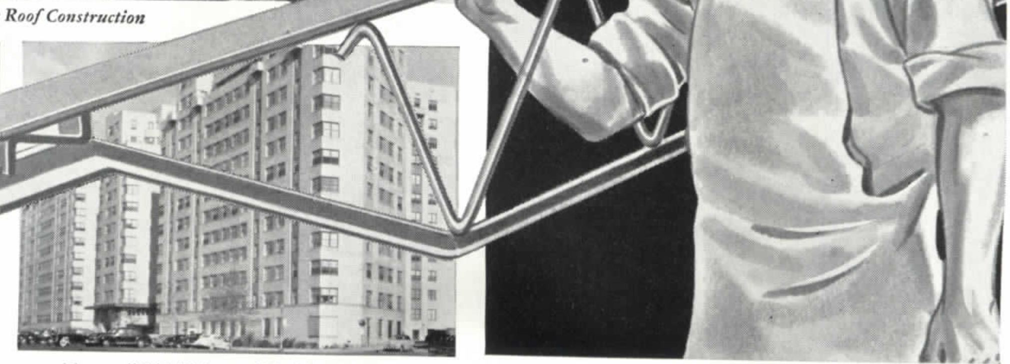

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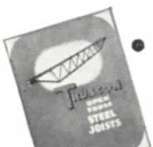

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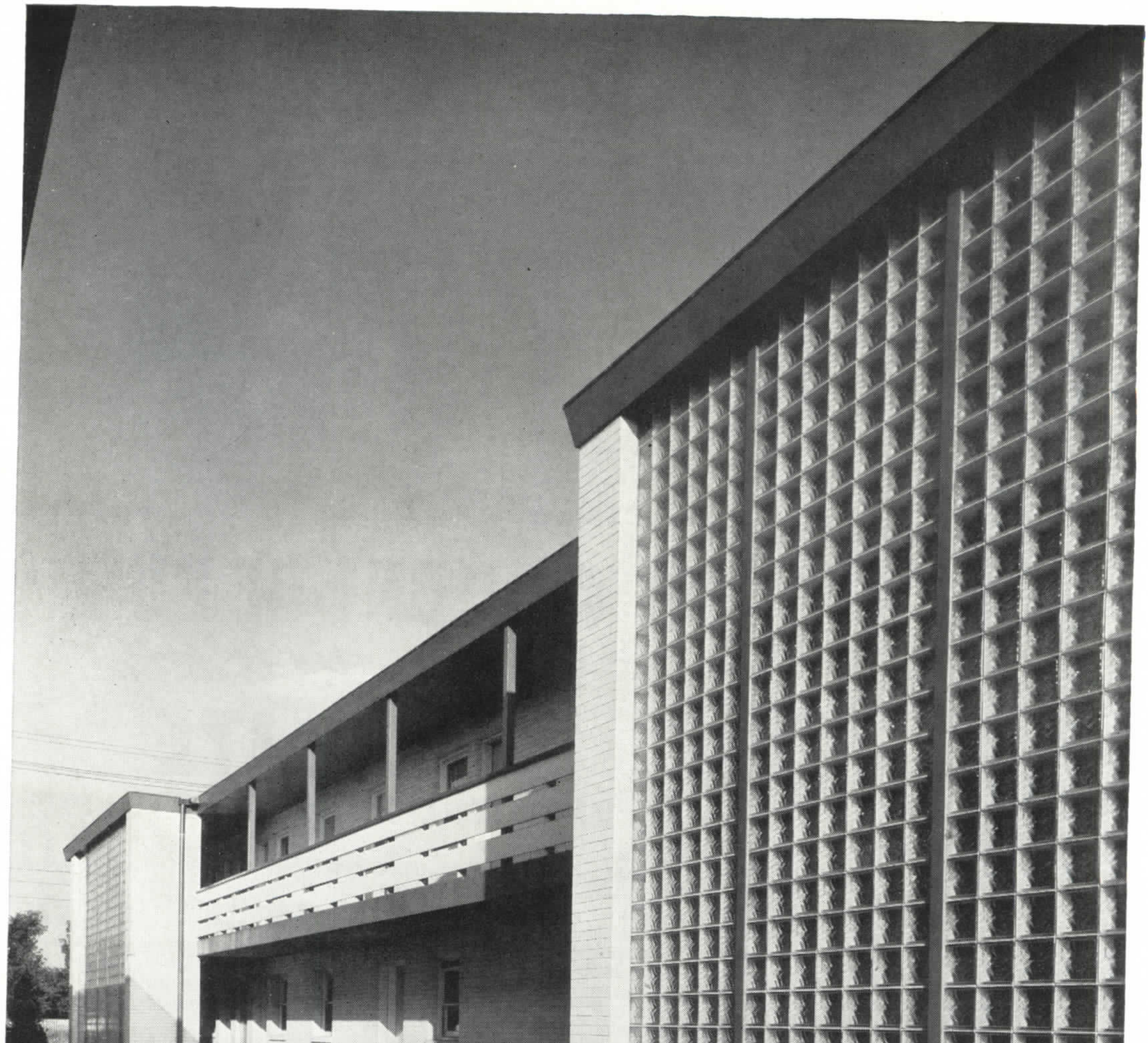

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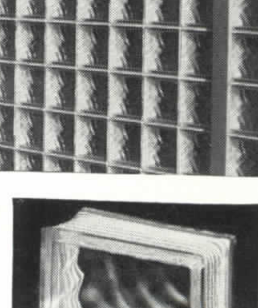

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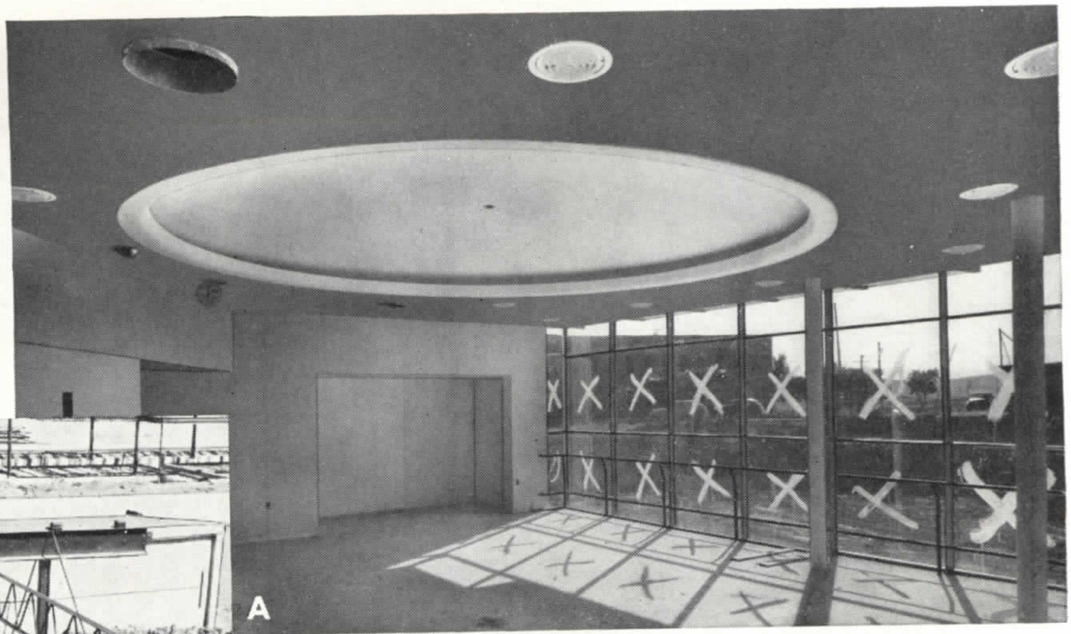

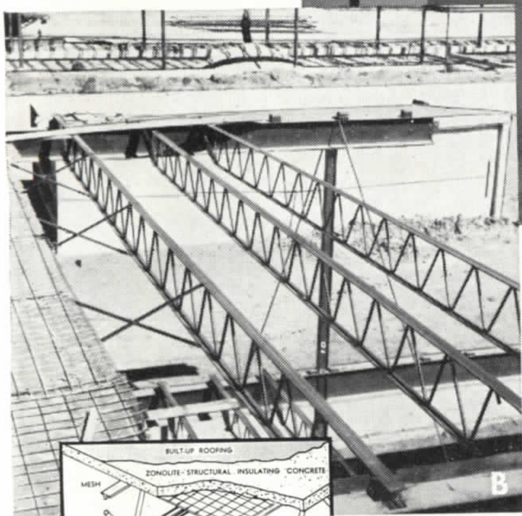

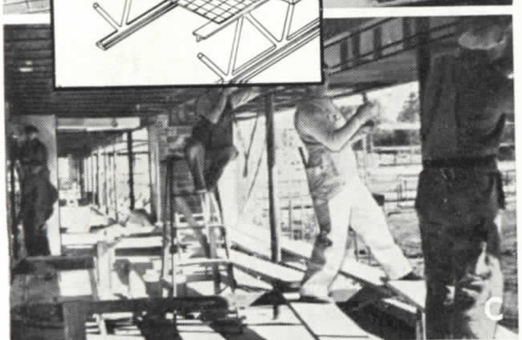

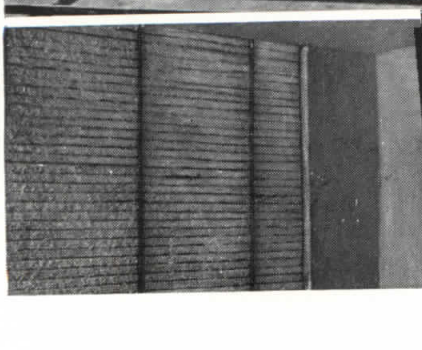

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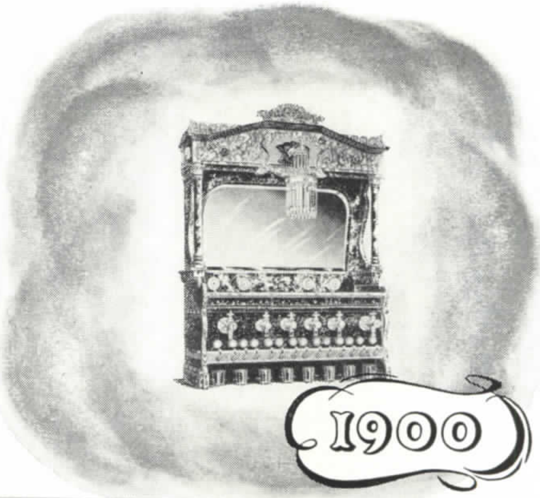

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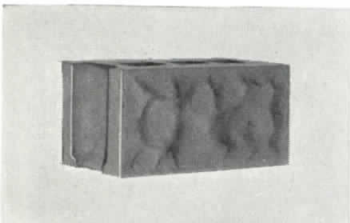

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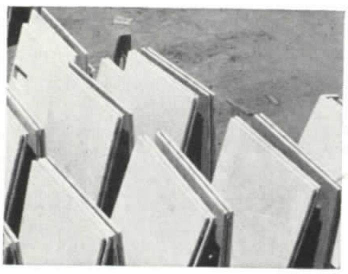
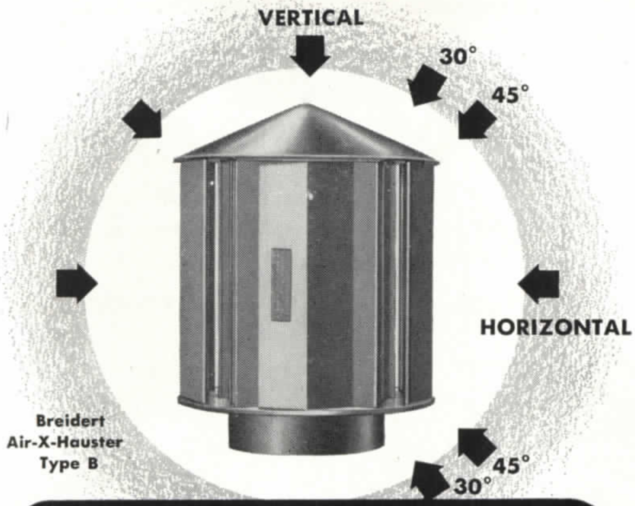


Architectural Concrete Units made with Trinity— The whitest white cement

The finest structures such as the Prudential Building, Los Angeles, use architectural concrete units made with Trinity White—a true portland cement. In addition to its fine appearance, architectural concrete units contribute uniquely to structural economies. Trinity white is recommended for use in terrazzo. Its extra whiteness gives an extra whiteness to the matrix, or, with colors added, a purer color tone.

First Ventilator with Certified Capacity Ratings!



Breidert
Air-X-Hauster
Type B

Breidert Air-X-Hausters

PATENT NO. 2269428

The Revolutionary Improvement in Roof Ventilators and Chimney Tops

Only the Breidert Air-X-Hauster offers certified capacity ratings based on tests* made with wind blowing in *all* directions as shown above. Only such tests can guarantee the capacities a ventilator will deliver under actual operating conditions! No matter which way the wind blows, barring interior negative pressures, the Breidert provides safe, sure ventilation.

For Chimney Tops . . . the Breidert Air-X-Hauster stops down-draft, exhausts smoke and fumes, completely overcomes sluggishness caused by down-draft. Thousands of Breiderts are in use all over the country.

For Vent Flues . . . the Breidert succeeds when conventional ventilators fail because it completely eliminates back-draft where no interior negative pressure exists. Postive flue action is assured regardless of wind direction. The Breidert is more compact and neat in appearance.

For Roof Ventilating . . . the Breidert is unsurpassed in efficiency, economy and appearance for use on residence, commercial and industrial buildings of all types. Stationary . . . no moving parts . . . nothing to jam or get out of order.

SEND FOR FREE ENGINEERING DATA BOOK . . .

use the coupon for complete information on the Breidert Air-X-Hauster, including certified capacity ratings.

* *By Smith, Emery & Co. of San Francisco, Pacific Coast Branch of the Pittsburgh Testing Laboratory.*

THE G. C. BREIDERT CO.

The G. C. BREIDERT CO., Dept. P
3129 San Fernando Road
Los Angeles 65, California

Please send Engineering Data Book. No charge for obligation.

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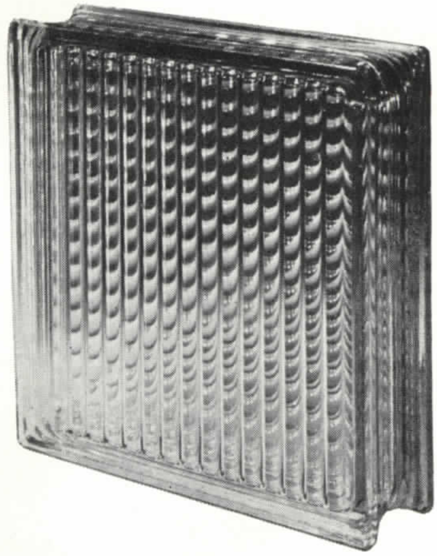

THE THERMAG SKYLIGHT BLOCK

Especially designed with light directing lenses for SKYLIGHTS and skylights only.

Semi-vacuum type provides insulation against cold and heat.

Furnished assembled in pre-fabricated grid panels ready for installation.

Write today for descriptive Brochure S-49

J. MERRILL RICHARDS, 25 Huntington Ave., Boston 16, Mass.

This grille design is

CHEVRONS

one of the hundred distinctive designs in the famous Hendrick line.

Many of these designs were originally developed, according to an architect's specifications, to harmonize with the decorative scheme for some outstanding public building or residence. They are now available as standard numbers.

Fabricated in heavy-gauge aluminum, bronze, copper, Monel, steel or stainless steel. Write for full information.

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Mitco Open Steel Flooring,
"Shur-Site" Treads and
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HENDRICK
Manufacturing Company
68 DUNDAFF STREET, CARBONDALE, PA.
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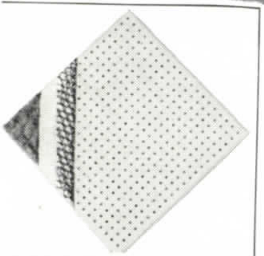
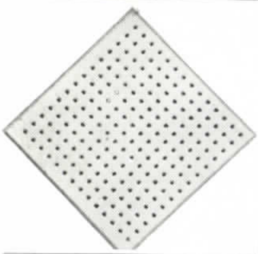
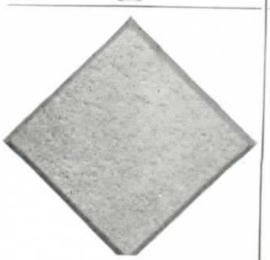
Gold Bond's COMPLETE LINE OF ACOUSTICAL PRODUCTS

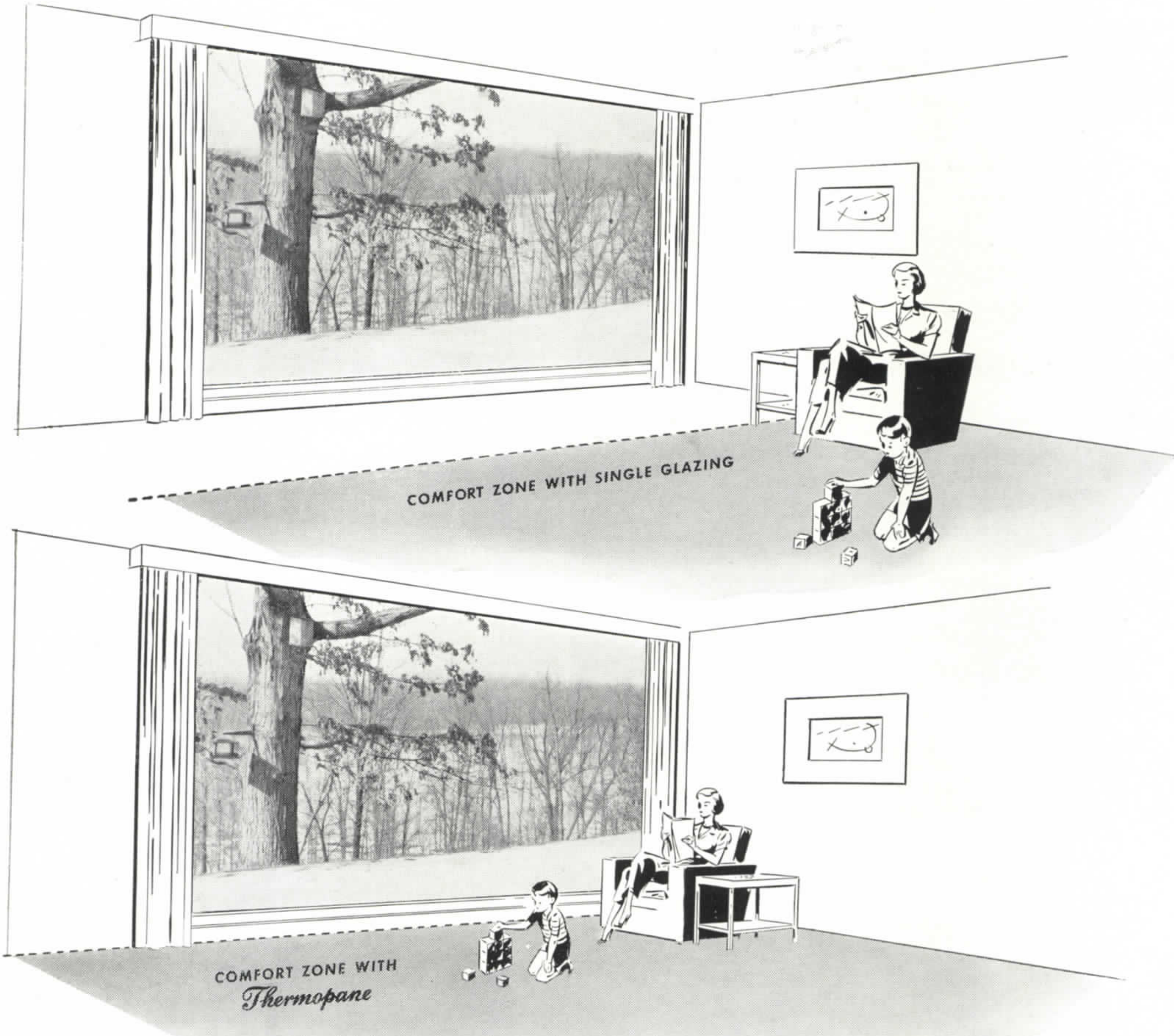
MEETS EVERY SOUND CONDITIONING NEED . . . FITS EVERY BUDGET!

YOU'LL find the answer for *any* acoustical job in Gold Bond's complete line of acoustical products. Take a look at the chart below and you'll *see* the answer. Call your local Gold Bond Acoustical Applicator, listed in the phone directory under "Acoustical Contractors". He's a factory-trained and experienced engineer and at no obligation will be glad to work with you in selecting the right product to fit your budget. For additional information see our section in Sweet's, or write Division Z, Dept. PA 1.

NATIONAL GYPSUM COMPANY, BUFFALO 2, NEW YORK

Lath . . . plaster. . . lime . . . sheathing . . . wall paint . . . rock wool insulation . . . metal lath and sound control products . . . fireproof wallboards . . . decorative insulation boards.

		Noise Reduction Coeff.	Thickness	Sizes	Finish
	**ACOUSTIMETAL** Low maintenance cost. Can be washed or painted any number of times. Panels quickly removed for access to plumbing and wiring. Fireproof, permanent, salvageable.	.85	1¼″	12″ x 24″	Alkyd resin enamel finish, electro-statically applied for uniform density and coverage. Baked on by infra-red light. Bonderizing of metal assures greater adhesion of paint.
	**TRAVACOUSTIC** Fireproof mineral tile. Closely resembles beautiful travertine stone. Fissures vary in size, depth, and arrangement. Permanent, sanitary, acoustically efficient.	.65 .70	11/16″ 13/16″	6″ x 12″ 12″ x 12″ 12″ x 24″	Non-glaring white finish applied at the factory gives high light-reflection. Repaintable with brush or spray gun.
	**ACOUSTIFIBRE** Perforated wood fibre tile. Round, clean holes drilled deep into porous core. Chemically-treated against mould and fungus. Sanitary, cleanable, repaintable.	.55 .65 .70	½″ ⅝″ ¾″	12″ x 12″ 12″ x 24″	Factory-applied shell-white finish results in high light-reflection.
	**ECONACOUSTIC** Low cost wood fibre tile. Distinctive brushed texture surface offers unusual natural beauty. Cleanable with vacuum cleaner.	.60 .70	½″ 1″	12″ x 12″ 12″ x 24″	Prepainted white. May be spray-painted when other colors are desired.
	**THERMACOUSTIC** A mineral wool product which is sprayed to any desired thickness. Fireproof and rot-proof. Especially adaptable to irregular surfaces.	.80 at ½″ thickness	As desired	Monolithic	Eggshell white finish gives high light reflection. Can be repainted without destroying its acoustical properties.



½ *inch* ADDS *feet* TO A ROOM

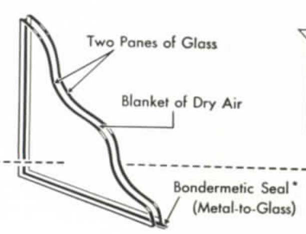
Where building budgets restrict floor space, *Thermopane** insulating glass in the windows becomes doubly important. *All* of the room is usable because the inner pane stays warmer in winter and downdrafts are minimized.

Areas next to windows stay comfortable and furniture can be placed for maximum convenience. An unused "low-comfort zone" is expensive to build. A window wall of *Thermopane* to give the feeling of spaciousness and to allow full use of the room is the economical solution.

The ½-inch insulating blanket of dehydrated air sealed between the panes of *Thermopane* does the trick. Builders now are erecting *Thermopane* window walls at little or no advance in cost over conventional wall construction. For design flexibility and building economy, *Thermopane* is made in over 80 standard sizes. For details, write for our *Thermopane* book.

*®

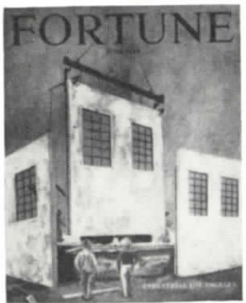
FOR BETTER VISION SPECIFY THERMOPANE
MADE WITH POLISHED PLATE GLASS



Thermopane

MADE ONLY BY LIBBEY·OWENS·FORD GLASS COMPANY
4715 Nicholas Building, Toledo 3, Ohio

We speak our piece in FORTUNE

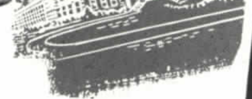


In these days when construction is urgently needed because schools and hospitals are overcrowded, because buildings and homes are inadequate, *time* becomes "of the essence." In the demand for greater speed in construction—standards ...value...and service are easily compromised. Quality is attacked in the interest of price. That's why we are glad that there is an architectural profession that sets up standards, and demands compliance with specifications to "insure the life" of the buildings it plans. This insistence upon quality has given each succeeding generation a better world in which to "live." No better time can be found than right now to repeat this story to the American Public.

•

This is the first of a series of advertisements by JOSAM to appear in Fortune Magazine.

HOW MANY HOMES MUST Baby HAVE?



ask your architect...he built them!

From the very first day Baby comes into this world, he places his future in the hands of an architect. From the crib in the hospital where he was born, to the college from which he will graduate, he must look to the architect for his comfort, his protection, his very existence. For this reason, the architect is many persons to the child and to the man. In the hospital, the architect, like the doctor, must be acquainted with every phase of health so that he may provide proper safeguards. In the home, the architect, like the parent, must know the needs of children, so that he can translate them in terms of plumbing and heating and lighting. In the church and in the school, the architect, like the teacher, must understand the nature of study and play, so that he can assist in their development through acoustics and air conditioning and visual aids. The architect is the man who combines the knowledge of many professions and the skill of many crafts to build a better world. Josam is proud of its association with this great profession and is honored by being the first choice of architects for plumbing drainage products for over 35 years.

Josam STANDARD OF THE WORLD PLUMBING DRAINAGE PRODUCTS

JOSAM MANUFACTURING COMPANY

303 Josam Building, Cleveland 13, Ohio

World's Largest Manufacturer of Plumbing Drainage Products

DRAINS • INTERCEPTORS • BACKWATER VALVES • SWIMMING POOL PRODUCTS

Achievement by BARBER-COLMAN

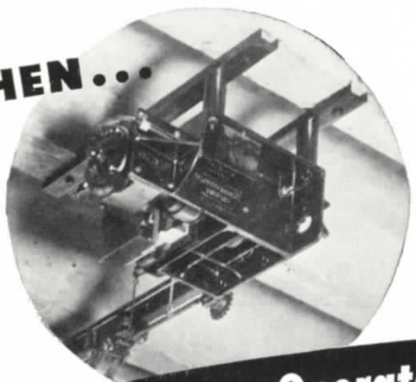
THEN...

NOW...

The Barcol OVERdoor

An Improved Overhead Door. Its exclusive closing action, carefully-engineered hardware, quality construction, and other distinctive features make the Barcol OVERdoor *both weather-tight AND easy-working.* Ideal for residence and commercial garages, industrial and municipal buildings, farms, etc.

THEN...



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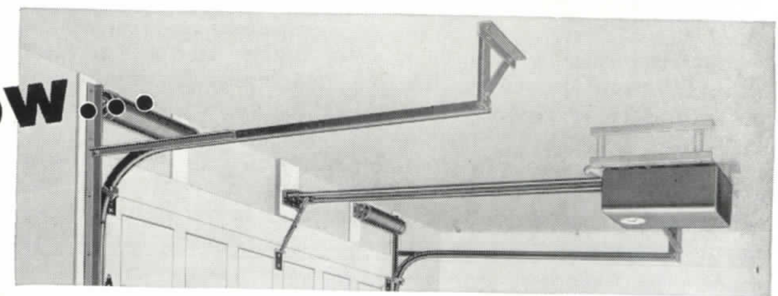


Electric Door Operators

Useful, generally speaking, for opening and closing all kinds of swinging, sliding, and overhead type doors, and sliding gates. Shown here as installed on a Barcol OVERdoor. Can be controlled by wall switches, outside switch, driveway plate, electric eye, or the Radio Control (see below).

THEN...

NOW...

RADIO CONTROL for Garage Doors

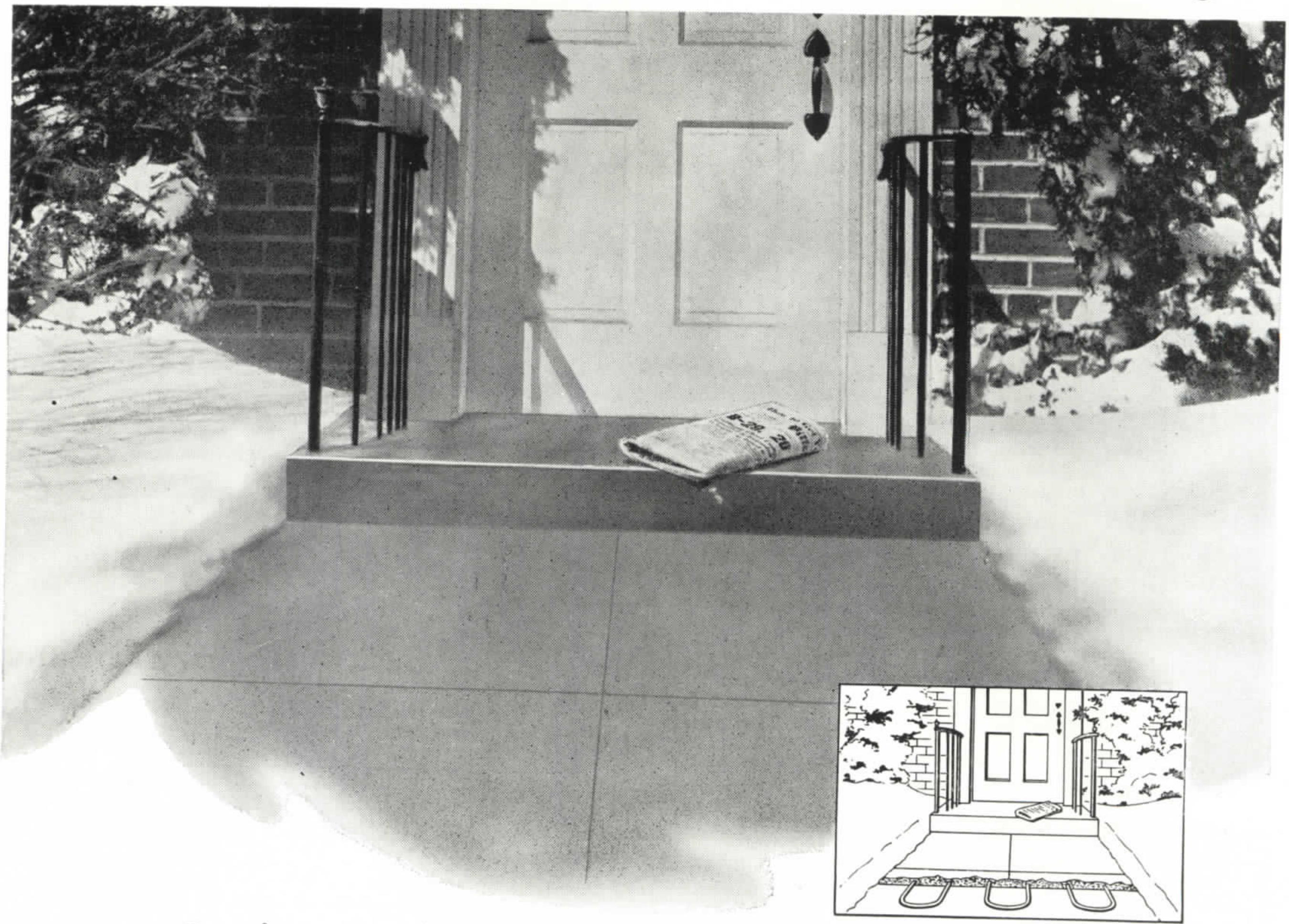
An amazing development, gradually growing in acceptance as a desirable home utility. The driver opens or closes the garage door automatically *by pressing a button in the car.* Saves the time and trouble of handling heavy garage doors . . . is particularly welcome in bad weather. Employs the modern magic of electronics. New, versatile Model E now available.

Look for this Mark of Quality

BARCOL

BARBER-COLMAN COMPANY
100 MILL STREET, ROCKFORD, ILLINOIS

Mr. Smith "Slept in" this Morning!



Steel Pipe *is first choice* for snow melting systems

Fortunate is the man who can let *steel pipe* shovel his snow while he takes an extra "forty winks" on a blustery winter morning!

Yes, by circulating hot water through steel pipes embedded in the concrete, snow can be melted on contact, ice formations prevented, and driveways and walks kept dry and safe all winter long. More and more home and building owners, plants, airports, and institutions are installing such systems.

Steel Pipe is the first choice, for good reasons. Not alone in slab heating for snow removal, but in the similar service of Radiant Heating for interiors as well . . . because *steel pipe* has been *proved* for more than 60 years in the transmission of steam and hot water for conventional heating purposes.

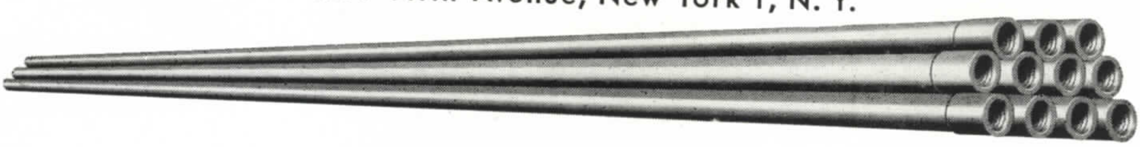
Economical to begin with, easy to form and weld, expansion co-efficient the same as concrete and plaster, durable beyond the life of the structure . . . *steel pipe* embodies all the characteristics necessary to successful installation and operation!

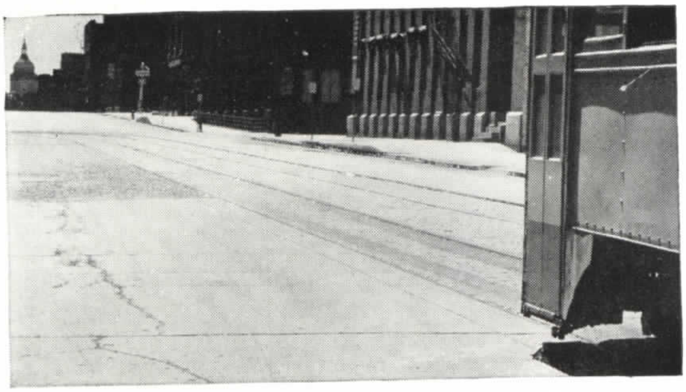
Driveways, too, can be kept clean and free from ice and snow with steel pipe coils.

COMMITTEE ON STEEL PIPE RESEARCH

OF AMERICAN IRON AND STEEL INSTITUTE

350 Fifth Avenue, New York 1, N. Y.





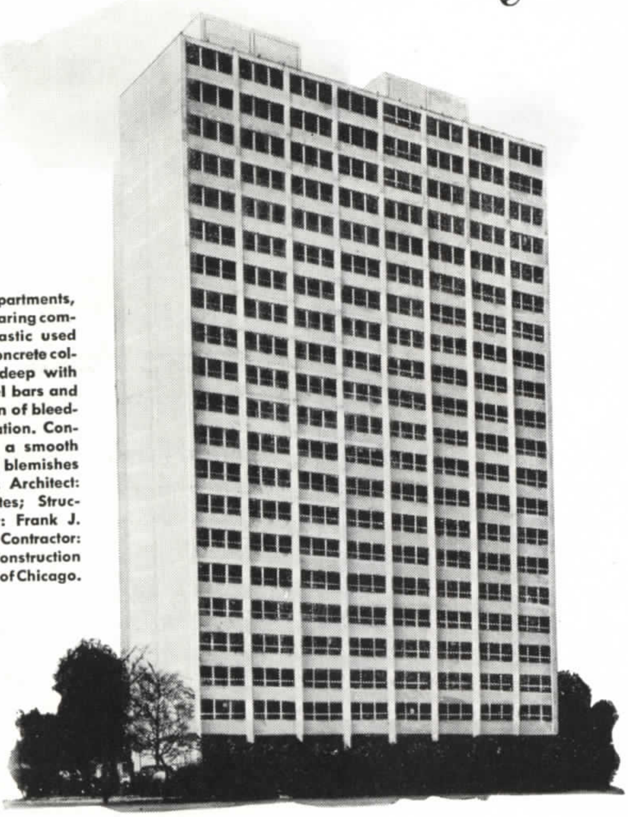
Ten Years Ago...

A Decade of ATLAS DURAPLASTIC AIR-ENTRAINING PORTLAND CEMENT

in August, 1939, this concrete test paving was laid in Second Avenue North, Minneapolis. The badly scaled section of roadway in the background was made with regular portland cement. The foreground section, *laid at the same time*, was made with Atlas Duraplastic—the first commercial use of the air-entraining portland cement originated and developed by Universal Atlas.

Both sections, subjected to the severity of ten Minneapolis winters and to heavy applications of de-icing salts, are shown just as they appeared in July, 1949—convincing proof of the characteristic durability of Duraplastic concrete, of its high resistance to freezing-thawing weather and the scaling action of de-icing salts. Longitudinal structural crack shows some ravelling. Note perfect transverse joint.

Today.... Added Durability and Improved Appearance in structural concrete made with DURAPLASTIC*



Promontory Apartments, Chicago, Ill., nearing completion. Duraplastic used throughout in concrete columns 12 feet deep with network of steel bars and beams. No sign of bleeding or segregation. Contractors report a smooth surface free of blemishes or air-bubbles. Architect: Pace Associates; Structural Engineer: Frank J. Kornacker; Contractor: Peter Hamlin Construction Company—all of Chicago.

From initial paving installations ... to the first structural job ... to beautiful, modern structural achievements like the one shown here, architects, engineers and contractors have come to rely more and more on the extra durability and improved appearance of concrete made with Atlas Duraplastic air-entraining portland cement.

In Duraplastic's rapid ten-year growth, its advantages have been applied to all types of mass and structural concrete—for foundations, walls, columns, and floors. It's ideal for slip-form, gunite, stucco and similar uses.

With Duraplastic, less mixing water is needed for a given slump. The resulting mix is more plastic, more workable, more uniform and cohesive. *It's easy to* place and finish. Water-gain and segregation are reduced. Surface appearance is improved and has higher resistance to the effects of weather-exposure.

For structural concrete needs of today and tomorrow, Duraplastic offers *better concrete at no extra cost.* It provides the precise amount of air-entraining agent interground with the cement for satisfactory field performance. It complies with ASTM and Federal Specifications, sells at the same price as regular cement and calls for no unusual changes in procedure.

Send for new free booklet, *"A Decade of Duraplastic Air-Entraining Cement." Write to Universal Atlas Cement Company, (United States Steel Corporation Subsidiary), Chrysler Bldg., New York 17, New York.*

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

PA-D-94

ATLAS DURAPLASTIC

TRADE MARK REG. U. A. C. CO.

AIR-ENTRAINING PORTLAND CEMENT

MAKES BETTER CONCRETE AT NO EXTRA COST

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

SELECTED PRODUCERS' BULLETINS

● Westinghouse elevators for the new Jordan Marsh department store in Boston will be equipped with cockpits for the operators. The operator stands in a private compartment which extends from the right-hand wall of the car. As the floor of the compartment is one foot above the regular passenger level, the operator is provided with an unobstructed view of the elevator entrance; therefore, he can provide the customers with safer and more efficient service. Also, as the space behind the operator is closed off, passengers are permitted to move directly forward when getting off instead of working their way from behind the operator. Each elevator (there are four) has a seven-foot-wide opening—two feet more than standard department-store cabs.

● General Electric's Air-Wall heating plant for small homes is considered mechanically acceptable by the FHA for properties eligible to mortgage insurance under the Minimum Property Requirements and Risk Rating Procedure of the Administration. The unit, delivered as a complete "package" to the home site, includes a G-E oil- or gas-fired warm-air furnace, small-diameter ducts and elbows, plenum chamber, and registers. The Air-Wall system offers substantial savings in installation costs through the use of prefabricated round ducts and elbows. The ducts are quickly assembled and installed, leave plenty of head room in the basement, and permit easy conversion to living or play quarters.

● Protective aluminum foil has been added to medium-thick rock wool batt insulation manufactured by the Sealtite Insulation Mfg. Corp., and brought out under the name of Seal-Foil. The new insulation product combines the efficiency of mineral wool with the advantages of foil backing, which stops 95 percent of heat transmission by means of radiation and serves as a vapor barrier as well. In laboratory tests it was found that the reflective surface is not seriously affected by dust, and will not tarnish. The firm plans to sell the material at a price in line with the present cost of ordinary full-thick batts.

● A new washable paint finish will be applied to Cushiontone, perforated fiber acoustical tile manufactured by Armstrong Cork Co. The finish consists of two coats of resin oil emulsion paint. No change in the white shade of the acoustical material will be made, according to the manufacturer.

p/a

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PROGRESSIVE ARCHITECTURE

P.S.

AS I WRITE THIS, WE ARE PUTTING THE MAIN PART OF THE JANUARY ISSUE TO BED. And most of the P/A staff is ready to go to bed also. It has been one of the toughest charrettes I've ever engaged in. Like most architectural problems, it began long ago with preliminary discussions and preliminary planning, and as the due-date appeared, the work has been almost constant and consuming of every minute of time. During the last few weeks the editors have locked themselves up to go over the final text and to correlate all of the valuable suggestions and criticisms made by our staff of consultants (who at two previous stages had spent days in the office working with us). To the people who have tried to get in touch with us during this time we apologize—we have been consistently "out." To the wives and families of those of us who have worked countless evenings and weekends we express regret and sympathy. The hell of it is, in this business, that the next issue is pressing us—the monthly deadlines come around with frightening regularity.

Some of you may realize the task that it has been to gather and then to select pictures and facts for a presentation such as this. They have come from every conceivable source — museums, collections, architects, manufacturers, trade groups, newspapers, owners of buildings, school boards, church groups, city governments, and many others. I am pleased but embarrassed by the cooperation we have received, and I just hope that everyone will be sympathetic to the job of condensation, selection and editing we have had to do to compress 50 years' history into one magazine issue. When someone sent us several dozen pictures, it broke our hearts to use only one. When someone wrote us a full historical analysis of the development of a particular material, it seemed cruel to select from it just one pertinent fact, perhaps to be used as one clause of a sentence. We *are* immensely grateful, and we hope that many of our readers will be, because without that sort of help we could not have hoped to document the period as we have done. It is a fact that has been brought home sharply to us that writing *recent* history is the most difficult task there is—simply because source data are not easily available and all of the research must be original.

We, the editors, and our assistants, have lived with this material so long that we may have lost our perspective about its value. To us it seems a most worthwhile thing to do, to look back over the past 50 years and attempt to learn from the work that has been done. It seemed to us when we started it, and it still does, to be a reasonable professional magazine enterprise to turn our sights above day-to-day design occasionally, to skip a month of current work, and to look at what *has* been done in a more objective historical manner. We sincerely hope that you find the issue interesting and useful.

•

TURNING TO MORE RECENT EVENTS, I'VE NEGLECTED TO REPORT ON SEVERAL interesting ones. First of all, the White Sulphur Springs Conference arranged by the West Virginia architects was a great success. The Greenbrier, despite its Dorothy Draper decor, is a pleasant place to stay for a few days. Cy Silling and his helpers ran the affair with great aplomb. The "program"—divided among pleasant talks by Belluschi and Chermayeff, a look at the Tremaine's Miller Collection of contemporary paintings related to architecture, singing led by R. A. Schmertz with his original hillbilly compositions—was lively, good fun, and informative. Some of us were sorry that Ralph Walker had prepared a talk for the final night which seemed to poke fun at much that had been said and done during the two days preceding—but that's his business, I guess.

•

RECENTLY I TOOK A DAY OFF in the middle of the rush and went up to Yale to help in the judgment of a hospital planning problem that had been conducted for the preceding 10 weeks by Al Aydelott, and which a special gift from Charles Neergaard had made possible. It's always a privilege to work with Ed Stone and Lou Kahn, who were the other jurors, and it was good to see Harris Armstrong, in New Haven as critic of another problem. But even more exciting was the opportunity to hear articulate and thoughtful students explain and defend their solutions of a highly technical problem, and to see both the excellent general level of design and the occasional instances of original research and outstanding talent that we found among the 25 submissions.

•

AFTER THE JUDGMENT, ALONG ABOUT MIDNIGHT (before Stone drove me back to New York and we ran out of gas on the Merritt Parkway) some of us discussed for a brief few minutes, over a cup of coffee, the need for teaching drafting and representational techniques in the schools. No one (let's say almost no one) wants to go back to the emphasis on presentation that Carl Feiss speaks of in his column this month, when the rendering was likely to be more important than the thought it expressed. And yet in too many schools it is obvious that the elementary tool of the designer—the ability to express his thought clearly and compellingly in graphic form—has not been well taught. It is annoying to see an excellent solution to a tough problem so weakly drawn that it is almost impossible to "read" the structure or the plan arrangement. Conversely it is most refreshing to come across a readable and explanatory presentation which makes a good design so much the more convincing. Perhaps the de-emphasis of drafting *as a tool* (undoubtedly because it had become an end in itself) is a *bad* thing that has happened in the last 50 years, both in the schools and in the profession itself. P/A plans to pay some attention to the problems of drafting in the modern office during this coming year.

Thomas H Creighton