THE ARCHITECTURAL RECORD

CHICAGO WORLD'S FAIR

MAY
1933

ERNEST BORN

These NEW DUTCH BOY PRODUCTS

make good paint jobs easier than ever to specify

DUTCH BOY COLORS-IN-OIL were especially developed for tinting white-lead paint and are characterized by high tinting strength and true color tone. They come as a smooth, buttery paste, requiring no thinning, and disperse into paint quickly without lumping or streaking.

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An IMPROVED *Soft Paste White-Lead*

As a further contribution to better painting, Dutch Boy offers still another new product—Dutch Boy *All-Purpose* Soft Paste White-Lead. Here, for the first time, is a quick-mixing "lead" which is equally suitable for *inside* as well as outside use. It not only gives a fine gloss but mixed with flatting oil, flats perfectly . . . without a trace of a "flash" or shiny spot. This soft paste is also whiter and smoother, insuring better all-around appearance.

NOW YOUR PAINT CAN BE "DUTCH BOY" CLEAR THROUGH... EVEN TO COLORS AND DRIER

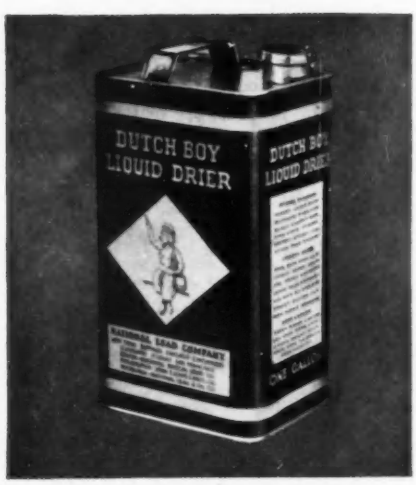
THE latest additions to the Dutch Boy family of fine paint materials are a line of colors-in-oil and a liquid drier.

Purely on the basis of their genuine merit, these new products are finding favor everywhere. But there is another and equally important reason why you will want to include them in your painting specifications. Now, with Dutch Boy colors and a Dutch Boy drier available, you can have white-lead jobs that are "Dutch Boy" throughout...with all that this means in quality, reliability and economy.

Make every job an "all-Dutch Boy" job by specifying Dutch Boy paint materials as follows: *For Interior Flat Paint Work;* Wall Primer, White-Lead, Flatting Oil, Colors-in-Oil. *For Exterior Gloss Paint Work;* White-Lead, Linseed Oil, Drier, Colors-in-Oil.

NATIONAL LEAD COMPANY

111 Broadway, New York; 116 Oak St., Buffalo; 900 W. 18th St., Chicago; 659 Freeman Ave., Cincinnati; 820 W. Superior Ave., Cleveland; 722 Chestnut St., St. Louis; 2240 24th St., San Francisco; National-Boston Lead Co., 800 Albany St., Boston; National Lead & Oil Co. of Pa., 316 4th Ave., Pittsburgh; John T. Lewis & Bros. Co., Widener Bldg., Philadelphia



DUTCH BOY LIQUID DRIER is properly balanced, full strength, uniform . . . a thoroughly efficient drying agent. This drier will not curdle or injure paint in any way and is manufactured especially for use in white-lead paint.

●

OTHER MEMBERS OF THE DUTCH BOY FAMILY OF PAINT PRODUCTS

DUTCH BOY FLATTING OIL. A skillfully blended flatting liquid for use with white-lead to produce both flat and semi-flat paint for modern interior painting. Gives a finish which is sanitary, washable, durable, beautiful and economical. For use also as a blending, glazing and bronzing liquid.

DUTCH BOY LINSEED OIL. Pure, clear, well-settled linseed oil—either raw or boiled. Only the best of selected oil is sold in these sealed cans.

DUTCH BOY WALL PRIMER. A special primer developed for use in white-lead painting. Stops suction, seals fire cracks and, at same time, serves as first coat. Possesses exceptional hiding power. Forms a tightly adhering foundation for succeeding coats of white-lead. Works equally well on all interior surfaces—plaster, wallboard, insulating board, brick, concrete.

THE ARCHITECTURAL RECORD

VOL. 73 NO. 5 MAY, 1933

F.W. DODGE CORPORATION

Published monthly by

F. W. DODGE CORPORATION

115-119 West 40th Street
New York

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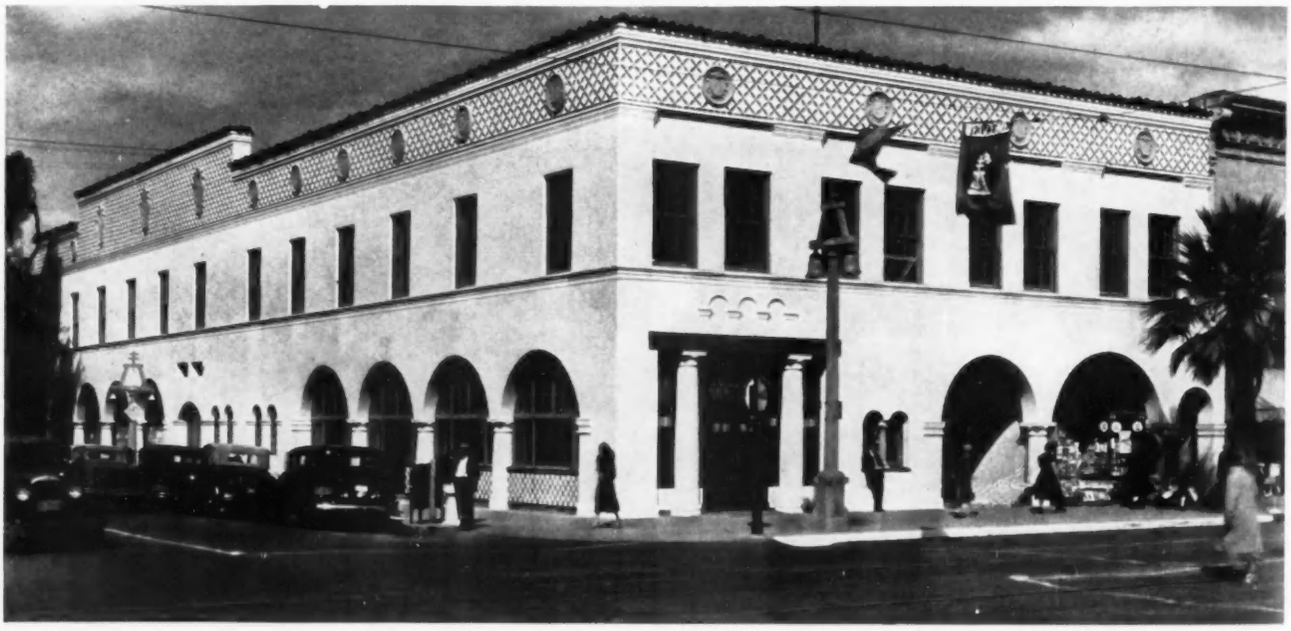
Yearly subscription: United States and Possessions, $3.00; Canada and Foreign, $5.00; Single Copy, 50c. Member Audit Bureau of Circulations and Associated Business Papers, Incorporated.

Entered as second class matter May 22, 1902, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Printed in U. S. A.

STUCCO FOR REMODELING WORK

The old-timer you see above is, or was, the First National Bank Building, Riverside, Cal. The owners wanted to remodel, all right. But they demanded the usual things—low cost, big improvement and quick dollars and cents returns. Architect G. Stanley Wilson of Riverside knew the answer. He said "OK" and went ahead—with stucco. From experience he specified

ATLAS WHITE FOR GOOD STUCCO!



And this is the job he did! Really, isn't it a beauty? Architect Wilson knew that Atlas White stucco is reasonable in cost. He knew that the colors and textures possible would help him produce a remarkable change. And he knew that a job like this would get tenants for the building and customers for the tenants. He certainly delivered on all three counts. It's one more job that says, for good stucco, specify

ATLAS WHITE PORTLAND CEMENT

PLAIN OR WATERPROOFED • • • • PRODUCT OF

UNIVERSAL ATLAS CEMENT CO.

208 SOUTH LA SALLE STREET • CHICAGO

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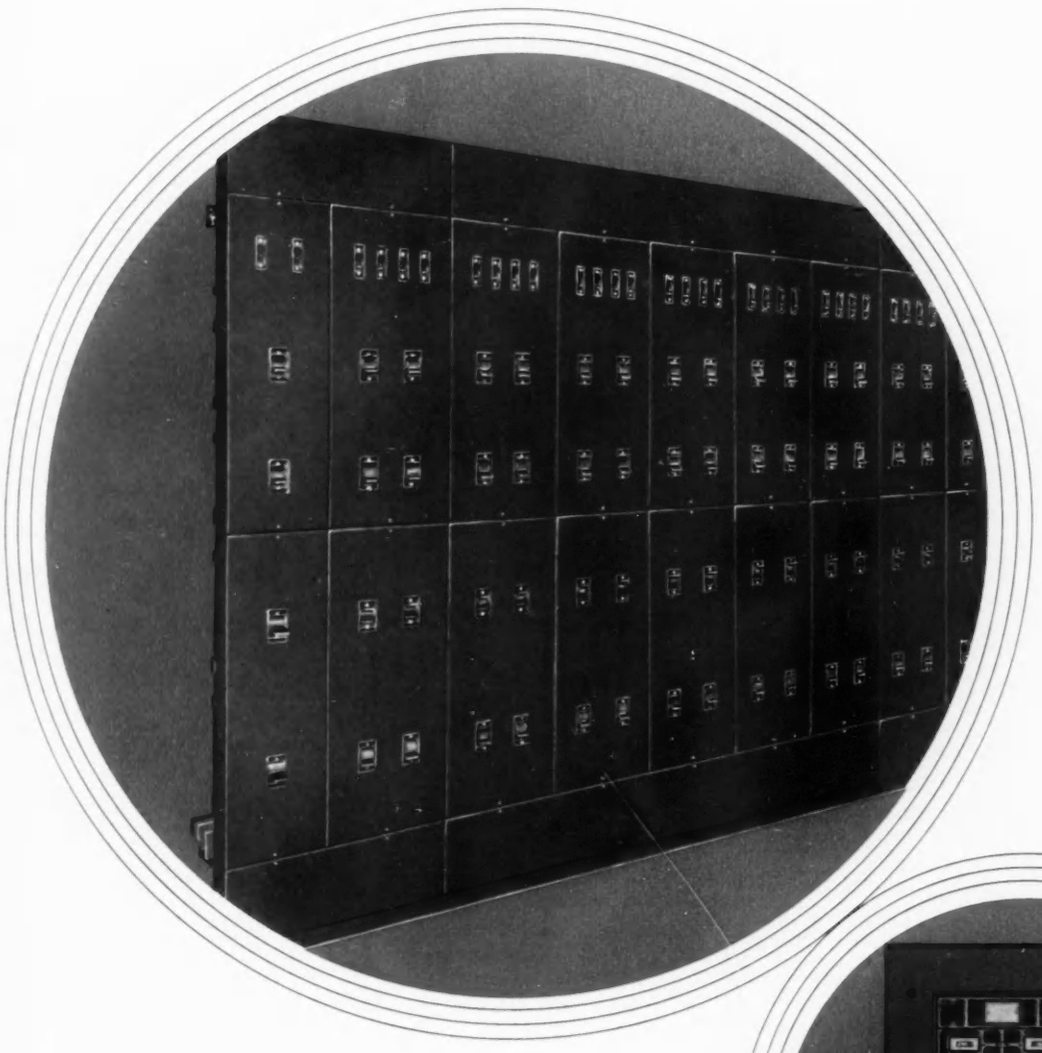
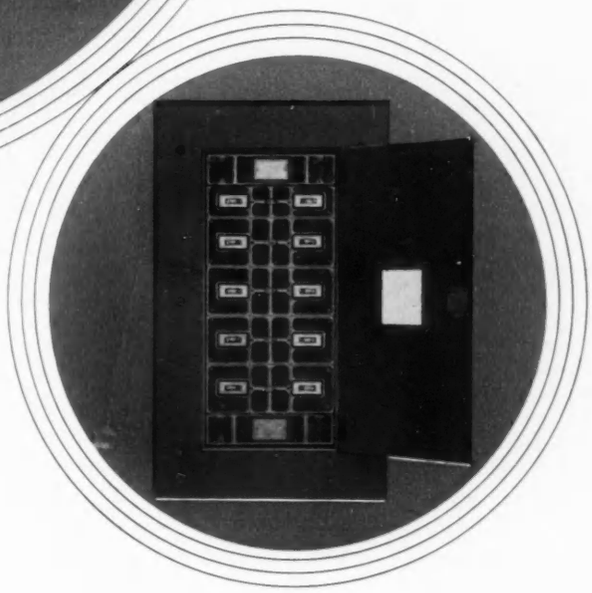


Nofuze Switchboards save from ⅓ to ½ the usual switchboard space and weight. They are completely dead-front and present an attractive appearance. Supplied with breakers up to 600-ampere capacity, 600 volts a-c. or 250 volts d-c.



Nofuze Panelboards can be supplied with "De-ion" circuit breakers to protect any number of circuits. Capacities range from 15 to 600 amperes, up to 600 volts a-c. or 250 volts d-c.

ARCHITECT'S LIBRARY

PUGIN. By Michael Trappes-Lomax. Published by Sheed & Ward, London; 63 Fifth Avenue, New York. 358 pages. $3.50.

As a scholarly biography of "a medieval Victorian," this book is a notable addition to 19th century architectural literature. The author has had access to original sources and has well-documented this life of Augustus Welby Northmore Pugin, a great force in the Gothic Revival in England and a forerunner of Ruskin as an aesthetic theorizer.

From his father, a French painter who came to England and worked as a draftsman, Pugin inherited a love of Gothic design which became a strong influence in his life and in his subsequent change of religion. (Conversely, this change in religion was responsible for much of Pugin's professional activity, for there were few Catholic architects in England who were able Gothic designers.) Art and architecture became for Pugin a means to an end—the restoration of Catholicism to England. He built up an enormous architectural practice, collaborated with Charles Barry in the decorative work of the Houses of Parliament, and died insane from overwork at the age of forty.

From PUGIN

Pugin — architect of churches and the decorative work in the Houses of Parliament.

ADVANCE PLANNING OF PUBLIC WORKS BY STATES. Pamphlet issued by the Federal Employment Stabilization Board, Department of Commerce, Washington, D. C. 33 pp.

This outline of principles is for guidance of State legislation in providing for the advance planning of Public Works. Assistance to the Federal Employment Stabilization Board in preparation of this document was rendered by the American Engineering Council, the American Institute of Architects and the Associated General Contractors.

It was recognized that definite procedure should be followed in planning for future construction improvements. It is also noted that the requirements of states vary considerably. The pamphlet therefore is suggestive in nature and includes material on the following:

—Suggested principles for guidance in formulation of state legislation providing for the advance planning of public works.
—Copies of existing and proposed legislation providing for advance planning of public works.
—List of advantages of advance planning.
—Exhibits.

Copies of this pamphlet may be obtained by writing to the Superintendent of Documents, Government Printing Office, Washington, D. C.

From PUGIN

A design for a church — signed by "A. Pugin, 1821" and later inscribed "My first design + A. W. Pugin, 1852" with "9 years old" added to the first date.

A COMPETITION

Sponsored by the Scovill Manufacturing Company

This competition is open to all Architects, and to men or women who have been members of a recognized architects' organization *at any time* since March 1, 1932.

CLASS A: CASH AWARD $100

PROBLEM: An essay, not to exceed 1500 words, on modernizing an apartment house, hotel, office building, residence, or any building involving plumbing specifications. In the introduction state briefly: *First*, the value of modernization to the architect and to the building owner. *Second*, the importance of plumbing modernization as an integral part of such projects. *Third*, your opinion as to the most important points in specifying plumbing equipment.

To illustrate the subject, outline a modernization commission from your *actual experience*. Include the type and age of the building; the changes in plans; the solution of the plumbing problems; and the points involved in the selection of the plumbing equipment. (Neither the original nor the new brand of fittings need be mentioned by manufacturer's name.) In conclusion, tell how the building owner was approached, and the line of reasoning used in obtaining the commission.

Results of the solution of the above problem, such as increased tenancy, greater economy of operation, etc., should be covered and attested by a letter from the building owner or his business agent.

CLASS B: CASH AWARD $75

PROBLEM: An essay, not to exceed 1500 words, following the same conditions outlined in the first paragraph of the Class A problem.

To illustrate the points, assume a *hypothetical* modernization commission. Indicate the line of reasoning you would use with the building owner to obtain this commission. Point out the probable results of modernization—in increased tenancy, etc. —obtainable by skilful planning. A sketch plan may be attached to illustrate your proposal for modernizing plumbing arrangements and fittings.

GENERAL RULES

Contestants may enter *either* Class A or Class B—but not both. Only one essay will be accepted from each contestant.

Essays must be typed or written legibly in ink on one side of the paper only. Sign with a *nom de plume* or device and send in a *plain envelope* to Contest Director, Scovill Manufacturing Co., Plumbers' Brass Goods Division, Waterville, Conn. Enclose with the entry a plain, opaque envelope marked *Class A* or *Class B*, containing your real name, full address, position, and name of firm. Excellence of English, while desirable, will not be given undue weight as compared to grasp of the subject. Entries will be returned at the close of the competition if postage is enclosed.

The judges will be the following men:

CASS GILBERT, JR.....Cass Gilbert, Inc., New York City
RAWSON HADDON.....Waterbury, Conn.
FRANCIS KEALLY.....New York City
LOUIS A. WALSH.....Waterbury, Conn.
RUSSELL WHITEHEAD.....Editor, *Pencil Points*

They will meet shortly after the close of the competition, and their report will be published. It is understood that all contestants agree to the conditions of this competition. The judges' decision is to be accepted as final.

If one or both winners wish to donate their awards to a charity limited to the Architectural Profession, the Scovill Manufacturing Company will donate an equal sum —provided the donation is made within two weeks after the winners are announced.

•

This competition closes at midnight, June 1, 1933

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SCOVILL MANUFACTURING COMPANY
PLUMBERS' BRASS GOODS DIVISION
WATERVILLE • CONNECTICUT
Scovill Flush Valves—Shower, Bath and Lavatory Equipment—Tubular and Miscellaneous Plumbers' Brass Goods

Scovill

THE ARTS IN AMERICAN LIFE. By Frederick P. Keppel and Robert L. Duffus. McGraw-Hill Book Co., Inc. New York. $2.50.

This is one of the important series of monographs published under the direction of the President's Research Committee on Social Trends. The Committee was named by President Herbert Hoover in December, 1929 to survey social changes in this country in order to throw light on the emerging problems which now confront or which may be expected later to confront, the people of the United States.

The purpose of this very readable book was to *appraise the arts* in American life, such as architecture, sculpture, painting, and the theater. Considerable space is given to art education and the relation of the arts to government.

The authors of this book do not attempt to demonstrate absolute progress or decline in the arts. They have shown objectively that there are differences of opinion as to the aesthetic values in American art and that various tendencies are apparent.

In the chapter on architecture it is pointed out that the downtown section of every growing city in the United States has been architecturally made over since 1920.

". . . In the cities, at least, the public is evidently becoming acclimated to the new architectural ideas, just as it might become accustomed to extreme modernism in painting if all the largest and most conspicuous paintings were modernistic. The desire for novelty which is characteristic of the city dweller may have something to do with this. Certainly the modern skyscraper has had to run no such barrage of reactionary criticism as that encountered by the various revolutionary movements in painting during the nineteenth century. The vocal criticism has nearly all been based not upon the modernism of the skyscraper but on its frequent retention of archaic features.

"When the first plans were announced for the gigantic project known as Rockefeller Center, designed to occupy three entire blocks of the west side of Fifth Avenue, Manhattan, an animated discussion in the press was focused on this very feature, and, apparently as a result of this discussion, the original designs were radically modified. The final plans, now being carried out, fail, naturally enough, to satisfy that school of critics which believes the skyscraper to be already obsolescent. But the fact that the element of aesthetic significance was placed first, even in a building enterprise which had to earn its own living, is important.

". . . The great variety of uses to which buildings may be put is likely to insure as much opportunity as our architects can use. The monumental structure, often put up frankly for advertising purposes, and the single private dwelling, promise to remain parts of the architectural picture in any discernible future. Thus architecture is not only America's most distinctive contribution to the arts, but bids fair to become increasingly so."

HOME ARCHITECTURE. By Rexford Newcomb and William A. Foster. Published by John Wiley & Sons, Inc., New York. 336 pages, illustrated. $3.25.

According to the subtitle, this volume is intended for a twofold use: (1) as a textbook for schools and colleges, and (2) as a manual for the home builder and home owner. In either case the book is largely historical in interest. The authores discuss how houses have been built and furnished, but they say little anent how the dwelling could be improved in design for the greater satisfaction and wellbeing of the occupants. Many worthwhile developments of recent years are omitted from consideration; for example, no mention is made of domestic air conditioning, although a chapter is devoted to heating and ventilation. The photo-electric cell, which has many actual and potential remote control applications in the house, likewise is ignored by the authors.

The book is divided into twenty chapters, each with its own bibliography. The subject matter includes plumbing, lighting, heating, mechanical equipment, decoration and furnishing, financing, remodeling, together with chapters on the apartment house, the farmhouse and home landscaping. A complete index is given.

WORLD SOCIAL ECONOMIC PLANNING. M. L. Fledderus, editor. Obtainable from the International Industrial Relations Institute (I.R.I.), The Hague, Holland, and from Room 600, 130 East 22nd Street, New York City. 585 pages; with addendum (published as separate volume), 935 pages. $2.50.

In August, 1931, the World Social Economic Congress met at Amsterdam. Papers contributed to the Congress by delegates from 23 countries, including Russia, constitute this book; they are printed as originally delivered, together with translations, so that they appear triply in English, French and German versions. A large number of valuable tables and charts are included, together with an analysis and review of the Congress, prepared by Mary van Kleeck, director of the Department of Industrial Studies of the Russell Sage Foundation, New York.

The subject before the Congress was "The Necessity for Planned Adjustment of Productive Capacity and Standards of Living." The factual basis for this discussion, showing the recurrence of unemployment in the last two decades, was presented in advance as analysis by economists: these reports are published in a companion volume, *International Unemployment*. The unemployment fluctuations, it is pointed out, come in a period of unprecedented growth in productive capacity. Actual production is less than the real productive capacity and thus standards of living are lower than they might be if productive capacity were fully utilized. The failure to produce to capacity is in turn a cause of unemployment; underconsumption and the resulting curtailment of production block international trade.

Introducing The New

DROP-FORGED Von Duprin

Self-Releasing Fire and Panic Exit Latches

Enduring and beautiful beyond belief are the drop-forged Von Duprin devices (types B2 and C2) just announced.

External parts, drop-forged from special brass and bronze alloys, have more than three times the strength of the parts used in the best of the cast devices. The metal approaches gold in density, and has the rare charm of mirror surface and sharp perfection of detail.

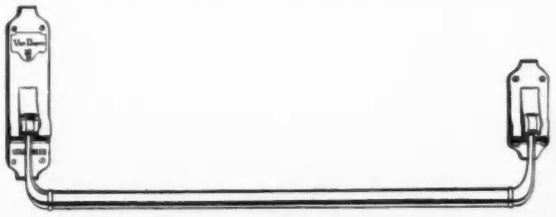
All working parts are drop-forged from bearing metal and will wear, we believe, at least a century beyond the full life of any building.

Surprisingly enough, prices of these superlative new devices are no higher than those of corresponding cast devices.

VONNEGUT HARDWARE CO.

INDIANAPOLIS, IND.

Listed as Standard by Underwriters' Laboratories



ARCHITECTS' ANNOUNCEMENTS

Theodore R. Jacobs, Inc., architects, have opened a Long Beach office at 518 Ocean Center Building, Long Beach, California.

The New England Division of the Architects' Small House Service Bureau has been moved to the office of the Architects' Exhibit Corporation at 11 Beacon Street, Boston, Massachusetts.

John A. Roebling's Sons Company of New York has moved its offices from 83 Liberty Street to the Robinson Building, 107 Liberty Street, New York City.

ADDISON MIZNER

Addison Mizner, architect, died on February 5 at Palm Beach, Florida. Mr. Mizner was responsible for the revival of Spanish type homes in Florida and was the organizer of the Mizner Development Company.

GEORGE WILLARD CONABLE

Mr. Conable, member of the Brooklyn Chapter of The American Institute of Architects, died on January 2, 1933, at St. Petersburg, Florida.

WILLIAM SIDNEY WAGNER

Otto R. Eggers, architect, and Edward Field Sanford, sculptor, have designed a memorial to the memory of William Sidney Wagner who died on May 26, 1932. This monument, in Northport Rural Cemetery, Long Island, was erected through the combined efforts of Mr. Wagner's friends.

ERNEST M. HEBRARD

Word has been received of the death in Paris of the well-known French Architect, Ernest M. Hebrard, a brother of Professor Jean Hebrard of the architectural faculty of the University of Michigan.

PROFESSOR JAMES M. WHITE

Professor White, who was identified with the University of Illinois for nearly fifty years, died on February 6, 1933. He was a member of the Illinois Architectural Examining Committee since 1918, president of the National Council of Architectural Registration Boards, and chairman of the A. I. A. Committee on Registration. Prof. White was also a member of the Illinois Society of Architects, the Chicago Architectural Club, and the University Clubs of Urbana and Chicago.

CORRECTION NOTICE

The illustrations appearing on pages 182-184 of the March, 1933, issue of THE ARCHITECTURAL RECORD should have been credited to Allen G. Siple, architect, instead of to J. E. Dolena.

CALENDAR OF EXHIBITIONS AND EVENTS

May 2-5	Annual meeting of the Chamber of Commerce of the United States, to be held in Washington, D. C.
May 6	Opening day of the Second Philadelphia International Salon of Photography. Last day for receiving prints is April 21. Address communications to Philip N. Youtz, Curator of Exhibitions, Pennsylvania Museum of Art, Philadelphia.
May 24	Last day for receipt of drawings in the architectural competition sponsored by the Phelps Stokes Fund. Entries for the competition should be sent by letter to the Phelps Stokes Fund, 101 Park Avenue, New York City, not later than May 1.
June	"A Century of Progress," International Exposition at Chicago.
June 1	Closing date of competition sponsored by the Scoville Manufacturing Company, Waterville, Connecticut.
June 10	Annual meeting of the Garden Cities Association of France and of the International Linear Cities Association, to be held at the Institut Oceanographique in Paris.
June 22-24	Semi-annual meeting of the American Society of Heating and Ventilating Engineers, to be held at Hotel Statler, Detroit, Michigan.
June 25-30	"Engineering Week" in Chicago.
June 26-30	Thirty-sixth annual meeting, A.S.T.M., Chicago.
June 27, 28	Annual meeting of The Producers' Council, Inc., in Chicago.
July 29-August 14	International Congress for New Building, Marseilles-Athens.

HOUSING COMPETITION

The Phelps Stokes Fund for educational work among negroes and poor whites in America and Africa, and for the improvement of housing conditions among the poor in New York City, has recently decided to hold an architectural competition, and to invite the submission of plans for the development of a typical New York City block of tenements.

The types of development which it is sought to encourage by this competition are those which will produce a sufficient number of rooms, coupled with the best procurable combination of economic construction, adequate space, convenient arrangement, privacy, attractive outlook, good ventilation, and well proportioned rooms, at rents not exceeding an average of $10 per room per month.

Details of this competition may be obtained from Phelps Stokes Fund, 101 Park Avenue, New York City. The competition closes May 24.

BRIDGE AWARD

The American Institute of Steel Construction has announced a Fifth Annual Award for the most beautiful bridge built during the year. The Jury of Award will designate the most beautiful bridge in each of three classes: Class A, bridges exceeding $1,000,000 in cost; Class B, those costing between $250,000 and $1,000,000; and Class C, those costing under $250,000.

Moffett-Russell

LOUIS SKIDMORE
In Charge of Exhibit Design,
A Century of Progress

NATHANIEL A. OWINGS
In Charge of Concessions

Moffett

CLARENCE W. FARRIER
Asst. Director, Department of
Operations and Maintenance

OTTO TEEGEN
In Charge of Exhibit Color

PUBLISHER'S PAGE

THIS ISSUE is given over to consideration of a Century of Progress which opens in Chicago on June 1, and presents to architects what we consider the most interesting items of the Fair.

Architectural designers and engineers in charge of the design and construction of the buildings "on the job" have written articles on design, construction, exterior and interior color and "gadgets."

SHEPARD VOGELGESANG
In Charge of Interior Color

OTHER CONTRIBUTORS

Frederick L. Ackerman, architect, New York City; consultant to City Housing Corporation. He is now in charge of an architectural survey of Providence, Rhode Island.

M. H. Furbringer, architect, Memphis, Tenn.; Regional Director of The American Institute of Architects.

Louis La Beaume, architect, St. Louis; chairman, Committee on Public Works, The American Institute of Architects.

William O. Ludlow architect, New York City; chairman, Committee on Industrial Relations, The American Institute of Architects.

William Stanley Parker, architect, Boston; member of Committee on Contracts and Fellow of The American Institute of Architects; Chairman of Committee on Design, President's Conference on Home Building and Home Ownership.

Ernest J. Russell, architect, St. Louis; President of The American Institute of Architects.

Delbert S. Wenzlick, president of Real Estate Analysts, Inc., of St. Louis and Chicago. Mr. Wenzlick has been engaged in the real estate business for many years and has, in recent years, turned his attention to a new method of property analysis and appraisal.

NEXT MONTH

Girard College Chapel, Philadelphia—Thomas, Martin and Kirkpatrick, architects.

Symposium on Architectural Education.

Queens Boulevard Competition Drawings.

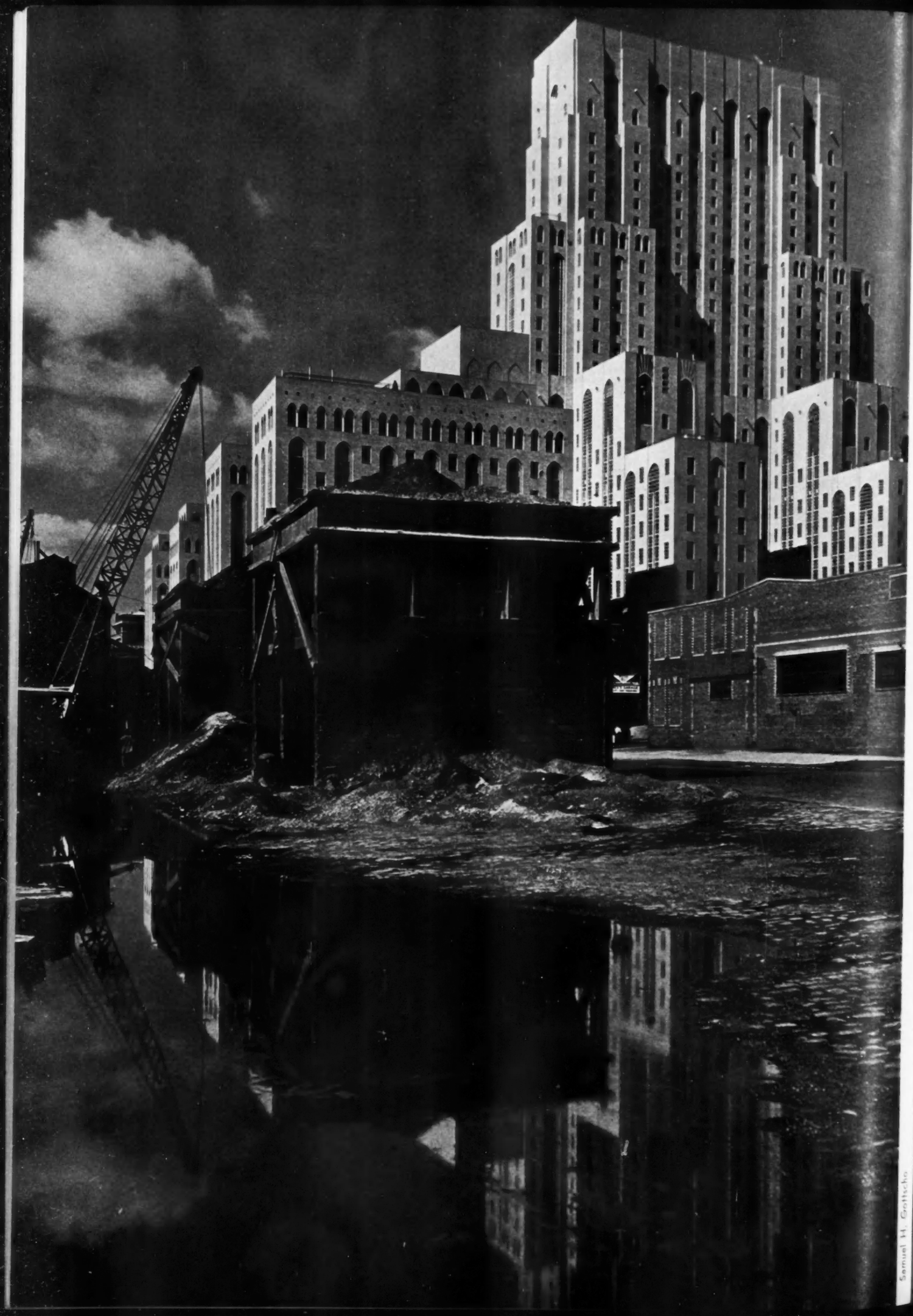
Steel and its applications.

PHOTOGRAPHS OF NEW YORK
BY SAMUEL H. GOTTSCHO

NEW YORK HOSPITAL
CORNELL MEDICAL COLLEGE

NEW YORK CITY

COOLIDGE, SHEPLEY, BULFINCH & ABBOTT
ARCHITECTS


Samuel H. Gottscho

THE ARCHITECTURAL RECORD

MAY, 1933 VOLUME 73 — NUMBER 5

HOW CAN ARCHITECTS DEVELOP BUSINESS?

Architects, it is believed, can render a public service to their communities by taking the lead in initiating and developing new building activities at this time. In the following symposium the profession is urged to encourage low-cost housing projects, civic improvements, modernization, and other public projects.

PRESIDENT RUSSELL URGES BUILDING STUDIES

Architects should analyze the building needs of their communities and be prepared to do their share in satisfying such needs. Undoubtedly they will find a dearth of sanitary low-rent housing, as this condition exists in all cities.

This problem demands solution, and architects should take the lead in a study of the situation. It is vital because it affects the largest percentage of the population. Spasmodic attempts have been made from time to time in various localities to study some detail or other of the problem, but the answer has not been forthcoming. It is time that the architectural profession as well as the entire building industry should concentrate on some such study.

In making analyses the investigations will find that educational, eleemosynary and religious institutions are in need of new buildings. These analyses will also indicate clearly the advisability as well as the necessity of modernizing existing buildings. As a matter of fact this is next to low-cost housing in providing the best opportunity with which architects may busy themselves.

If architects will drop their watchful-waiting, hopeful policy and adopt instead a will-to-work they will be infinitely better off mentally and financially.

E. J. RUSSELL, *President*,
American Institute of Architects.

A. I. A. PUBLIC WORKS COMMITTEE SEEKS FEDERAL REFORMS

The Public Works Committee of the American Institute of Architects is continuing to press for further recognition of the principle that the planning and designing of Federal buildings should be entrusted, so far as possible, to competent architects resident in the different sections of the country where such buildings are to be located. In recognition of this principle and in connection with the current building program, more than three hundred architects in private practice have been commissioned by the Treasury Department during the past two years.

We have addressed ourselves to the high officials of the new Administration, urging the continuance and expansion of this principle. As citizens, we are vitally interested in the administration's program looking toward the consolidation, under one centralized public works unit, of the many Federal bureaus engaged in the preparation of plans and specifications for Federal projects. Such consolidation can be commended as logical in the interest of economy and efficiency. However, if this proposed public works unit were to become only a super-bureau, swollen and enlarged by the absorption of the lesser bureaus, and if it should continue to pursue the methods that have prevailed for so long in the present bureaus, neither economy nor efficiency would necessarily result.

Therefore, it becomes extremely important to correlate this consolidation with the elimination of many details with which the present bureaus are engaged. The most important of these functions, with which we, as architects, are primarily concerned, is the preparation of plans, designs and working drawings within the bureau. If real economies are to be achieved with resulting savings to the taxpayer, the services of independent architects, landscape architects and engineers, resident in the different sections of the country where public works are to be executed, must be enlisted.

Moreover, in assigning these projects to competent architects, landscape architects and engineers, the new bureau should free itself from many of the obsolete and unprogressive policies by which the old bureaus have been restricted. Thus only can real economies be effected and real efficiency result.

It has been stated by the Treasury Department that architectural services can be performed by their staff at a cost somewhat less than the fee paid independent architects. No opportunity has availed to check their method of accounting, and we do not know what items enter into their statement of cost nor what important items may have been omitted. We are convinced that the differential cannot be great, and rather feel that a thorough-going accounting would show a saving in production costs if independent architects were consistently employed and the size of the bureau reduced. The main economies to the government, however, would result from the greatly reduced cost of the completed projects themselves if businesslike processes and modern practices in the specification of materials were followed, as in our private practice.

All citizens, whether architects or not, may indorse these principles on the grounds of sound common sense and good business procedure. As architects and specialists, however, we know that the actual quality of plan, design and structure should be immeasurably improved.

Whether or not the new Administration intends to undertake any large program of public works is beside the question. We are not, and have not been, simply interested in trying to secure employment for ourselves, but have been consistent in our advocacy of these principles as primarily in the public interest.

It is apparent that the new administration is engrossed with many problems of major importance, but we are hopeful that the practical arguments, which we shall continue to advance, will receive sympathetic and cooperative consideration.

LOUIS LABEAUME, *Chairman*.
Committee on Public Works, A.I.A.

HOW CAN ARCHITECTS DEVELOP NEW BUSINESS?

LEISURE IS SEEN AS BUILDING STIMULUS

The increase of leisure means a demand for new types of building, according to Mr. Ludlow. Parks and recreational buildings, schools, new highways and the like are fields for architectural development.

We shall see a great change in our buildings as soon as money begins to circulate again, and this change will be not only in style but in kind. Breaking away from the traditional forms of architecture will bring about the change in style and the increase in leisure time will make a demand for the kind of building that leisure time will need. The kind of building that will be required first will certainly not be the skyscraper or the factory; dwellings and institutional buildings, schools, hospitals, churches, and similar noncommercial buildings will probably lead the way.

There will be, however, a new factor in the situation that will mean great building along another line. This is the shorter hours of labor and longer hours of leisure. Whether the outcome is a five-day or a four-day week, the average man and woman will have an unprecedented amount of leisure time that will be filled with recreation and amusement.

Already the automobile has nearly revolutionized our manner of living, and it is going to be the means of making the greatest use of out-of-doors and the buildings that go with it.

The time is not far away, when the heart of our great American cities will be abandoned as places for residence, amusement and shipping. They will be given over to office buildings, centers for the distribution of freight and passengers, by rail, bus and airplane. Amusements, shopping, and residence are already beginning the process of decentralization, as one can readily see by the establishment in suburban towns of great branches of our finest department stores, of elaborate moving picture houses and legitimate theaters; by the popularity of out-of-town apartment houses, and even in these times when there is apparently no money for building, people have found money for building private residences in suburb and country.

City congestion reached its limit in 1929, and the many nostrums which simply seemed to make the disease worse are giving way to the obvious cure—taking the people away from the city and not into it.

We are going to turn our attention to parks, municipal and national, and the building of swimming pools, outdoor gymnasiums, and country hotels. The additional leisure will also promote buildings of many sorts for indoor recreation and amusement. Theaters and movie houses will flourish, great gymnasiums for football, baseball, tennis, skating and the like will be built to make outdoor sports possible indoors for winter and at night.

Our colleges, schools, hospitals, and charitable institutions are even now at full capacity, and better times and more available money will bring about a great expansion of these and the new housing necessary to accommodate them. We shall also build many straight highways for traffic and travel, and winding roads for scenic beauty for pleasure driving. Landscaping, planting, flowers, bridges, pavilions for rest, recreation, and refreshment, public playgrounds and golf courses will of course accompany these in ever-increasing numbers.

What the effect of all this will be upon us as a people is another question, its answer depending in a great measure, perhaps, on whether we build along without recreational facilities, more schools, churches, libraries, and charitable institutions, and whether we rebuild our slums with decent habitations.

But architects, engineers, city planners, landscape architects, builders, park boards, and public officials will do well to think a little in advance of the inevitable trend of affairs. They should prepare for great building activity, taking account of our rapidly changing conditions and probable mode of living, so that whatever is done shall not be done in the costly, haphazard fashion of former days, but shall be planned for the greatest economic use, and the most adequate future development.

Sigurd Fischer

New York Hospital and Cornell Medical College, with park and playground in foreground. Coolidge, Shepley, Bulfinch and Abbott, architects.

WILLIAM ORR LUDLOW, *Chairman*,
Committee on Industrial Relations, A.I.A.

HOW CAN ARCHITECTS DEVELOP NEW BUSINESS?

BETTER OFFICE PROCEDURE: BETTER ARCHITECTURAL SERVICE

Mr. Parker of Boston recommends affiliations of individual practitioners who are specialists in certain phases of building activity so that overhead expenses can be cut down and an efficient, well-rounded architectural service be offered to clients.

Much has been written of the changing times and the new relationships being developed between the architect and the other elements in the business of designing and constructing buildings. It is said that the day of the super-office is past; that large buildings for multiple residence, business or industry will be few and far between, at least for a number of years; that the future is to be the day of the small practitioner.

Whether or to what extent all that is true remains to be proved by time. Doubtless, for the immediate future large operations are likely to be few, except possibly in the field of large-scale housing developments. Even here no masterful conqueror has appeared with the power or the wit to overcome the many obstacles in the path of such enterprises. The magic letters R. F. C. still flutter in front of us to lure us on with the promise of the necessary mortgage money if we can somehow contrive to settle the other minor problems of land cost and construction cost to suit desirable population density and limited rentals, not to mention the local equity.

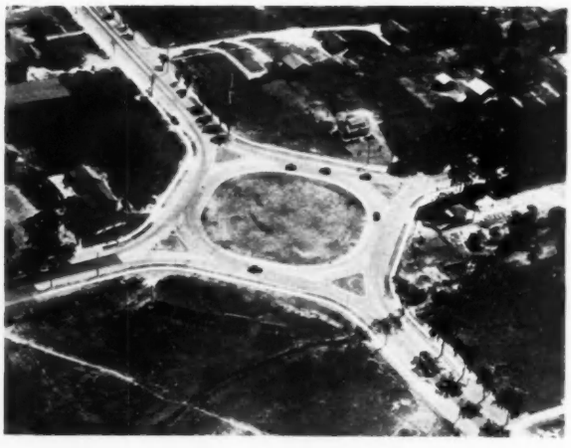
Many valiant attacks on these fundamental difficulties are being made throughout the country. Even if they fail to meet all the requirements of Reconstruction Finance Corporation procedure, much valuable progress will have been achieved in

PUBLIC WORKS ELIGIBLE FOR FEDERAL FINANCING

Wide World

AIRPORTS — General view of airfield at Sky Harbor, Northbrook, Illinois.

BRIDGES — New Jersey State Highway bridge near New Brunswick. Morris Goodkind, engineer.



HIGHWAYS — Intersection circle at Vineland, built by New Jersey State Highway Commission.

public education in the elements of our housing problem and slum clearance, and education of architects also in the study of these most complicated community problems.

In spite of a very close contact with the difficulties inherent in such studies in Boston, I am optimistic enough to believe that some tangible results will be secured somewhere, but evidently any drastic improvement in housing conditions in the low-rental group must be accomplished in the face of the united organized opposition of the real estate interests, and the passive inactivity of those in the loaning agency field. They together are responsible primarily for existing undesirable housing and at present are opposing any new competition from operations based upon better standards and broader community planning.

Real estate opposition to the proposed Massachusetts State Housing law stood alone except for the potent underlying opposition to any new governmental agency inherent in the National Economy League's campaign for reduced governmental expenditure. In spite of the League's title it is natural that the result of its efforts will be many false economies. A legislator who has just been forced to cut his own salary and vote out of existence a state board he had helped to create and believed in, is not likely to vote to create a new board and a new budget item and assume the embarrassing problem of explaining to his constituents the involved reasons for such action.

Before these words are printed, Massachusetts will probably have referred this proposed legislation to the next General Court or have passed it with some amendments eliminating any expense to the taxpayer by making applicants for housing projects deposit fees in advance sufficient to cover all expenses involved in their official investigation. If this latter is accomplished it is likely to be due primarily to the Governor's belief in the importance of this legislation, as stated in his annual message.

Whatever happens, however, to these housing programs, they will demand the services of a very small percentage of the profession. What will help to support the rest of it? Will it be the small-house field? If it is, it will be something akin to a miracle, for to one occupying one of the "listening posts" on the firing line, the evidence of an eager and constructive interest among architects in the opportunities for a modest livelihood in designing and supervising small houses is almost nil. While the trenches occupied by the army of speculative builders are for the moment relatively quiet, the only sniping being done seems to be coming from their side of the field and we may reasonably expect them to come over the top in full force as soon as the tide turns, unless they are able to observe new forces and new methods being deployed along the architects' front lines.

Every effort that I have made to detect such activity has failed. I seem to find only the accustomed habit of sitting back waiting for a client to come in with an offer of a ten per cent commission.

I find no constructive thought being generally applied to the development of architectural service for the speculative builder, or any imagination of the financial value of such service that is potentially present in that vast housing field.

There is a rather amusing comparison to be made between real estate men and architects as they are now functioning in these fields of housing. The Real Estate Associations issue the strongest possible indictment of any housing operation at this time—but every real estate man will do his very best to help you start one. The American Institute of Architects repeatedly asserts that the architect's future opportunity lies in the small-house field—but the individual architect, by and large, takes no step whatever to secure the fruits of this opportunity.

While, as first stated, the future may be the day of the small practitioner, architects may well give some heed to possible results of such a tendency in the quality of service rendered. One distinct advantage of a large organization is its aggregation of men of different aptitudes. Now I would like to raise the point that a client, no matter what his problem, needs many different abilities in his architect whether he goes to a small practitioner or to a large organization.

How does the small practitioner plan to render full service? It is traditional for architects to stress the fact that it is in high degree a personal service that the architect renders his client. But it has been equally strongly stated at many conventions and meetings that no one man can excel in all the branches of architectural practice. It is, I think, also proved to most of us in our contacts with architects as well as in our own practice. A man who excels in imaginative design will not be apt to be equally efficient in construction details, specifications and supervision and the routine of business management. Any special aptitude is inevitably balanced by a corresponding ineptitude in some other part of the wide field of technical knowledge that is embraced in architectural practice.

But a client expects, and rightly, to get well rounded and competent service, no matter what architect he goes to. With the small individual practitioner this will presumably be impossible, for the reasons already stated. Does not this suggest the desirability of individual practitioners forming groups, with common or adjacent offices, the individuals forming the groups being men of widely different training and experience and natural aptitudes, each being available to be called in as a consultant or associate when needed to supplement the experience of another member of the group?

These groups need not be in any sense formal partnerships or corporate groups, but might equally well be such if the personal relationships warranted. My own office is one of the latter type, being a group of five men of widely varying abilities, formally associated as a corporation. Individually we are specialists in some particular phase

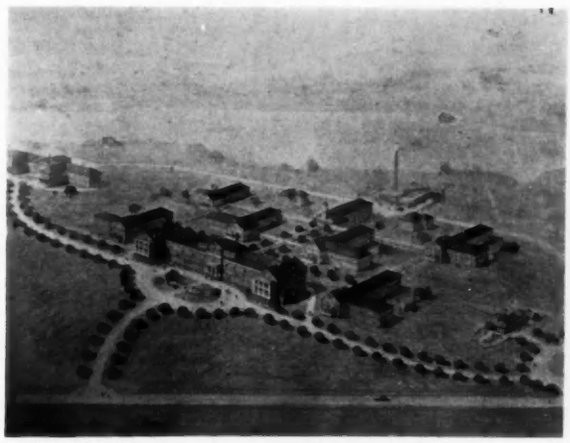
PUBLIC WORKS ELIGIBLE FOR FEDERAL FINANCING

Somerset power station, designed and built by Stone and Webster, Inc.

POWER PLANTS

New additions to Toledo Museum of Art. E. B. Green & Sons and Albert H. Hopkins, architects.

MUSEUMS



Sanborn Studio

Old Age Welfare Home for Smyrna, Delaware. Massena and Dupont, architects.

INSTITUTIONS

of the profession—construction, design, contracts and specifications, planning,—each with a supporting general experience in the other branches of the work. Through close cooperation we can give each client the benefit of the sum total of our several abilities such as they are. No one of us could singly give a client the same service that he is able to give as a result of his association with the others.

Some offices, I believe, are less definitely organized than this but share offices and stenographic force and collaborate on jobs in different ways according to the circumstances and the nature of the work. I have an impression Mr. Kohn and his associates function in some such way. A more detailed exposition of a number of differently constituted partnerships and associations would be profitable, I believe, and perhaps suggestive of how other younger practitioners might affiliate to their mutual advantage.

Such group activities will, of course, help to reduce the overhead expense of each member as a joint drafting room will need fewer square feet for five men than five separate drafting rooms. One library and reception room in which to receive clients can be shared as well as one stenographer. Small problems in domestic architecture can be handled from one's home as is frequently being done today, but access to an adequate drafting room, and collaborators eager to assist, provide a capacity to take on a larger job promptly and efficiently. It is also true that a client with a job of any substantial size is not impressed favorably by an office in an architect's home; nor is he so impressed by an office consisting of one room ten by twenty feet with one drafting table and a stenographer as he is by an office occupying say twenty by forty feet with a stenographer's desk near the entrance, a library, and a drafting room with tables for five men into which two or three more could be squeezed at a pinch to take care of a sudden need.

In such an office each architect gets the full value of the larger accommodations available for the service of his clients. He also can provide for his client the special abilities of his associates as they may be needed, and should freely indicate this to potential clients rather than attempt to indicate his self-sufficiency and omniscience.

One other angle of the subject might be mentioned for consideration. A younger practitioner with a client in sight having a fairly important job may have a strong personal contact warranting his selection but if he has no adequate office at the time he may lose all his chances to some better established organization. It seems to me there should be a generous cooperation between the larger offices and such architects by which the latter can secure the job and carry it out under some temporary form of collaboration with the larger office which will be mutually beneficial and will not unduly subordinate the position or the financial interests of the architect who secured the job.

How to find and capture a client is rightly occupying a large share of our thoughts just now. We may, to advantage, also consider among ourselves how best we may serve such a client if, when, and as we capture him.

WILLIAM STANLEY PARKER.

HOW CAN ARCHITECTS DEVELOP NEW BUSINESS?

AN OPPORTUNITY IN INDUSTRIAL REHABILITATION

By checking manufacturing requirements and proposing new operating economies through better planning of facilities, architects can assist in reviving industrial activities. While immediate results cannot be expected, an unselfish service now will redound to the architect's interest later, Mr. Furbringer believes.

The rehabilitation of industrial plants offers to the architectural profession the means for constructive leadership, based on principles of service. So far as immediate returns are concerned, any efforts expended in rehabilitation in order to assist the upturn to normal conditions may be disappointing. During the past few years, various suggestions have been advanced for the benefit of architects, based on the hope that business would soon revive and work would again flow into their offices, but most of the plans were predicated on the assumption that the depression would not last long and that the surplus in buildings, based on present needs, would readily be absorbed. Now that we have come to a full realization of the serious conditions facing us, I believe it is no exaggeration to state that we are willing and anxious to assume the burden which has been thrust upon us.

A nation-wide movement for industrial rehabilitation has been under way for some time. It is the hope of its sponsors that funds now idle and unproductive will be released for sound investments which will pay dividends at the earliest upward trend. Reports indicate a healthy response. Manufacturers realize the folly of attempting to start production when their equipment is at a low efficiency and are quick to grasp the opportunity for rehabilitation, if the matter is properly presented

to them. The wisdom of doing so now when costs are low and little interference in operation is encountered needs no selling effort beyond that which can be developed by any one willing to undertake the slight labor involved in making the necessary investigations.

Architects can visualize future conditions perhaps a little better than any other group. They know from experience the difficulties encountered in making structural changes when a plant is in full operation and improvements must be made without restricting or interfering with the process of manufacturing. They know too the hazards and handicaps and the heavy costs incurred, resulting so often in keen disappointments, all of which can be reduced or almost eliminated if undertaken under more favorable conditions.

Few better opportunities have presented themselves to the architectural profession to be of service, but this service, to be of value, must be conceived on a broad and unselfish basis. Industrial rehabilitation cannot be accomplished at a single stroke, and this fact will no doubt awaken in many architects the thought that an undertaking of this nature would be too far removed to make the effort worthwhile. It is true that immediate results cannot be expected; on the other hand, we can not hope to obtain work until business conditions show improvement, and any effort any of us can make to accomplish this will rebound to our interest in the end.

No better reason could be advanced to induce a manufacturer to make an investment than to offer a reduction in operating costs, but no method short of a complete check of the properties and the process of manufacture will supply this information.

It is surprising to what extent machinery and equipment have been neglected in many plants throughout the country, and it is equally true that in many instances new processes of manufacturing have not been adopted to meet competition, and operating costs are high in proportion to the cost of the finished product. A survey recently undertaken indicates that fully half of the plant equipment in this country is ten years old, or more. Writing off the usual ten per cent per year for depreciation, it requires no stretch of the imagination to see the need for early replacement. Machines go out of date, shafting becomes worn, bearings wear out and new inventions of greater efficiency are placed on the market, indicating a high percentage of obsolescence.

Capital investments for the purpose of reducing operating costs are sound, and funds can usually be obtained for this purpose, especially when labor is both cheap and abundant. The demand for manufactured products will be the first indication of an upward trend, and while we can with no degree of certainty predict when the turn will come, we know that stocks in all lines are low and that average requirements will entail a heavy burden on the producers of manufactured products before very long.

Ford Assembly Plant at Long Beach, California. Albert Kahn, Inc., architects.

Coupled with the replacement and expansion of manufacturing facilities in the way of machinery will be the enlarging of plants, to be followed by storage and distributing units, after which will come, in natural sequence, the required additions for offices and sales space. For these reasons it seems logical for architects to devote their time and talents to such development, for the potentialities are not so apparent in other fields.

We may find that efficient and economical illumination in factories has lagged far behind, we may discover in many cases that power is still produced by expensive methods, that trucking could in some instances be greatly reduced by the installation of conveyors and that the number of industrial plants having adequate and well distributed daylight is small in proportion to those properly designed.

A further check may indicate that an automatic stoker will make possible the burning of cheap fuel. A sprinkler system, besides affording protection, will reduce insurance and the covering of heating pipes with proper insulating material will reduce the cost of heating. Countless other items needing correction and too numerous to mention here would be revealed by a careful check.

Broad planning must take precedence over visionary reasoning if we are to attain the results we hope for. At least this is one way we can turn to profit the time we now have at our disposal, and while no doubt there are other fields to which architects can direct their efforts, I know of no like activity so promising, if soundly developed.

M. H. FURBRINGER.

A SURVEY OF PROVIDENCE, R. I.

By FREDERICK L. ACKERMAN,
Architect

This city is of typical interest, for as Mr. Ackerman notes, "Providence occupies a median position in respect to percentage increase in State and local debt creation during the last decade. Many cities show increases above 125% and one State even increased its debt by some 447%!"

Fairchild Aerial Surveys, Inc.

The Providence Survey is being carried on by the City Plan Commission with the aid of several unemployed relief agencies and in collaboration with the city officials. The aim is not only to make a physical inventory of the city as of the present, but to organize the relevant facts as to use, occupancy, vacancies, assessed valuation, and the like. Emphasis is placed upon showing as many as possible of these facts as growth trends as may be had from the records and to relate these growth trends to corresponding trends covering state, region, urban territory and the United States.

The work is in progress and it is therefore too early to draw conclusions, except in certain instances where the facts have been taken from the census and statistics already compiled.

The most significant items to be brought to light relate to the differential growth rates of population, assessed valuation, taxes and funded debt, as given in the following tabulation showing percentage changes by decades:

	1900-1910	1910-1920	1920-1932
U. S. Population	21. %	14.9%	16.1%
U. S. Urban Territory	38.8	28.8	26.9
Rhode Island	26.6	11.5	13.7
Providence	27.8	5.9	6.5
Providence Assessed Valuation per unit of population.	8.92	41.2	39.8
Providence Funded Debt per unit of population.		45.	68.8

Such a stretch between the growth of population, assessed valuation and debt as is indicated here is quite common in urban centers and obviously accounts for their fiscal problems.

Of equal importance is the relation of the growth of population to the population required to fill the zoning envelope, particularly in the business and industrial districts. From preliminary calculations, it would seem that the zoning envelope makes provision for between three and four centuries of growth at the rate Providence has been growing since the turn of the century! From the facts available, one may say that such a condition would probably be found in urban centers generally.

We have in the relation of the growth rate and the potential capacity of the zoning envelope covering business and industry, an application of that fantastic business concept of normality which assumed as a basis of industrial and financial procedures the certainty of constant growth. Constant growth is, of course, a physical impossibility and yet we have created financial structures and urban centers in accordance with this fantastic belief. That such financial structures would have to be liquidated should surprise no one.

But the liquidation of fantastic financial structures is, after all, not the most serious aspect of the problem. The creation of business and industrial districts of such magnitude that several centuries must pass before such areas could be used for such purposes, is equivalent to the creation of districts of stagnation. New habitations will not be built within them; and repairs and reconditioning will tend to lag ever further behind physical obsolescence. Hence we may say that the magnitude of stagnant or blighted areas has a direct relation to the extent to which optimism was inflated when the zoning ordinance was enacted. It follows that the usual increases in assessed valuation that are laid upon such stagnant areas in anticipation of changing use must be largely fictitious. And of course an increase in the funded debt that is based upon such increases in valuation must likewise be fictitious and without foundation.

This preliminary study of the relative growth rates of population, assessed valuation, funded debt, etc., points to the importance of further inquiries into this field. The maintenance of an urban center under the price system depends upon the profits derived from industrial procedures. The urban center cannot live by trade alone. So it is pertinent to raise the question as to the source of funds to support the operating costs of urban centers which were built in utter disregard of the differential growth rates such as referred to above.

DETERMINING BUILDING NEEDS

By DELBERT S. WENZLICK, President, Real Estate Analysts, Inc.

The architect has every inducement to qualify himself to give sound advice on the investment problem in building as well as on the design problem. This article explains how analyses can be made of the most profitable uses of real estate.

Every architect undoubtedly has asked himself, "Should it be built?" when a client or prospective client has come to him to design a building. Sometimes perhaps he has been convinced at once that there was no need for the proposed structure and so advised his client, only to find a few days later that some other architect, less experienced or perhaps less scrupulous, has been employed. A certain prominent architect was asked if, in his opinion, an architect was professionally obligated to advise his client as to whether or not "it should be built." His reply was that the architect who did not believe it his professional duty to consider the necessity for a proposed structure had better give up his profession.

Suppose we ask the question, "Should it have been built?" to many of our existing structures. In far too many cases, the answer would obviously be "No." Millions, perhaps billions of dollars have been lost on structures that should not have been built. Who is to blame for this waste? Who could have prevented it? The blame, of course, cannot be placed entirely upon any one group; because of the almost total lack of organized study of the many factors involved, perhaps no one can be blamed to any great extent. The fact remains, however, that architects and financing organizations, had they been properly informed and had they had the courage of their convictions, might have prevented many of the construction follies of the past decade. These unneeded and, today, largely vacant office buildings, apartments, hotels and store buildings, through their own cost and through their disastrous competitive effect on existing or more justified projects, have constituted one of the major causes of the depression.

Present-day methods of financing, through bond issues and various forms of participation, distribute the investment in our real estate more widely than it has ever been distributed before—more widely perhaps than any other form of securities. A social problem of protecting these investments exists and is demanding action. If effective protection is not developed for the small investor by those now in a position to control the situation, the government will act—perhaps not intelligently nor even effectively, but surely. Our first zoning law in 1916 was not well received nor was it perhaps nearly as effective as it might have been but it was based upon the theory that the rights of the many must be protected against the unwarranted privileges of the few. Today over half of our cities have enacted more or less effective zoning ordinances. The time is rapidly approaching when necessity will or must be considered before the plans for a new structure leave the drafting board. What constitutes necessity and what factors must be considered before a *certificate of necessity*, more and more frequently referred to, could be intelligently issued?

About six years ago, a group of realtors, engineers and economists, known as Real Estate Analysts, Inc., applied themselves to the study of the uses of urban land and the design and operation of structures. These efforts, elementary at first, have been devoted, for the past two years, to the study of the economic factors of utility, supply and demand. Studies have been made in Saint Louis, Chicago, Atlanta and several other cities. Every effort has been made to relate the various studies in a permanent and logical manner. Briefly, the work of the organization has been based upon the following fundamentals:

1. Standards and units have been established by which all data could be classified, recorded and measured. These standards and units have been coordinated and related. They form the skeleton of a "common language" filing system. Many of them have been adopted and are being used by national associations and organizations.

2. Much data have already been reclaimed and accumulated in accordance with those standards and units. In many cases as far back as the Civil War period, current data in complete and logical detail are being continuously and systematically recorded.

3. Methods and technique for the application of this accumulated data have been developed through the study of nearly seven hundred individual problems in which the conclusions reached have been more consistent and logical than they might have been had they been based entirely upon unrecorded personal experience.

4. Every possible attempt has been made toward complete cooperation and coordination with the efforts of various universities, trade organizations, professional societies and governmental agencies, resulting in greater progress than would otherwise have been possible.

With this introduction, the following discussion and charts are presented with the hope that they will prove stimulating and result in a real effort among architects to consider carefully the element of necessity before designing a structure which, because it is not needed, will result in a loss, not only to the owner and client but in an unjustified

loss to all owners of existing competing structures.

The fundamental requirement of a structure is worth. Worth depends upon the relationship of the three factors which we shall call demand, utility and supply. Demand has been defined as human want for goods or services, accompanied by ability to buy. Utility might be said to be the ability of goods or services to satisfy demand. The extent of the supply of given goods or services, when compared with demand, determines the price. The relationship of price to cost determines profit.

Let us suppose that you, as an architect, have been asked to design an apartment building, to be erected on a given site. How might the question, "Should it be built?" or, "Is it needed?" be answered? How might we determine whether this building will be likely to be sufficiently occupied at satisfactory rentals to pay the operating costs and a satisfactory return on the investment? Only by forecasting the demand for such apartment units and comparing such demand with the probable supply. It is not sufficient to determine the relationship of the present demand to the present supply because the proposed building must produce a satisfactory net income for many years to come. The forecast will be worth little unless it is based upon experience.

The factor of demand is first in importance and, as we have said previously, demand depends not only on want but ability to satisfy that want. In many cases the want, measured in units, may vary considerably. In the case of housing we shall see that this want is fairly constant. In other words, the unit of demand for living quarters is nearly always the family, consisting of at least a married couple and, in most cases, one or more children. It would probably be difficult to stimulate a demand for more than one home per family, although it is possible, in times of prosperity, to stimulate the demand for many goods and services to the extent of several times what might be called normal. Therefore, our first problem in determining demand for housing or apartment units depends very largely on the increase in the number of families.

When the first attempts were made by Real Estate Analysts, Inc., to chart various factors over long periods of time, it was found necessary to adjust or weight the actual figures to compensate for the growth of population. The first assumption, that real estate activity might increase in direct proportion to population, quickly showed itself to be erroneous. After some experimentation, the use of the family instead of the individual as a unit proved much more consistent and satisfactory. For instance, the last eighty years have seen a decrease in the size of the family from 5.6 individuals to 3.8 individuals. Stating this in another way, it would take nearly 50 per cent more living quarters, homes, apartments, or whatever units might be in use, to house a given population in 1930 than it would have taken about the time of the Civil War. On further study of this unit it was found that the increase in families was not at a uniform rate.

On chart No. 1 is shown the marriage rate in the city of Saint Louis from 1880 to 1933. In this chart, the number of marriages per month had been divided by the number of males 21 years of age or older. The subnormal marriage periods are shown by the black areas below the line and the abnormal periods by the areas above the line. On this same chart, real estate activity in Great Saint Louis is shown by the dash line, and the index of general business, as compiled by Col. Ayres of the Cleveland Trust Co., is also shown. That there is considerable correlation between the marriage rate and real estate activity is most apparent. It will be noticed that the marriage rate went below normal in the early part of 1924 and has been continuously below normal since that time. The accumulation of marriages short of the normal rate shown in this last subnormal area amounts to nearly twenty thousand. There is strong reason to believe that most of these marriages are merely delayed because of economic conditions and will occur at a greatly abnormal rate with the return of employment and purchasing power.

It is impossible in this article to go into any great detail in regard to this study. It should be sufficient, however, to state that if an upturn in the marriage rate occurs soon, as the accompaniment of general business recovery, a factor of demand, probably more important than the often referred-to "unscrambling of doubled-up families" will be released.

A careful study of this hitherto unsuspected factor of demand is now being made. Apparently it is very largely responsible for the increased demand for housing conditions which became so acute in 1904 and again in 1919. Such absorption of vacancies results in an increase in rents. An increase in rents results in greater net income. Net income determines value. When values increase, new construction is stimulated.

Chart No. 2 shows the number of family accommodations provided by new construction authorized by building permits in Saint Louis from 1885 to the present. Interesting comparisons between this chart and chart No. 1 can be made. Evidently without any knowledge of the efforts of Dan Cupid, our construction industries have proceeded to take the acute shortage of housing, brought about by the peak of the marriage cycle, to indicate a continued growing demand and to increase production to an unjustified degree, not realizing that long before construction has gotten into its stride, Cupid has apparently become tired or perhaps run out of material and the marriage rate drops at an alarming rate. Finally, vacancies materialize to such an extent that rents drop and construction ceases, the next upturn occurring only after new families have absorbed most of the surplus. Had this fact been known in the early 'twenties, probably much of the construction that occurred from 1923 to 1929 might have been eliminated or postponed.

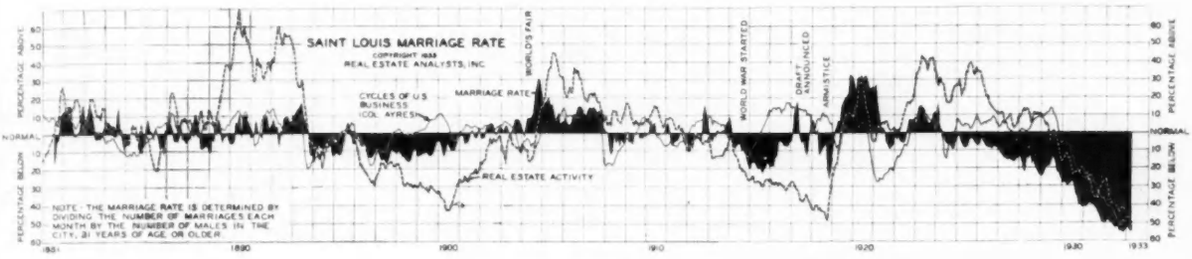


CHART NO. 1

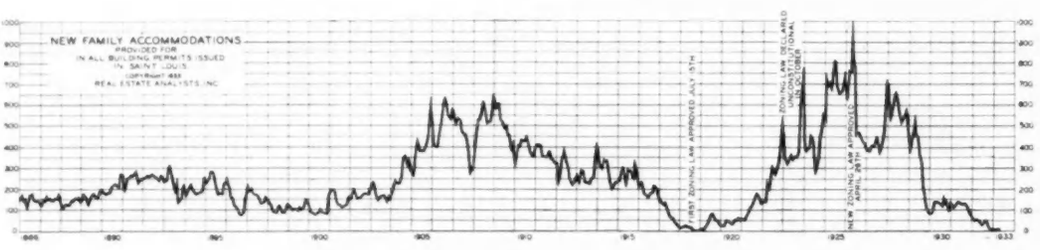


CHART NO. 2

The question of utility, or the ability of apartment units in general or a proposed building in particular, to satisfy want is one with which architects are, I think, pretty generally familiar. Great strides have recently been made in the accumulation of actual operating experience, in accordance with a Uniform Classification of Income and Expense which has been adopted by both the National Association of Real Estate Boards and the National Association of Building Owners & Managers. This classification is a decimal system, logical and easily applied, regardless of the bookkeeping or accounting system in use. According to recent estimates, between fifteen hundred and two thousand sizable buildings are recording and classifying their experience on this basis. Any one of these classifications, divided by a common denominator which, in this case, is the square foot of rentable area, gives a resulting figure which is directly comparable with the same data from other buildings. Through the exchange of operating experience on this uniform basis, the efficiency of design of various typical structures can be determined. In many factors of expense, special adjustments in reducing unit figures to square feet increase the accuracy of comparisons. Greater cooperation between management agencies and architects is desirable.

Until only a year or two ago inventories or, as they have been popularly called, vacancy or occupancy surveys were unknown. Such surveys have recently been made in more than forty cities. They form the basis upon which an intelligent estimate of supply can be made. Additions to the supply of housing quarters should be recorded, not in dollars nor in building permits, but in housing units. This has already been done in several cities. Deduction should be made for units taken off the market, whether through destruction occasioned by street widenings, fires or obsolescence, or by buildings remodeled for some other use than housing. In Saint Louis these deductions are being recorded systematically.

The question of obsolescence on buildings which may still be physically sound is one to which serious consideration should be given. Since the income tax has been levied by the Federal Government and allowances have been permitted for depreciation and obsolescence, various estimates of the probable useful life of structures have been made. The one perhaps most generally accepted is fifty years. It matters little whether or not this is a correct estimate, as buildings do wear out and do become out of date and in either case must be replaced. If we assume, for the purpose of illustration, that fifty years is the useful life of the average building, then it is self-evident that during the first fifty years in the growth of any town or city, there would be no replacements as a result of this cause. The replacements, however, would be determined from then on by the volume of building fifty years previous. Preliminary studies on this subject in Saint Louis indicate that at the present time, about 225 family living accommodations are passing the fifty-year age mark each month. This number is increasing and will continue to increase until about 1940 when it will exceed 275 per month. It will remain near this figure until 1970 when it will drop back to about 200 a month. New construction, therefore, must provide for the replacement of obsolete quarters and for additions in the net number of new families in the community able to occupy individual quarters.

From a study of the two foregoing charts, it is evident that at the present time there is a considerable potential market for housing accommodations which will be released when the marriage rate again swings back above normal. In other words, housing projects in general at this time, while perhaps still a little premature, will have a much better chance at success than those constructed in the false security and over-optimism produced by our abnormal but temporary demand of the early 'twenties. An increasing knowledge of these fact-

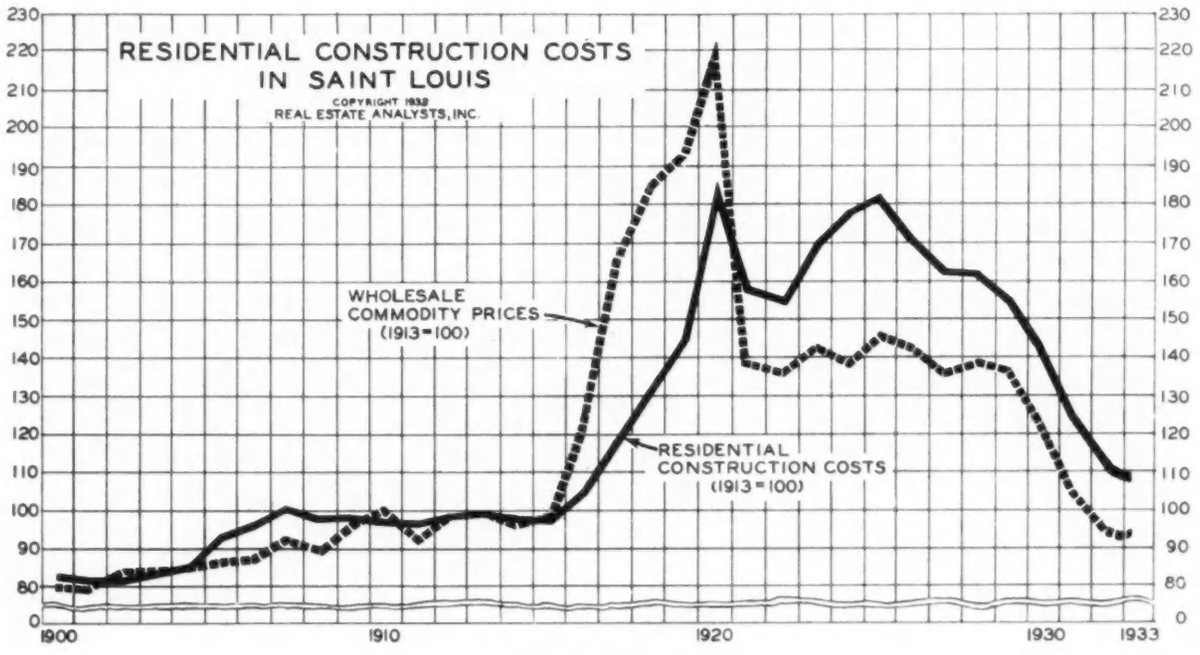


CHART NO. 3

ors should, in the future, have the effect of stimulating construction in periods such as these and retarding it following periods of acute shortage.

In northern climates, construction work is timed so that advantage may be taken of favorable summer weather. Severe winters or rainy seasons are known to be undesirable and construction work is at a minimum under those conditions. It is no less logical to expect that with an increasing knowledge of the factors of supply and demand just discussed, construction will eventually be controlled in the much longer cycle shown on these charts. There need be little effort made to stimulate construction as the demand will automatically do that but the increasing supply should be watched carefully as the peak in marriage activity is passed and the demand sinks below normal. Then, too, it should not be assumed that any and all construction, just because it occurs in a favorable period, will be needed and will be successful. The factors of design previously mentioned may spell either success or failure. The factor of location is almost as important and perhaps in some cases even more so. The study of population trends and living standards by established standard statistical districts has progressed remarkably in the past ten years. More than a dozen cities are now definitely on the statistical district or "tract" plan. Architects should take a great interest in the efforts that are being made in these cities to record and use such tract data.

In Saint Louis the second occupancy survey has recently been completed on an identical district basis and for the first time definite detailed trends in the occupancy of all types of buildings in 128 reasonably small districts have been determined.

Another factor, but by no means least important, is the cost of construction and the probable trend of such cost. This brings us directly to the question of purchasing power of money, a subject which is now arousing more interest than perhaps at any previous time in the world's history. Chart No. 3 shows residential construction costs in Saint Louis and wholesale commodity prices from 1900 to the present time. Both of these indexes reflect chiefly the fluctuation in money value. Without some sort of inflation or revaluation, the stabilization of costs at somewhere near pre-war levels seemed certain. With the very strong possibility now apparent, however, of inflation or, preferably, revaluation, an increase seems assured. If, as a result of the present emergency, a "managed currency" results and the gold redemption value of the dollar is changed from its present 23.22 grains of pure gold to perhaps 16 or 18 grains, we may expect a return of prices and construction costs to somewhere near 1926 to 1929 levels. Through subsequent adjustments in the amount of gold obtainable for a dollar, reasonable stability of prices and costs might be obtained. The effect such a currency might have upon the cycles we have been studying is still to be determined. It would, perhaps, go far toward leveling the peaks and filling the valleys.

If the success of the proposed building is going to depend upon a reasonable demand and the rental in turn depend upon the relationship of that demand to the supply and if these two factors continue to move in as definite and regular a cycle as they have moved in the past, even a reasonable knowledge of their behavior should provide a basis for the intelligent answering of our subject question, "Should it be built?"

The charts used in this article were prepared by the Saint Louis organization of Real Estate Analysts, Inc., under the personal supervision of Roy Wenzlick, vice-president in charge of economic statistics. They are copyrighted and are not to be reproduced.

OHIO PLANS FIRST STATE SURVEY OF CONSTRUCTION NEEDS

The Cleveland housing studies, referred to in this report, were described in an article by Walter R. McCornack, architect, appearing in the March issue of The Architectural Record. These studies undertook to determine all facts regarding the populations living in the major blighted areas of Cleveland and to propose possible solutions for their re-housing.

Under the sponsorship of the Governor of Ohio, the Work Project Development Committee has been formed, with Fred I. Rowe of Hicksville, Ohio, as Chairman, with headquarters in the Wyandotte Building, Columbus, Ohio. This Committee is making a unique survey of the construction needs of the State in relation to the unemployment conditions of different localities. The survey is tabulating county by county and city by city the following data: population, total property valuation, delinquent taxes, total taxes, number of unemployed men, number of men receiving relief, number of State aid schools and miles of State aid roads. Such data related to proposed public works projects may very well be used to substantiate Ohio's requests for Federal expenditures within that State under the Federal public works program now under discussion.

With Cleveland's pointing the way to a comprehensive survey technique for a large urban community, and this beginning of a state-wide survey technique, Ohio seems destined to be the proving ground for studies leading to large-scale planning.

It has been suggested that where it is possible to secure relief funds for this purpose, unemployed architects and engineers be put to work on surveys of this kind. Administration of the Federal public works program will necessarily involve review of proposed projects, and those communities with survey-facts already prepared are likely to suffer little delay in getting their projects approved and financed.

CONCLUSIONS OF DETROIT SURVEY*

A city functions relatively to an intended purpose. The purpose is defined in socio-economic terms. The particular functions and the operation of the city are consequently conditioned by the organization of property.

The findings of the Detroit survey show the causal connections between private ownership, control and use of land and means of production for speculative profit, and the present paralysis of urban functions which is best expressed in the increasing spread between growth rates of population, city revenue and funded debt.

The urban planner must be concerned with the purpose for which the instrumental physical plant is designed and used. The immediate objective of urban planning is social reorganization.

It is therefore necessary that the congress on the basis of present findings take a clearly defined, directional stand to the immediate problems of socio-economic organization: Organization of land, production and distribution.

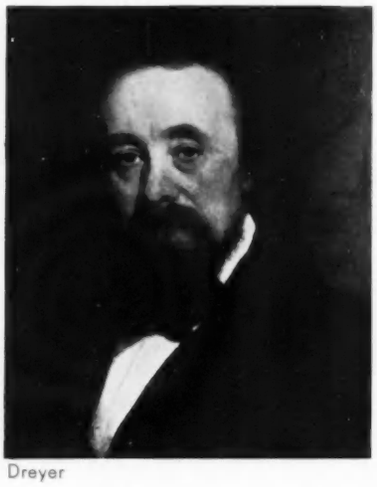
Proposed Future Objectives

1. Investigation of development and organization of regional economic entities. The findings should be organized to show rates of growth and trends over a sufficient time span; that is, analysis of processes rather than description of present conditions.

2. Initiation and correlation of research in the fields of the various sciences of life processes as conditioning factors in order to establish criteria for the design of the physical plant and for evaluation of political and economic measures.

*See March issue, pages 148 and 149, of THE ARCHITECTURAL RECORD.

RICHARD
RICHARD M.
HOBART
UPJOHN
ARCHITECTS
1833 - 1933



Dreyer

Richard Upjohn was born in Shaftesbury, England, in 1802. He came to this country in 1829 and began his practice as architect in New Bedford, Mass., in 1833. He removed to Boston in 1835 and designed his first church, St. John's, Bangor, Maine. Through his friends, Bishop Jonathan Mayhew Wainwright and Honorable Samuel A. Eliot, he was retained to design Trinity Church, New York City. He became the leading church architect of his time. In 1857 he was instrumental in founding the American Institute of Architects, and was its president for nineteen years. His works include many public buildings, churches and residences.

Dreyer

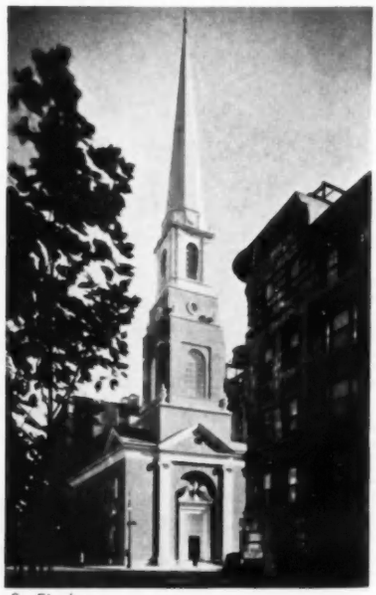
Richard Michell Upjohn, son of Richard Upjohn, was born in Shaftesbury, England, in 1828. After graduating from Dr. Mühlenberg's Academy in College Point, Long Island, he entered the office of his father. The first building which he designed was The Madison Avenue Presbyterian Church, New York City, on the site now occupied by The Metropolitan Tower. He became a partner of the firm and later succeeded his father, upon the latter's retirement. He was one of the founders of the American Institute of Architects, and served as president of the New York Chapter; designed public buildings and churches.

Blank-Stoller, Inc.

Hobart Upjohn, son of Richard Michell Upjohn, was graduated from Stevens Institute of Technology in 1899. After some time spent in architectural offices, including that of his father, he succeeded to the latter's practice upon his retirement. His first work was the Mead Memorial Chapel at Lake Waccabuc, New York. During the World War he served in the Housing Department of the U. S. Shipping Board. His work includes buildings for the North Carolina State College at Raleigh; Salem Academy, Winston-Salem; churches at Wilmington, Chapel Hill, Pinehurst, and All Souls Unitarian Church, Manhattan.

Underwood
Trinity Church, Manhattan, 1839-1846.
Richard Upjohn, architect.

Wurts Bros.
The Madison Avenue Presbyterian Church, Manhattan, 1850.
Richard M. Upjohn, architect.

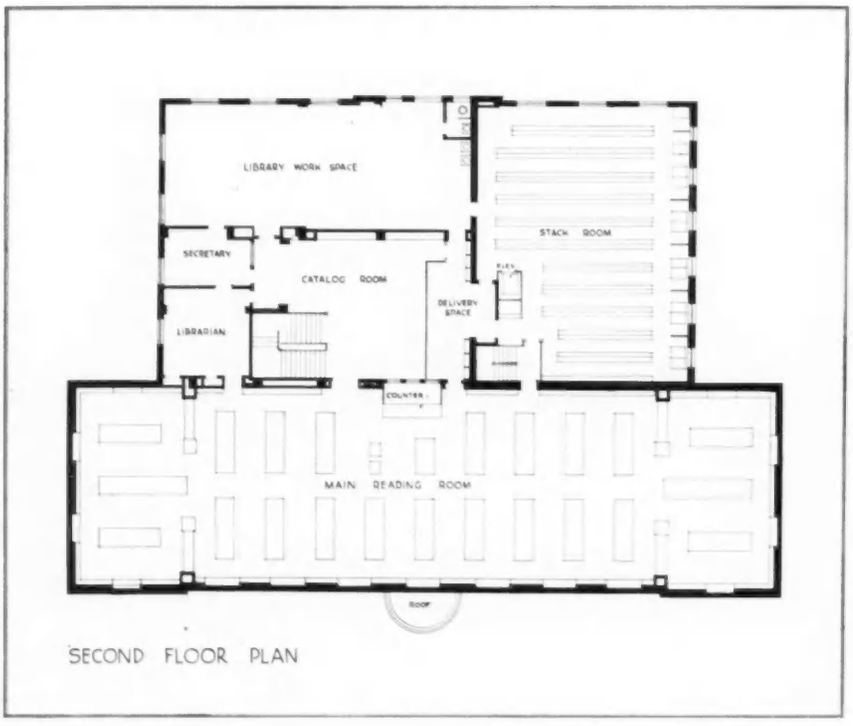


S. Fischer
All Souls Unitarian Church, Manhattan, 1931-1932
Hobart Upjohn, architect.

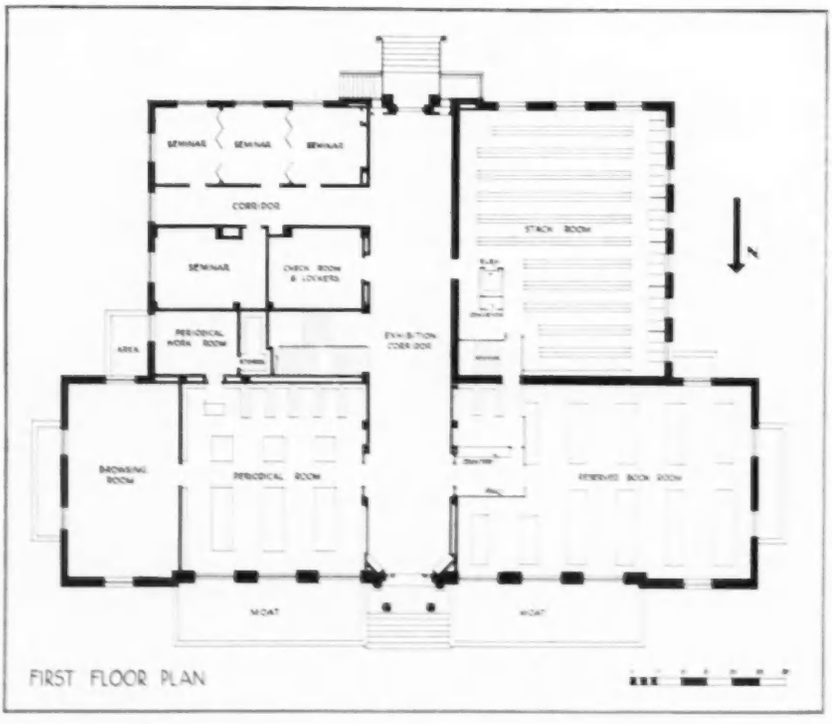
Each one of the architects of the Upjohn family of three generations designed a church in Manhattan. All three church plans followed the type with a straight nave continued to chancel, without transepts.

Grant

ATLANTA UNIVERSITY LIBRARY AT ATLANTA, GEORGIA
JAMES GAMBLE ROGERS, ARCHITECT



SECOND FLOOR PLAN



FIRST FLOOR PLAN

ATLANTA UNIVERSITY LIBRARY
ATLANTA, GEORGIA
JAMES GAMBLE ROGERS, ARCHITECT

Grant

ATLANTA UNIVERSITY LIBRARY
ATLANTA, GEORGIA
JAMES GAMBLE ROGERS, ARCHITECT

Grant

ATLANTA UNIVERSITY LIBRARY
ATLANTA, GEORGIA
JAMES GAMBLE ROGERS, ARCHITECT

Grant

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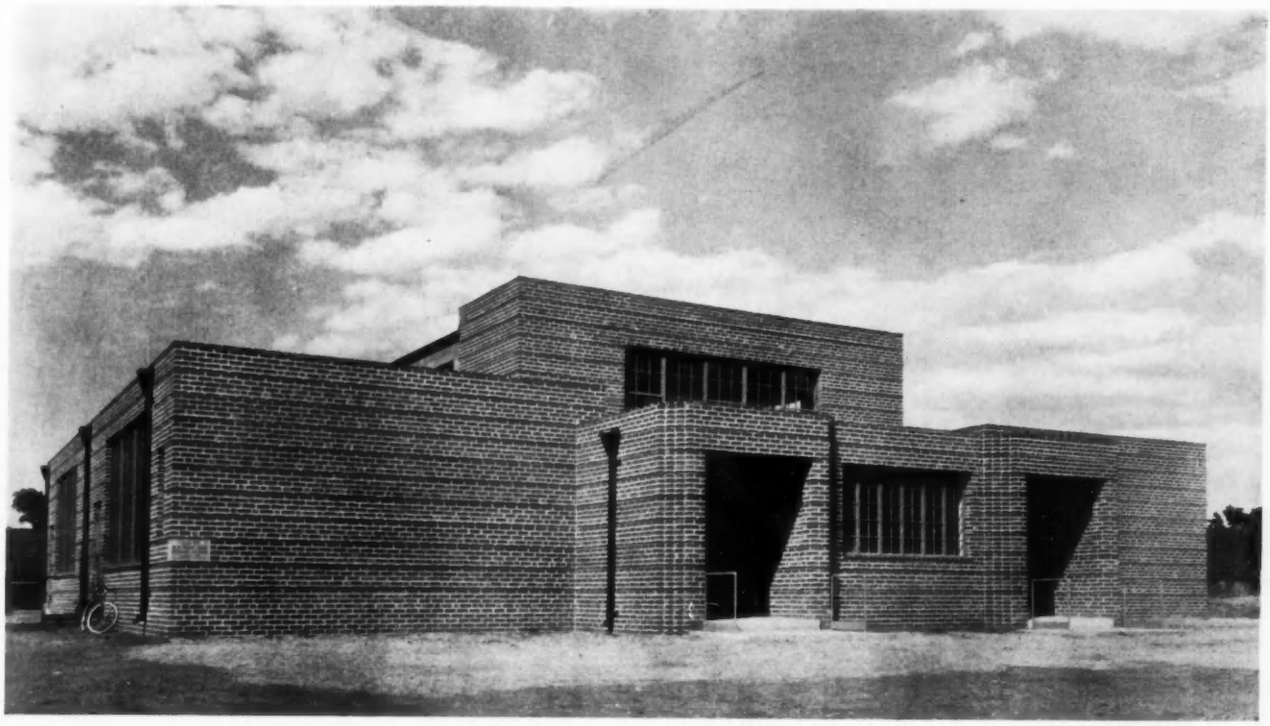
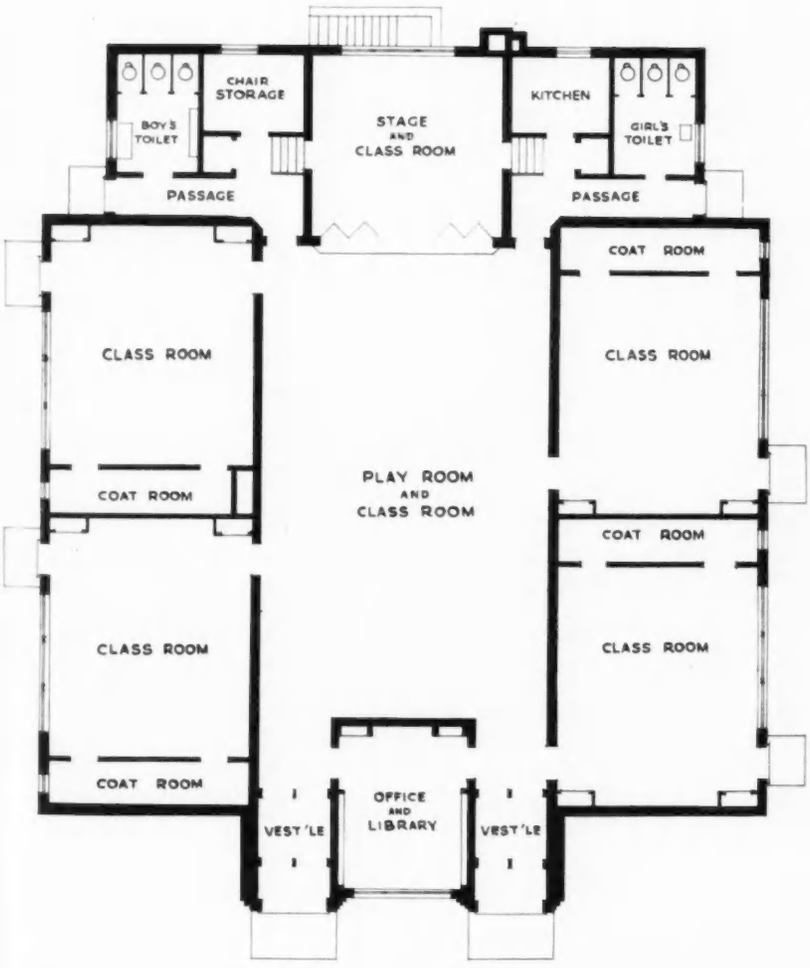
ATLANTA, GEORGIA
JAMES GAMBLE ROGERS, ARCHITECT



Mile High Photo



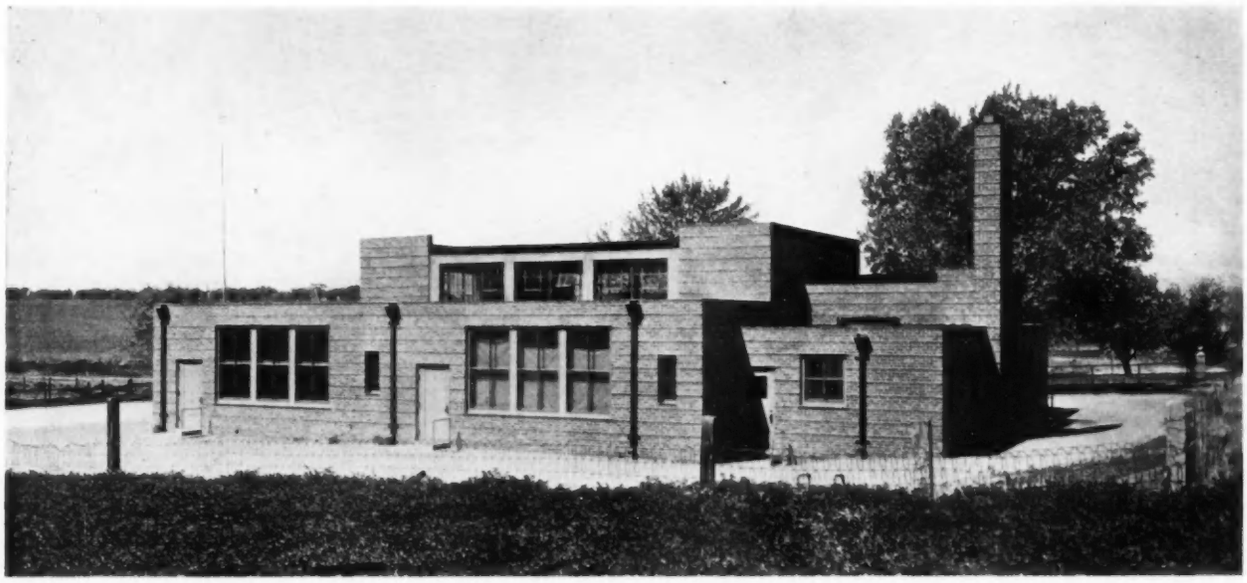
CHERRY HILLS SCHOOL
DENVER, COLORADO

W. E. and A. A. FISHER
Architects

A fireproof building of concrete construction. Main walls are brick; partition walls between classrooms are terra cotta tile. Only the windows, doors and a small amount of trim are of wood.

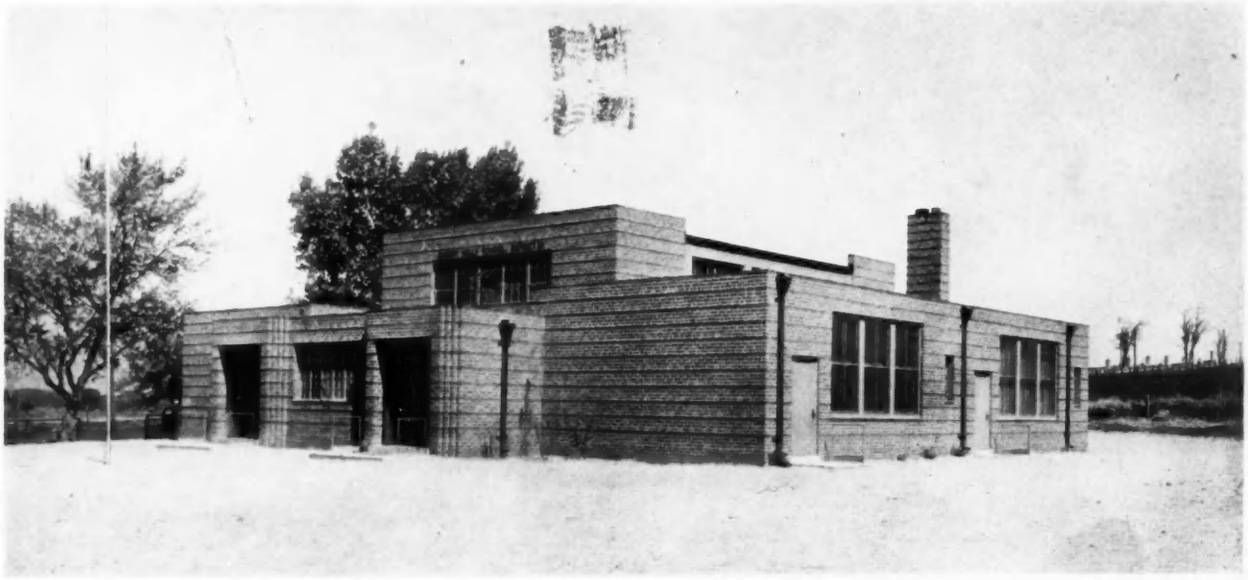
The main floor slab is laid directly on the ground, thus requiring very little reinforcement and obviating the necessity of outside steps. Floors are covered with mastic composition tile.

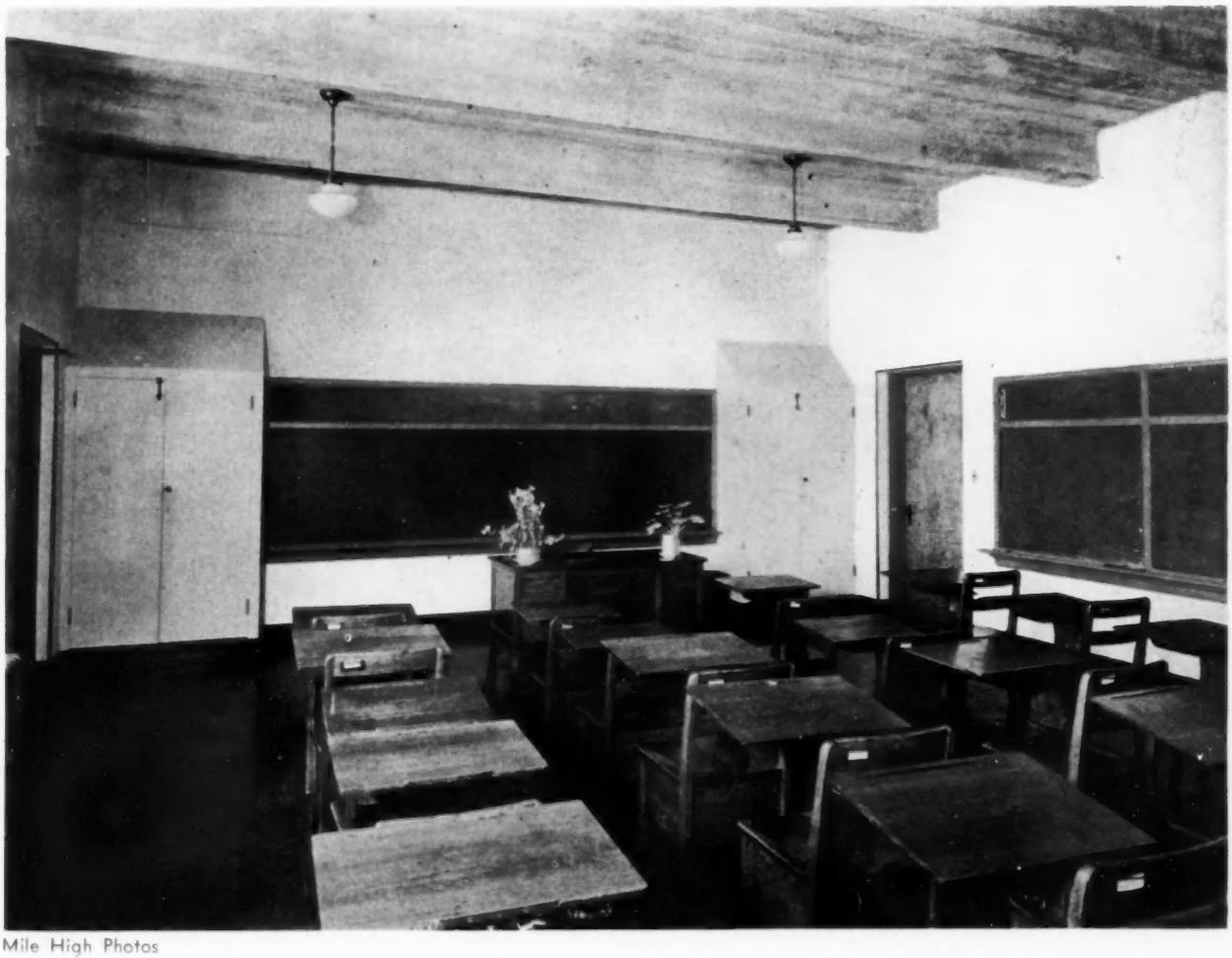
There is no basement, except for boiler and coal rooms, which are reached by an outside stair. Corridors have been eliminated. A general room serves as auditorium and physical education room, and as a playroom in inclement weather. A kitchen is provided so that the building can be used for community purposes.



Mile High Photos

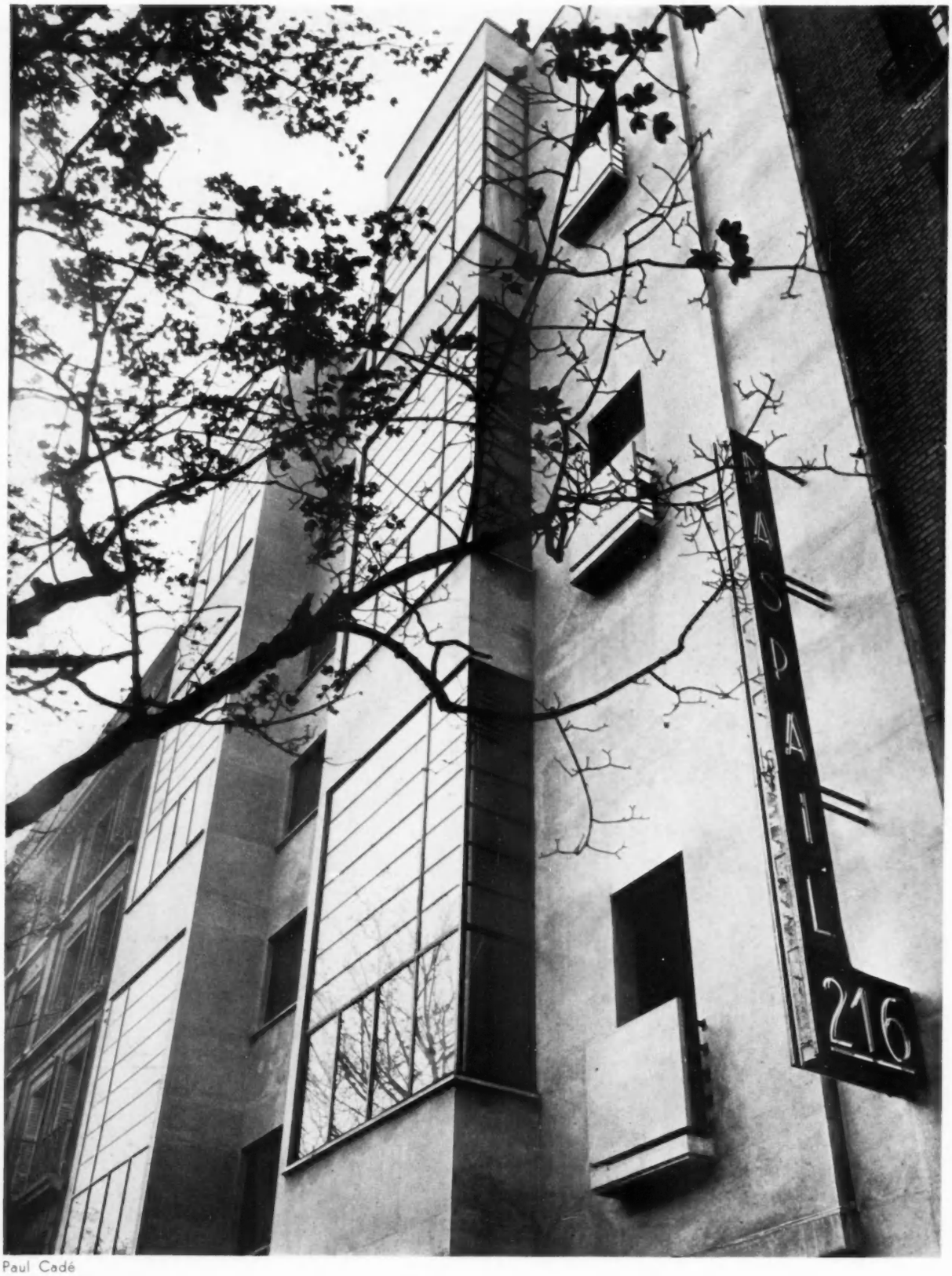
CHERRY HILLS SCHOOL
DENVER, COLORADO
W. E. AND A. A. FISHER, ARCHITECTS





Mile High Photos

CHERRY HILLS SCHOOL
DENVER, COLORADO
W. E. AND A. A. FISHER, ARCHITECTS

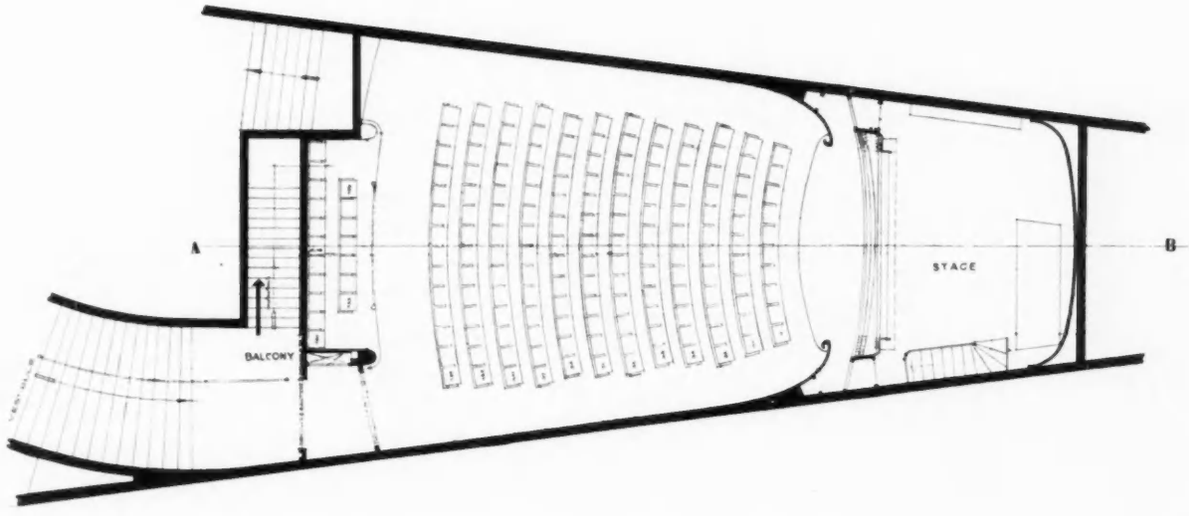


Paul Cadé

THEATER "RASPAIL 216"
PARIS, FRANCE
B. ELKOUKEN, ARCHITECT

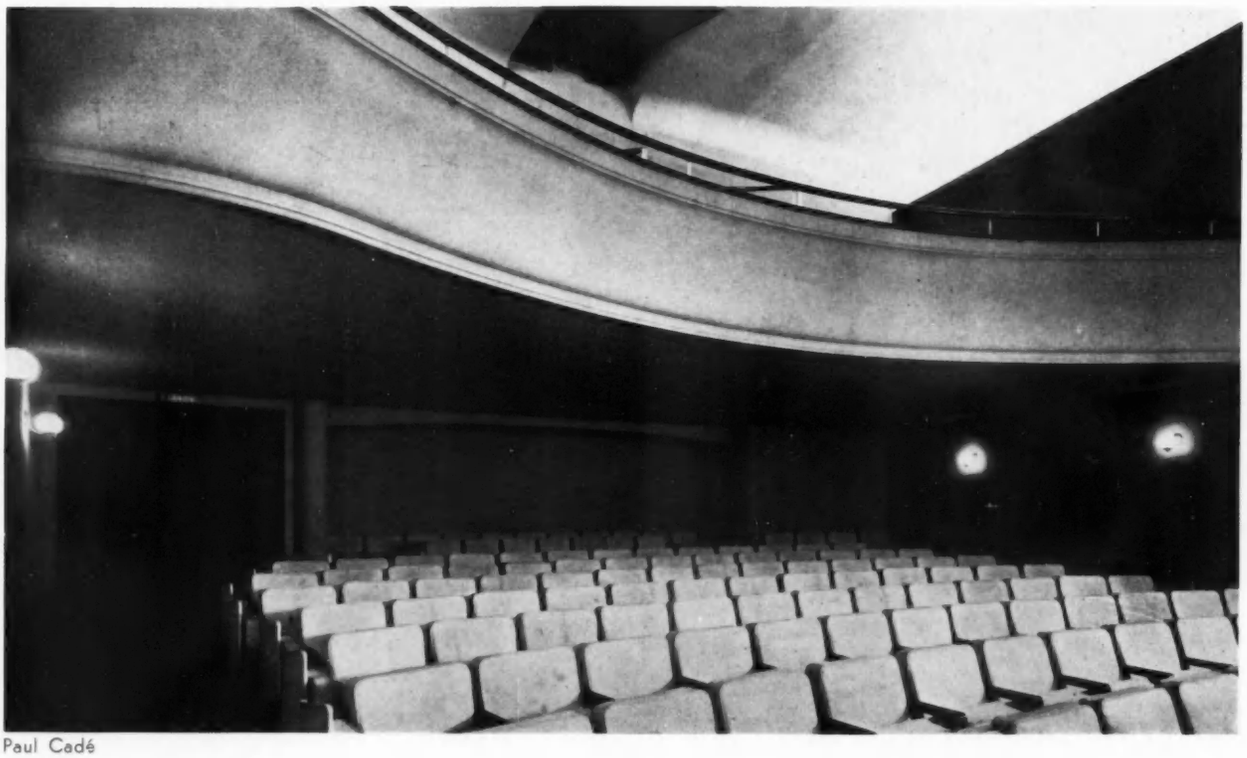
A motion picture theater combined with a studio-apartments building for artists.

Marius Gravot



The theater contains 278 seats, of which 70 are in the balcony. The trapezoidal plan results from natural condition of the site.

THEATER "RASPAIL 216"
PARIS, FRANCE
B. ELKOUKEN, ARCHITECT



Paul Cadé

THEATER "RASPAIL 216"
PARIS, FRANCE
B. ELKOUKEN, ARCHITECT

The seats are upholstered in a leather of ivory tone. The walls are stucco. Lighting is concealed in the cornice.

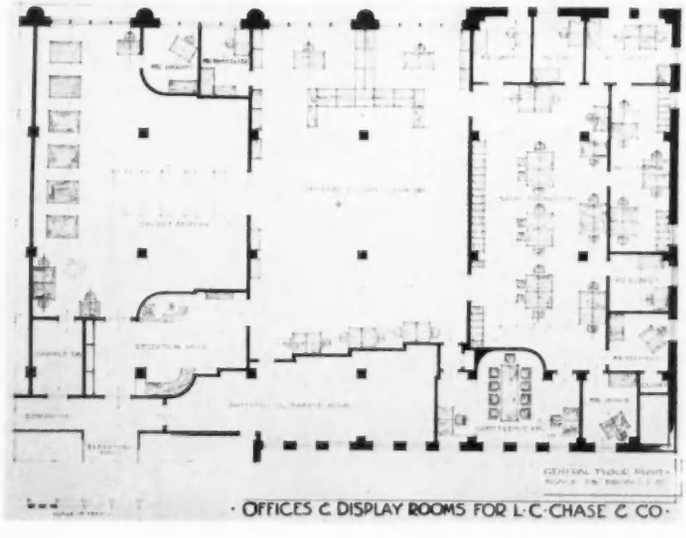
Paul Cadé

Marius Gravot

The entrance to the theater has a bar in addition to the ticket booth and vestibule.

THEATER "RASPAIL 216"
PARIS, FRANCE
B. ELKOUKEN, ARCHITECT

F. S. Lincoln



L. C. CHASE & CO. DISPLAY ROOMS
NEW YORK CITY
DESIGNED BY ELEANOR LEMAIRE

Foyer, showing built-in seat and advertising display case. Aspenwood wainscot. Three-tone gray-brown mohair upholstery.

F. S. Lincoln

Board room. Paneling and furniture in Gonzolo Alvez with ebony inlays. Chairs upholstered in reddish mohair. Seam-loc carpet in green, dark brown and white.

L. C. CHASE & CO. DISPLAY ROOMS
NEW YORK CITY
DESIGNED BY ELEANOR LEMAIRE

F. S. Lincoln

L. C. CHASE & CO. DISPLAY ROOMS
NEW YORK CITY
DESIGNED BY ELEANOR LEMAIRE

Foyer, looking toward Chase Mohair Division. Information counters and desk of aspenwood with brown Lino-top and brown lacquered recessed molding. Indirect cove lighting.

F. S. Lincoln

Foyer, looking toward entrance door. Display cases along wall. Built-in seat and small display for advertising matter. Seam-loc carpet in red and dark-brown checks.

L. C. CHASE & CO. DISPLAY ROOMS
NEW YORK CITY
DESIGNED BY ELEANOR LEMAIRE

ILLUSTRATED NEWS

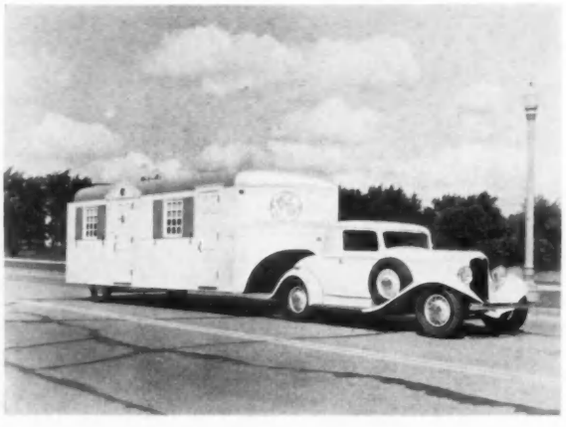
PLAN TO INCREASE SERVICES OF ARCHITECTS

A plan to have architects continue their services to an owner during the entire existence of a building is proposed by J. C. Knapp, vice-president of the Otis Elevator Company. Buildings, he maintains, require expert attention to care for upkeep and modernization. "The architect who designed the building," he explains, "would be paid a retaining fee to continue interest in the structure. As a specialist in buildings, and in that building in particular, the architect would be best qualified to suggest changes and improvements to keep it up-to-date.

"The architect's rôle," declared Mr. Knapp, "should be, perhaps, somewhat similar to the one played by the family physician. He not only brings the child into the world but looks after the child's health through manhood and thereafter."

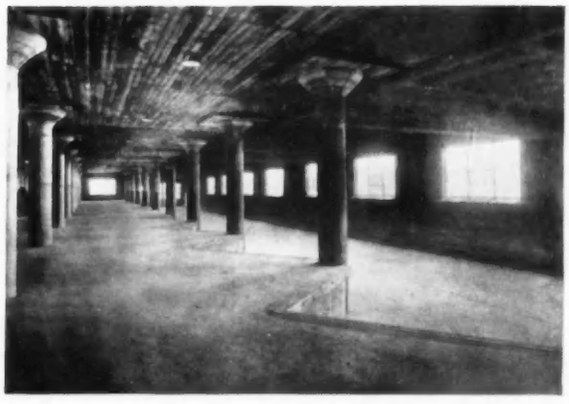
The unsound economics of the present system of tearing down buildings after twenty-five or fifty years of service is also scored by Mr. Knapp. He pointed out that in this country buildings are considered a deteriorating investment, while in fact in a building structurally sound a large proportion of the investment is of a nondeteriorating character.

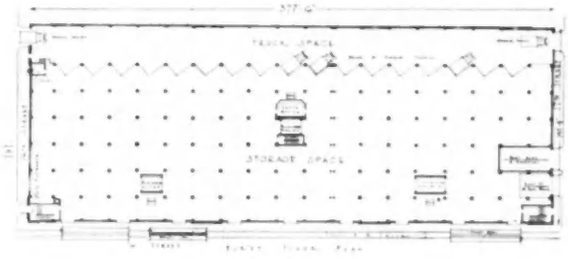
"Instead of writing off a portion of the investment each year why not spend a part of the amortization reserve for the renewal of that part of the building that really deteriorates, the accessories and various services, and save the building itself? Spend this part regularly as conditions develop. Use it for the purpose of maintaining a property at its full earning status."



MOBILE KITCHEN DEMONSTRATOR

A kitchen coach, with modernly designed exterior, carries the model 1933 kitchen scientifically designed to lighten the work of the average housewife with electrical appliances so placed as to permit a maximum flow of work with a minimum of effort. This merchandising plan was developed by the General Electric Company.





TRUCKS ALTERING STORAGE BUILDINGS

The Union Terminal Warehouse at Lincoln, Nebraska, is one of a chain of warehouses located on the Federal highway and with approach by railway tracks. The first or ground floor of this terminal warehouse is adjusted to the requirements of auto transportation. This plan is arranged for the speediest and most economical handling of both incoming and outgoing merchandise. Nine freight cars can be unloaded at one time, while seventeen motor trucks can be loading simultaneously without congestion. Notice the staggered arrangement of the truck berths, leaving a clear passageway for entrance and exit.

CODE FOR GAS INSTALLATION

A comprehensive code covering the installation, maintenance, and use in buildings of piping and fittings for city gas has been approved by the American Standards Association as American Recommended Practice, following its submittal by the National Fire Protection Association. The code embraces practically every point of gas installations in buildings, from the entry of the lines into buildings to the connections to appliances. It states the precautions to be observed by gas fitters installing or repairing piping and includes provisions to make certain that gas-burning appliances shall be installed only where there are proper ventilating facilities.

INCREASE IN MUSEUM BUILDINGS

A statistical study of museums in the United States, made by The American Association of Museums indicates that public museums are being

established at the rate of one each fortnight, and buildings or wings erected at the rate of one every fifteen days, a large majority of the new museums—80 per cent in the last biennium and 70 per cent in the decade—appearing in places with less than 100,000 inhabitants, and the point of greatest activity in museum founding moving steadily down the scale of population. The Museum Association study compares the states, and also the sections of the country, and indicates extreme disparities in their museum development. It reveals museum revenues of more than $16,000,000 yearly and catalogues an investment of $103,000,000 in public museum buildings and of $10,000,000 in college museum buildings.

PRIZE AWARDS IN COMPETITION FOR DEVELOPMENT OF QUEENS BOULEVARD

Winners of the national competition for plans to bring about the ordered and improved development of Queens Boulevard in the Borough of Queens, New York City, are announced as follows: First prize, $200—Philip G. Bartlett, Manhattan; Second prize, $75, plus special award of $30—Albert Sturr, Manhattan; Special prize, $30—John W. Ingle, Jr., Bronxville, N. Y.; Special Prize, $30—Timpson & Turnbull, Manhattan; Special prize, $30—Harry B. Brainerd and Richard Smythe, Manhattan.

Publication of the prize-winning drawings, with statement of the jury, will be made in the June issue of THE ARCHITECTURAL RECORD.

NEW PYRAMID DISCOVERED

Another pyramid has been unearthed in the vicinity of the three great pyramids of Egypt. The discovery was made by Professor Selion Hassan of the Egyptian archaeological department of the University of Cairo.

This pyramid is described by Professor Hassan as the burial chamber of Queen Khamet, a daughter of the last Pharoah of the fourth dynasty.

The expedition also unearthed a street near the pyramid, at the end of which ruins were found of a small city, apparently for priests. About forty priestly houses were uncovered, containing living and sleeping rooms, kitchens and bathrooms. There are extensive subterranean passages leading to a temple between the great pyramids.

SAINT PAUL CITY HALL AND COURTHOUSE

Designed by Ellerbe and Company of Saint Paul, and Holabird and Root of Chicago, associated architects. This twenty-story civic building is conceived with extreme restraint, in the manner of an office building. As a matter of fact, offices for city officials represent the predominating accommodation of this structure.

There is a grand concourse in the building with a colossal statue by Carl Milles, the Swedish sculptor, now residing at Cranbrook, Michigan. This statue is executed in translucent glass.

MODERNIZATION FEATURED IN U. S. CHAMBER OF COMMERCE

A round table conference on property maintenance and improvement featured the afternoon session of the United States Chamber of Commerce meeting in Washington on Wednesday, May 3. Walter J. Kohler, ex-Governor of Wisconsin, and president of Kohler Company, presided.

Plans for stimulating rehabilitation of residential, business and industrial properties were presented to an interested audience of business men. Running through the discussions was the conviction that there is a very large potential volume of building modernization work, estimates running from $1,000,000,000 to $2,000,000,000 a year. It was pointed out that the prospect of rising prices makes this an opportune time for organizing local modernization campaigns.

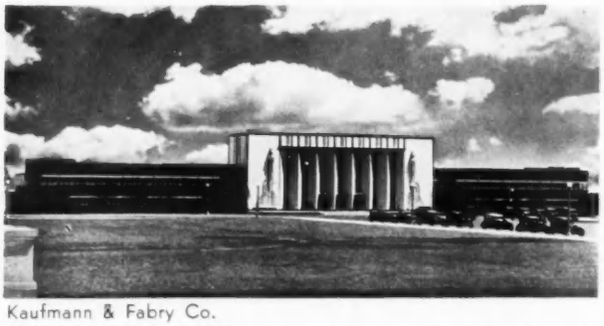
CHICAGO CONFERENCE TO DISCUSS RESUMPTION OF HOME BUILDING

A national conference on the renewal of home building is to be held at the Congress Hotel in Chicago, May 9-10. It has been organized by J. Soule Warterfield, vice president of the Starrett Building Co.; Edward J. Mehren, president, Portland Cement Association; Daniel H. Burnham, chairman, Chicago Regional Planning Commission; N. Max Dunning, housing adviser to the R.F.C.; Henry A. Guthrie, Millar's Housing Letter, and officers of various building industry trade associations and building supply firms.

SAINT PAUL CITY HALL AND COURTHOUSE

A CENTURY

CHICAGO EXPOSITION
JUNE–OCTOBER, 1933

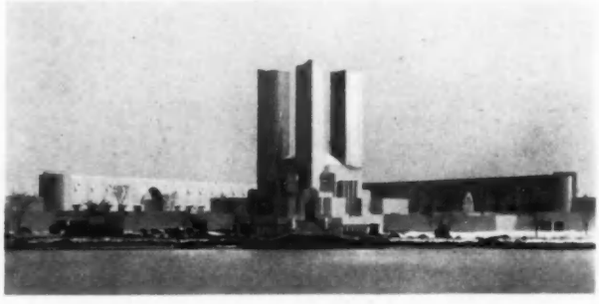


Kaufmann & Fabry Co.

Administration Building: headquarters for the Exposition staff. Edward H. Bennett, Hubert Burnham and John A. Holabird, architects.

Kaufmann & Fabry Co.

General Motors Exhibition Building: displays of automobiles and trucks, and demonstration of automobile manufacture. Albert Kahn, architect.



Hall of States, with Federal Building in foreground: exhibits of states and territories. Edward H. Bennett and Arthur Brown, Jr., architects.

Kaufmann & Fabry Co.

General Exhibits Group: displays of graphic arts, furniture, jewelry, cosmetics, sporting goods, textiles, minerals, industries. Harvey Wiley Corbett, architect.

Kaufmann & Fabry Co.

Federal Building: the towers represent the three branches of government. Edward H. Bennett, architect.

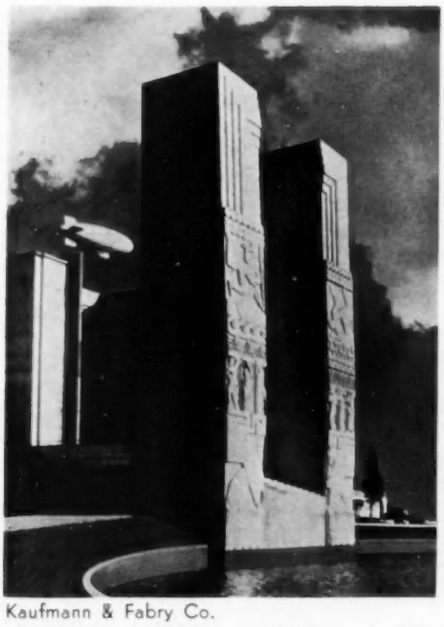
Kaufmann & Fabry Co.

Hall of Science: exhibits of industries closely related to basic sciences. Paul Philippe Cret, architect.

OF PROGRESS

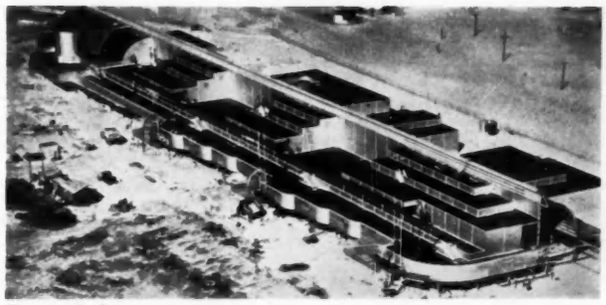
THE BUILDINGS AND THEIR ARCHITECTS

"Skyride": an amusement feature. Designed by N. A. Owings and J. D'Esposito. Robinson & Steinman, consulting engineers.



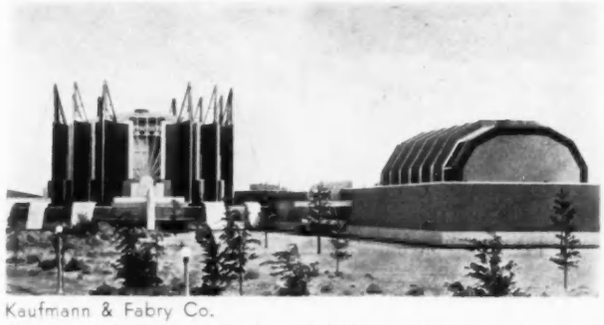
Kaufmann & Fabry Co.

Electrical Building: exhibits of the electrical industries. Raymond Hood, architect.



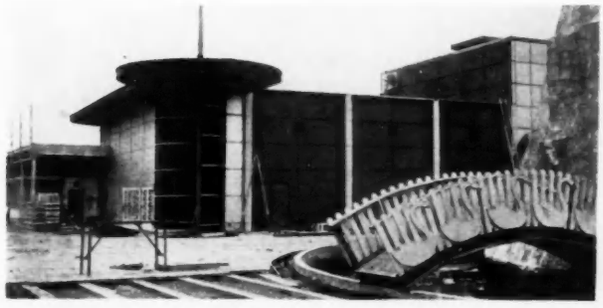
Ewing Galloway

Agricultural Group: displays of farm equipment and produce. Edward H. Bennett and Arthur Brown, architects.

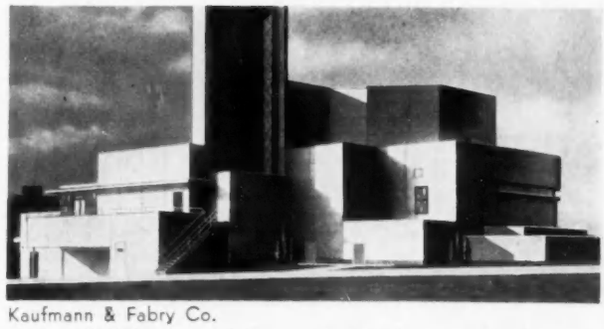


Kaufmann & Fabry Co.

Travel and Transportation Building: displays of transportation facilities. Edward H. Bennett, Hubert Burnham and John A. Holabird, architects.



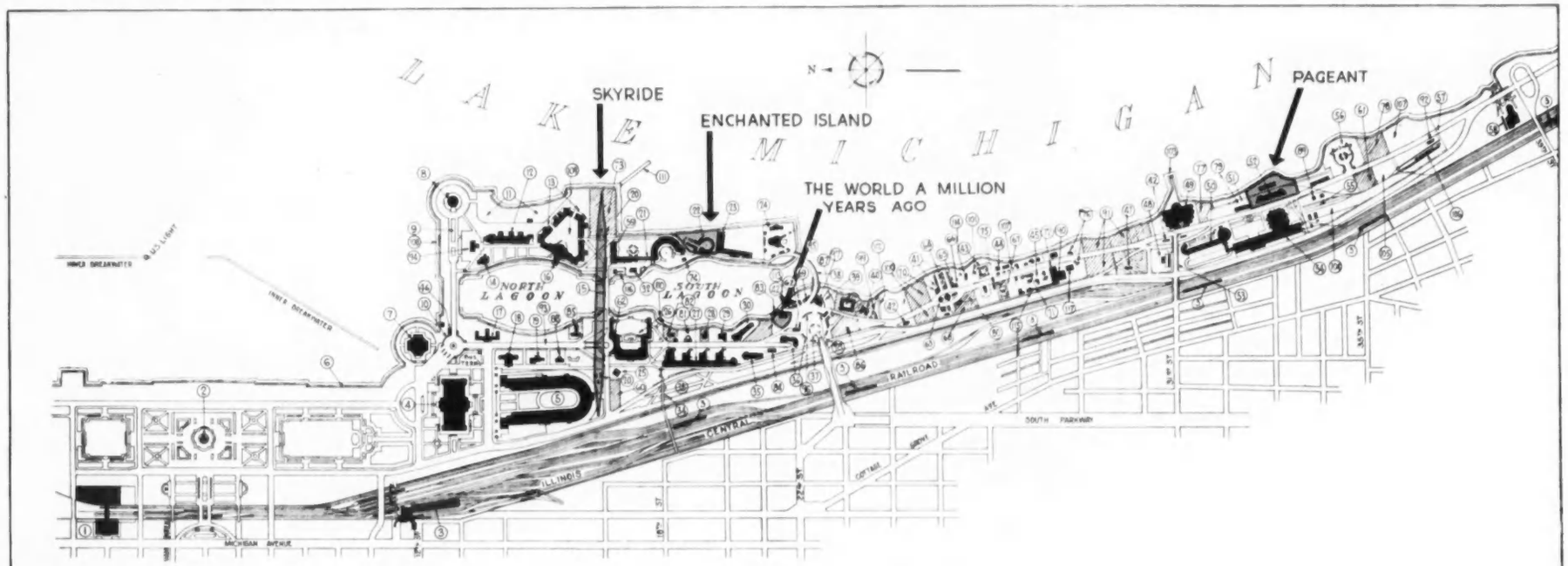
"The Enchanted Island": an amusement park and small theater for children. Designed by George H. Buckley.



Kaufmann & Fabry Co.

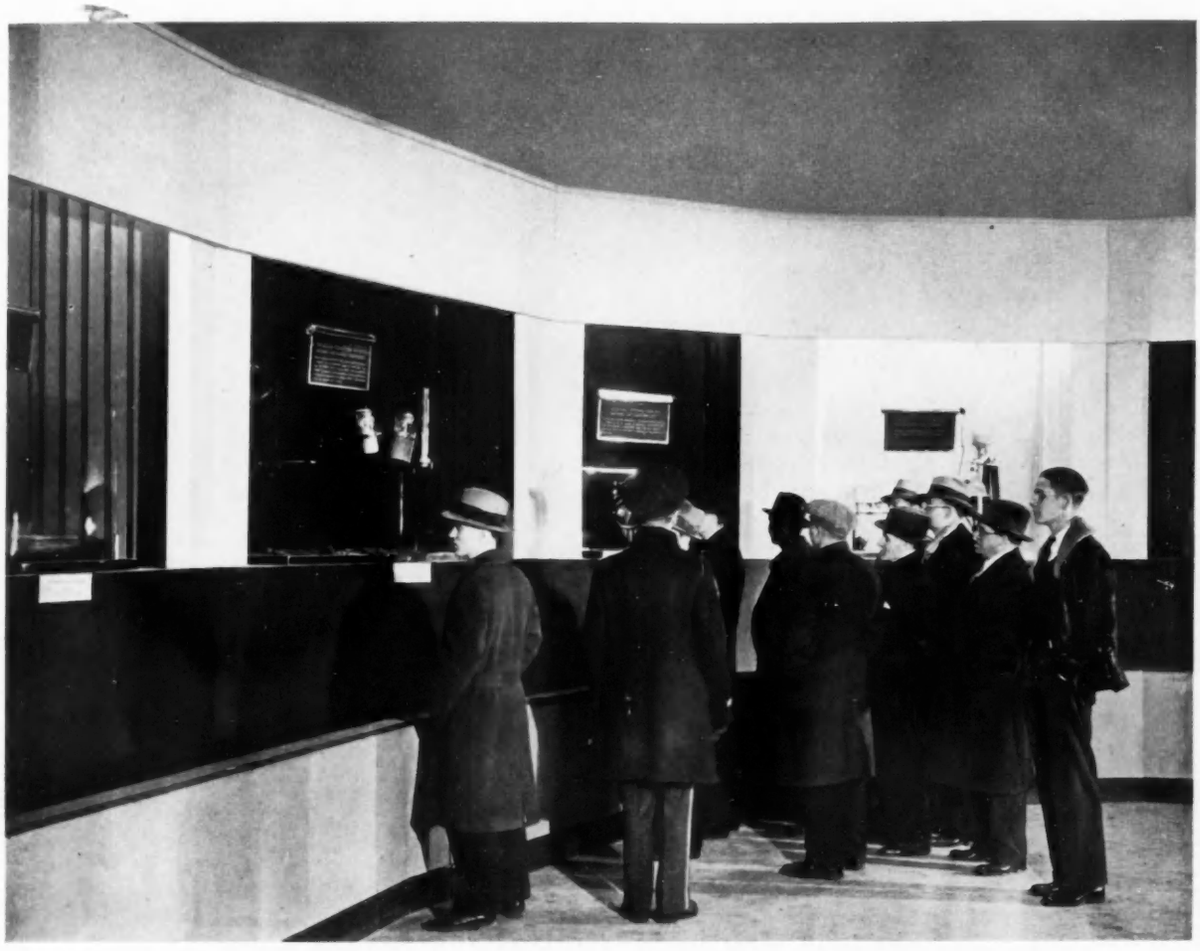
Dairy Building: evolution of dairying methods during last 100 years. Edward H. Bennett and Arthur Brown, Jr., architects.

A CENTURY OF PROGRESS—CHICAGO EXPOSITION OF 1933



· STRUCTURES ·

1. ART INSTITUTE
2. BUCKINGHAM FOUNTAIN
3. ILLINOIS CENTRAL STATIONS
4. FIELD MUSEUM
5. SOLDIER FIELD
6. AMPHIBIAN RAMP
7. SHEDD AQUARIUM
8. ADLER PLANETARIUM
9. TERRAZZO PROMENADE
10. NORTH ENTRANCE
11. BATHING BEACH
12. AGRICULTURAL GROUP
13. STATES BUILDING
14. CENTURY DAIRY EXH. INC.
15. SCIENCE BRIDGE
16. U.S. GOVERNMENT BUILDING
17. ADMINISTRATION BUILDING
18. SEARS ROEBUCK BUILDING
19. ILLINOIS HOST BUILDING
20. SKYWAY & OBSERVATION TOWER
21. ELECTRICAL GROUP
22. ENCHANTED ISLAND FOR CHILDREN
23. HORTICULTURAL GROUP
24. HOLLYWOOD
25. LAMA TEMPLE
26. HALL OF SCIENCE
27. GENERAL EXHIBITS GROUP
28. CHRISTIAN SCIENCE PUB. SOC.
29. BLUE RIBBON RESTAURANT
30. HALL OF RELIGION
31.
32. EDISON MEMORIAL
33. 18TH ST. BUS TERMINAL
34. 18TH STREET ENTRANCE
35. AMERICAN RADIATOR
36. FIRESTONE BUILDING
37. 23RD STREET ENTRANCE
38. 23RD STREET BRIDGE
39. STREETS OF PARIS
40. OLD HEIDELBERG INN
41. MIDWAY
42. CROWN FOOD CO.
43. FORT DEARBORN
44. LINCOLN GROUP
45. HOME AND INDUSTRIAL ARTS
46. RESTAURANT - EITEL INC.
47. AMERICAN INDIAN VILLAGE
48. MAYAN TEMPLE
49. GENERAL MOTORS BUILDING
50. CHRYSLER BUILDING
51. TRACKS FOR PAGEANT OF TRANSPORTATION
52. GRANDSTAND & STAGE FOR PAGEANT OF TRANSPORTATION
53. 31ST STREET ENTRANCE
54. TRAVEL & TRANSPORT BUILDING
55. T & T TRACKS & EXHIBIT SPACE
56. GOODYEAR FIELD
57. SOUTH ENTRANCE
58. PUMPING STATION
59. HALL OF SOCIAL SCIENCE
60. JAPANESE PAVILION
61. POULTRY SHOW
62. WALGREEN CO.
63. MAYNES-ILLIONS RIDES
64. FLYING TURNS
65. AFRICAN DIPS
66. SHOOTING GALLERY
67. SEMINOLE INDIAN VILLAGE
68. CAPTIVE BALLOON
69. DOUGHNUT MACHINE CORP.
70. EDWARDS RANCHO
71. VICTOR VIENNA CAFE
72. HOME PLANNING HALL
73. PICNIC GROUNDS
74. CONCESSION KIOSK
75. FORT DEARBORN MASSACRE BLDG.
76. CONCESSION GROUP
77. PAL-WAUKEE AIRPORT
78. ALL-AFRICA GROUP
79. AIR SHOW INC.
80. LAFF-IN-THE-DARK
81. CONCESSION PERGOLA
82. TIME AND FORTUNE MAGAZINE PAVILION
83. "CITY OF NEW YORK" BYRD'S SHIP
84. SINCLAIR PREHISTORIC EXHIBIT
85. ITALIAN PAVILION
86. BELGIUM
87. MOROCCO
88. SWEDISH PAVILION
89. WHITING & NASH MOTORS BUILDING
90. GAS INDUSTRY HALL
91. ARMY ENCAMPMENT
92. GREYHOUND SERVICE EXHIBIT
93. AVENUE OF FLAGS
94. POLISH PAVILION
95. WAVOLINE THERMOMETER TOWER
96. THE HUB - LYTTON
97. BABY INCUBATOR
98. GENERAL CIGARS
99. FOREIGN BAZAAR
100. ORIENTAL VILLAGE
101. DE SAIBLE CABIN
102. MARQUETTE CABIN
103. 31ST STREET BOAT LANDING
104. MACHINERY DEMONSTRATION AREA
105. DAYS OF '49
106. RECEIVING DEPOT
107. WILD WEST SHOW
108. PLANETARIUM BOAT LANDING
109. COURT OF STATES
110. MOTOR BOAT SHOW
111. 23RD ST. MOTOR BOAT LANDING
112. CYCLONE ROLLER COASTER
113. THE WORLD 1,000,000 YEARS AGO
114. DANCE SHIP
115. JOHNS MANVILLE CO.
116. COLUMBUS MEMORIAL LIGHT
117. W. & J. SLOANE BLDG.



Exhibits are placed at eye level so that they may be easily seen by many visitors.

PLANNING THE EXPOSITION DISPLAYS

By LOUIS SKIDMORE, in Charge of Exhibit Design

The Century of Progress Exposition is based on an *idea*—that of science as the determining factor in the progress of the past hundred years. Thus the exhibitors have a foundation for their displays and the architects a logical problem on which to base the building designs. The result is an *ensemble* of closely-knit structures, flexible in extent, with great halls for special features at salient points between connecting units of required lower ceiling height giving the proper size cubicals demanded by the exhibitors.

The Exposition's exhibit of the Basic Sciences in the Hall of Science established a nucleus around which the commercial exhibitors could build their displays. From the Hall of Science will radiate the eighty miles of exhibits. All of these exhibits are architecture, "the science of building," from the gigantic electric locomotive to the microscopic cell structures. They will be well studied: in operation, in full size or model, in animated or in diorama (a three-dimensional picture) form. They will demonstrate the services to mankind of an industry or a science, its processes, research, historical background and development.

A few typical examples of exhibits showing a development in industry, a process, and historical background are the following:

(1) A railroad has erected a great globe on which an ingenious system of lights and switches will show the development of the territory it serves, and the relationship between river, ocean, and railroad transportation.

(2) A pharmaceutical house will demonstrate the packing of toothpaste and the manufacture of the tubes from the rough slug of metal to the enameled and capped products which are found in the drug store.

(3) A manufacturing chemist will have as a part of his exhibit a pharmacist's shop transplanted from Renaissance Germany. With its Dresden china herb jars, old glass bottles and mortars of fine etched bronze, it will show the growth and change of the industry represented by this company.

A Century of Progress has provided in its Exhibit Department a division to advise and guide the exhibitor in the design and preparation of his display. Experienced architects have been employed for this work, and they have studied carefully the problems presented. The failures and successes of past expositions have been analyzed, and the results of this study put at the disposal of the exhibitor. The exhibitors were, on the whole, quick to take advantage of this assistance.

It is stipulated in the exhibitors' contracts that final plans and color studies for exhibits be submitted for approval. This makes it possible to avoid duplication, which is as undesirable for the exhibitor as it is for the Exposition. The Exhibit Department offers suggestions for improvement of individual designs, and can enforce certain regulations which seem to the best advantage of all exhibitors and the Exposition.

The exhibitor, who generally comes to the Fair grounds for approval of his exhibit, views the site and studies its possibilities. As a result he can proceed intelligently with his planning. Sometimes he objects, before he arrives, to certain rules which he considers unfairly restrictive. When, however, he has had an opportunity to walk through the buildings and observe for himself the reasons lying behind these regulations, he is willing to cooperate to the limit for the best interest of all.

This cooperation makes it possible to maintain unity of treatment on important corridors. A continuous sign shelf in the aisle is decorated in a single manner. Flashing, exposed incandescent and gaseous-tube effects, which drive visitors from the buildings instead of attracting them, are noticeably absent. Plans submitted up to the present include almost none of the bunting, artificial evergreen and palms which have played so large a part in exposition interiors in the past. Since the exhibitor is not permitted fan-fare and annoying brilliance to attract attention, he concentrates on making his exhibit attractive within his own boundaries.

In some cases this concentration is at first in the wrong direction. Sumptuous settings are planned, with velvet drapes, gold tassels, corded railings, and other trappings, smothered in architectural detail. An architect is given the task of preparing the exhibit, and goes to work with his pencil and water colors. Presently he has a "pretty picture," decorative and dazzling to the exhibitor, but the exhibit itself has been obliterated by the glitter of the setting.

The exhibitor then presents his plans to A Century of Progress. The sketches receive frank and sometimes devastating criticism. If the latter, the exhibitor generally reacts in one of two ways: he becomes angry, takes his plans home and sends in, a week or ten days later, a really excellent scheme. Or he sits down with the architects of A Century of Progress and goes over his advertising objectives, his products, and other phases of his business, with a view to developing a better basis for his exhibit.

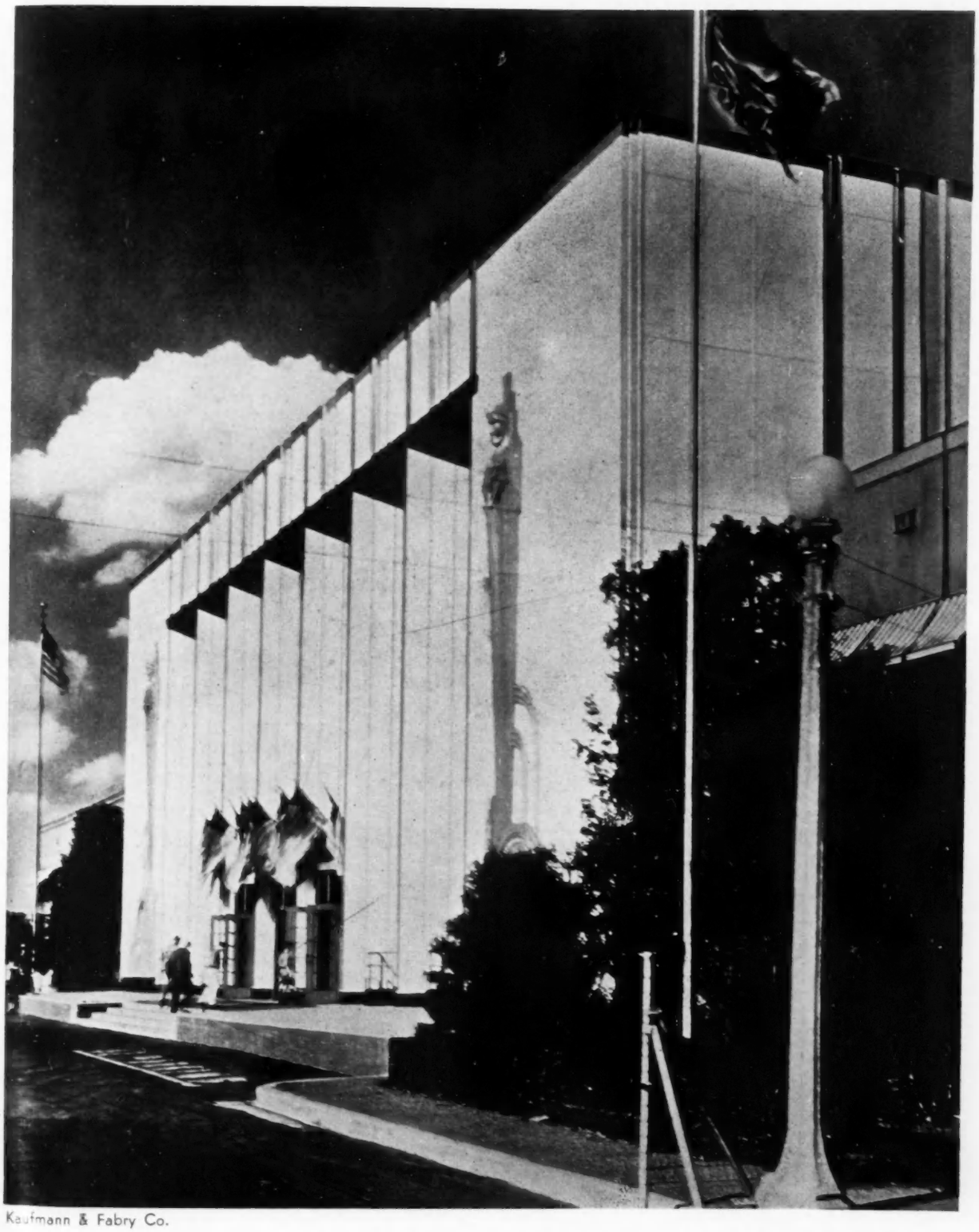
Perhaps he has a flashing sign, and defends it on the ground that a good exhibit requires action. Whereupon he is asked if he has ever seen any interest in a steam shovel as it moves down the street, and his reply is invariably in the negative. He has, however, seen the same steam shovel in an excavation pit with crowds of people watching it dig down into the earth, pick up its load and deposit it in a waiting truck. In both cases the shovel is in action, but in the second instance the action is productive.

This is an important consideration in the planning of an exhibit. Keeping the wheels in motion will not keep exposition crowds (in a passive mood at best) interested. If, on the other hand, the turning of those wheels produces something, the exhibit will hold attention.

Perhaps the exhibitor does not want to demonstrate a process, but is interested in showing how his product operates, what function it performs. Where he can find an application about which people are really curious, this desire can be gratified satisfactorily. Take, for example, the case of a producer of lubricating oils. This company might have the chassis of an automobile with various parts so cut away as to permit the visitor to see why and where lubrication is necessary, and to demonstrate how the machine is damaged if proper and sufficient lubrication is not provided. Because there is presented a new and usually inaccessible view of an every-day commodity, the display will be appealing to most people, whereas all but the technically inclined would pass by a series of charts demonstrating the same facts.

Frequently the exhibitor's architect is more tenacious upon traditional treatments than is his employer. He must have pointed out to him how incongruous such treatments would be in the modern setting of this Exposition. Then he forgets about decoration, and thinks about the display. He places the units so that they will be visible to the greatest number of observers. Then he plans a setting which will clearly define the exhibit but be entirely subordinate to it. The result is usually a less expensive display than the one with which he started, but one in which there is no detail without its purpose. Color, form, line, illumination, and texture are all employed to the best advantage, but none of these elements is important except as it contributes to the exhibit itself.

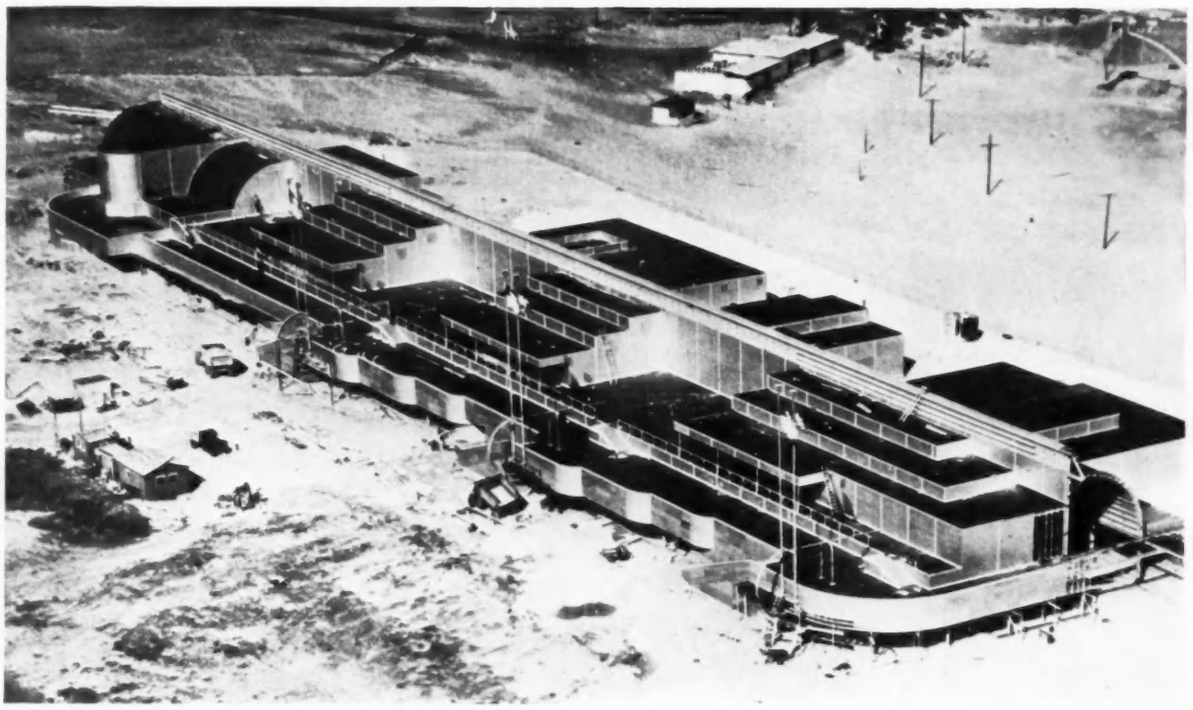
A CENTURY OF PROGRESS EXPOSITION



Kaufmann & Fabry Co.

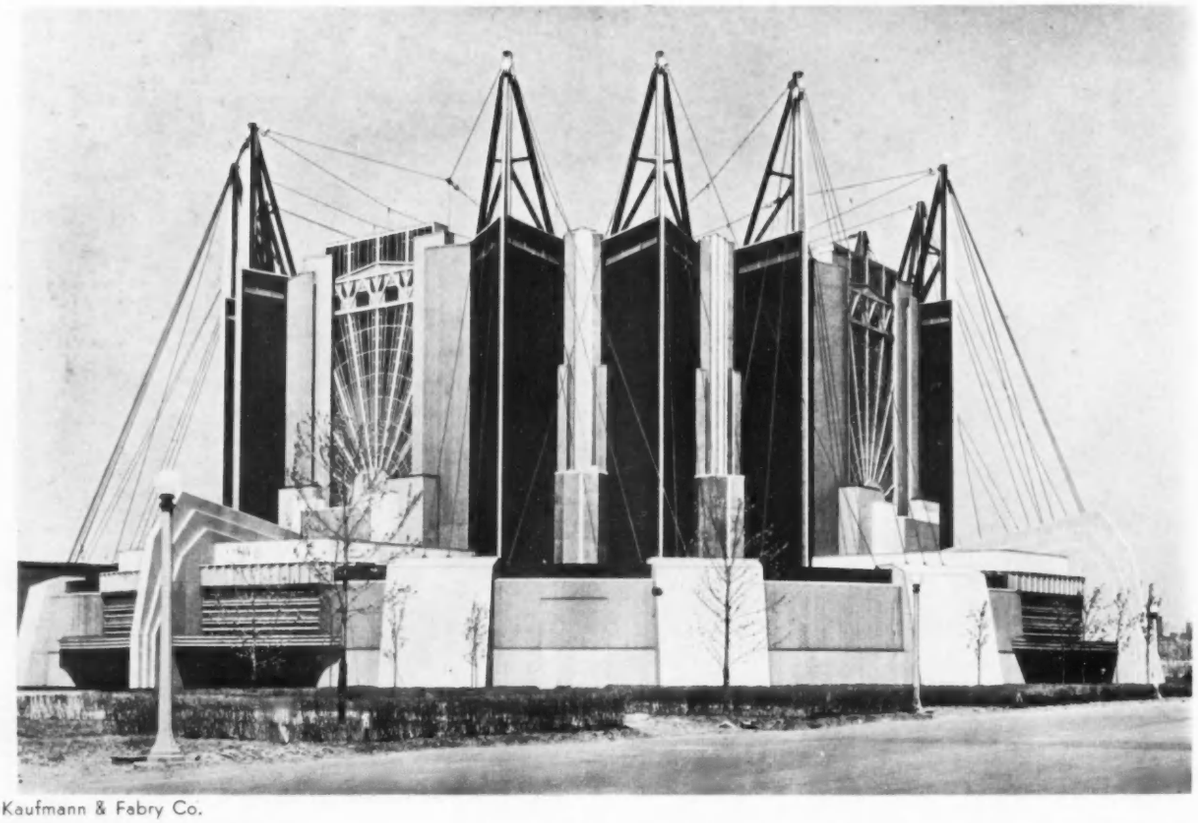
The building measures 350 by 150 feet. The central wing contains a restaurant for Exposition employees, the president's and manager's suites, trustees' quarters and a reception room.

MAIN FACADE OF THE ADMINISTRATION BUILDING
EDWARD H. BENNETT, HUBERT BURNHAM AND JOHN A. HOLABIRD, ARCHITECTS



Ewing Galloway

Agricultural Building. **Edward H. Bennett and Arthur Brown, Jr., architects.**



Kaufmann & Fabry Co.

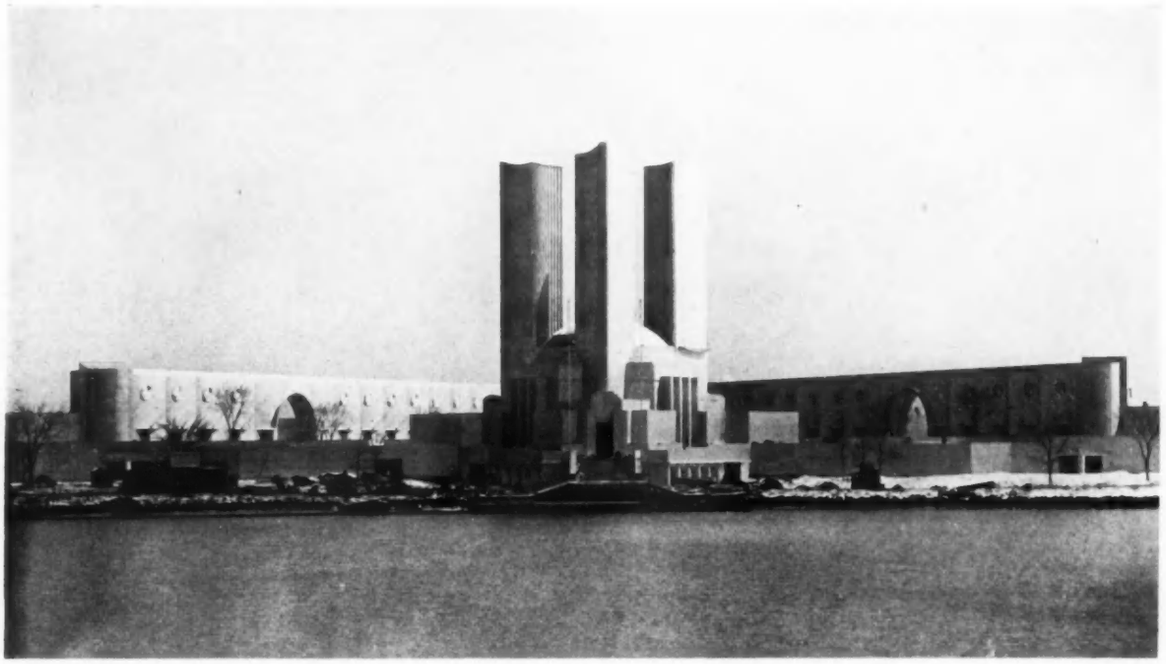
Travel and Transport Building. Roof formed of metal plates suspended by steel cables from twelve steel towers and anchored by huge slabs of concrete. Edward H. Bennett, Hubert Burnham and John A. Holabird, architects.

A CENTURY OF PROGRESS
CHICAGO EXPOSITION OF 1933

Kaufmann & Fabry Co.

Court of the Hall of Science. The hall is U-shaped, with two arms reaching down to the lagoon and inclosing a court of three acres. On upper terrace are fountains, pools and flower gardens. Paul Philippe Cret, architect.

A CENTURY OF PROGRESS
CHICAGO EXPOSITION OF 1933

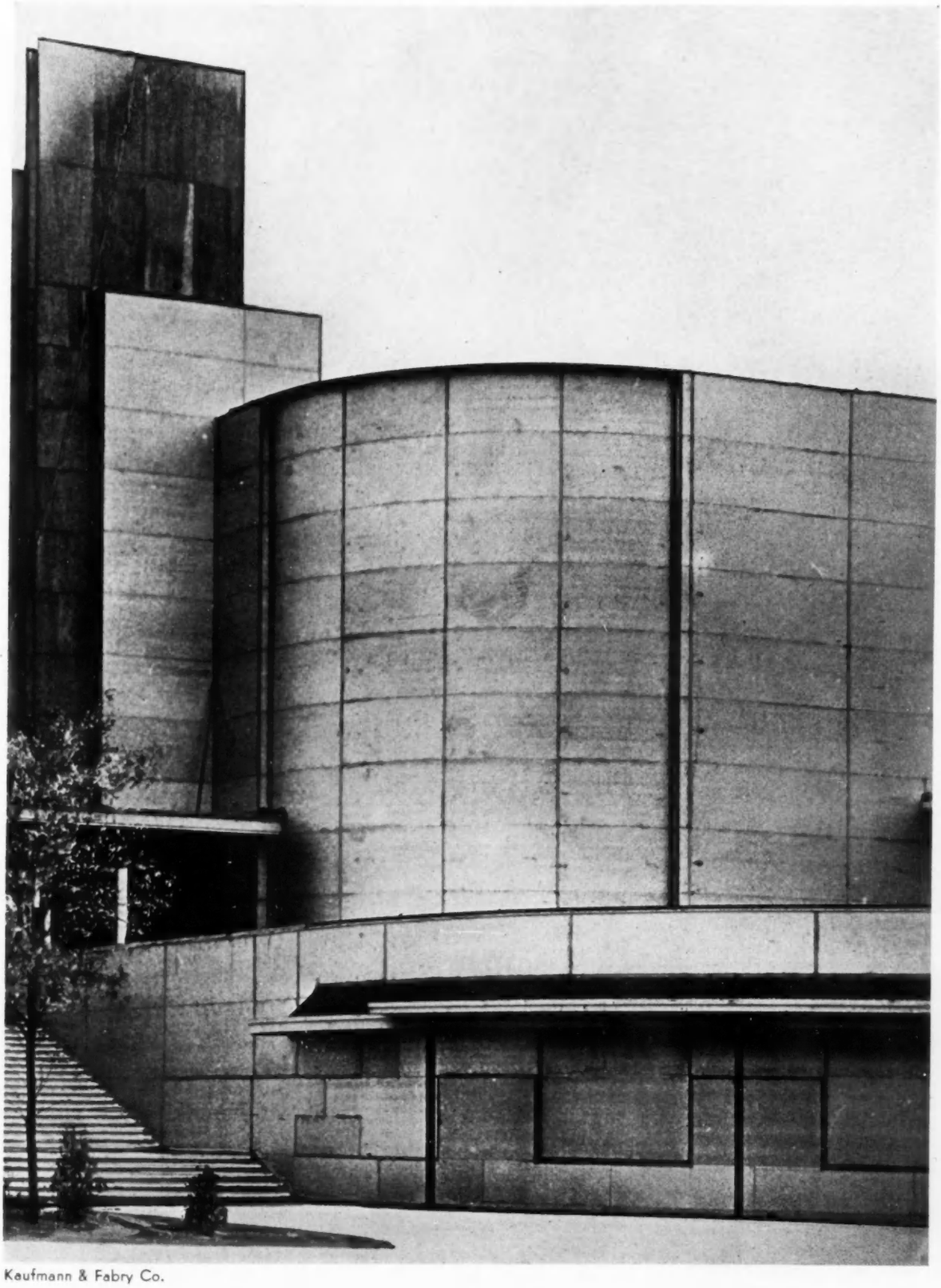


Federal Building and Hall of States. Edward H. Bennett and Arthur Brown, Jr., architects.

Kaufmann & Fabry Co.

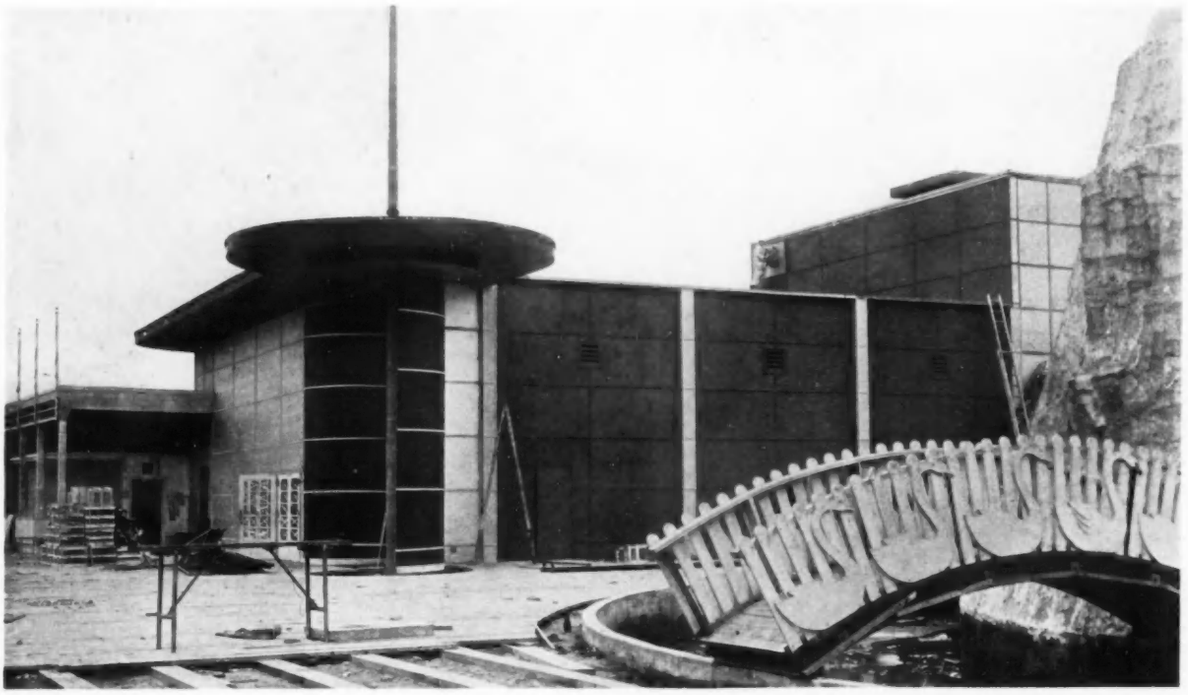
A CENTURY OF PROGRESS
CHICAGO EXPOSITION OF 1933

Three pavilions of the General Exhibits Group, housing displays of the graphic arts, furniture, jewelry, cosmetics, sporting goods, leathers, textile and mineral industries, and industrial engineering. Harvey Wiley Corbett, architect.

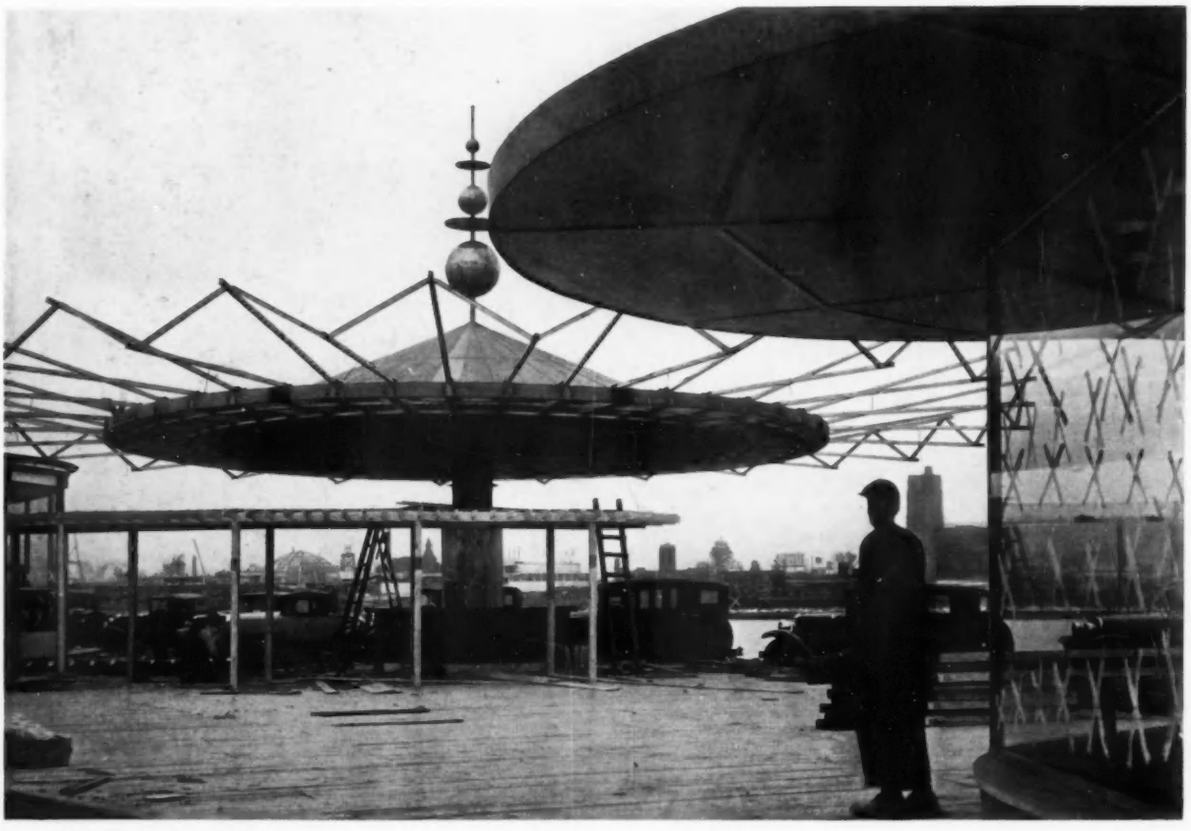


Kaufmann & Fabry Co.

Detail of a General Exhibits pavilion. The group opens toward the Exposition lagoon with terraces and courts. A double-decked arcade connects with the Hall of Science. Harvey Wiley Corbett, architect.

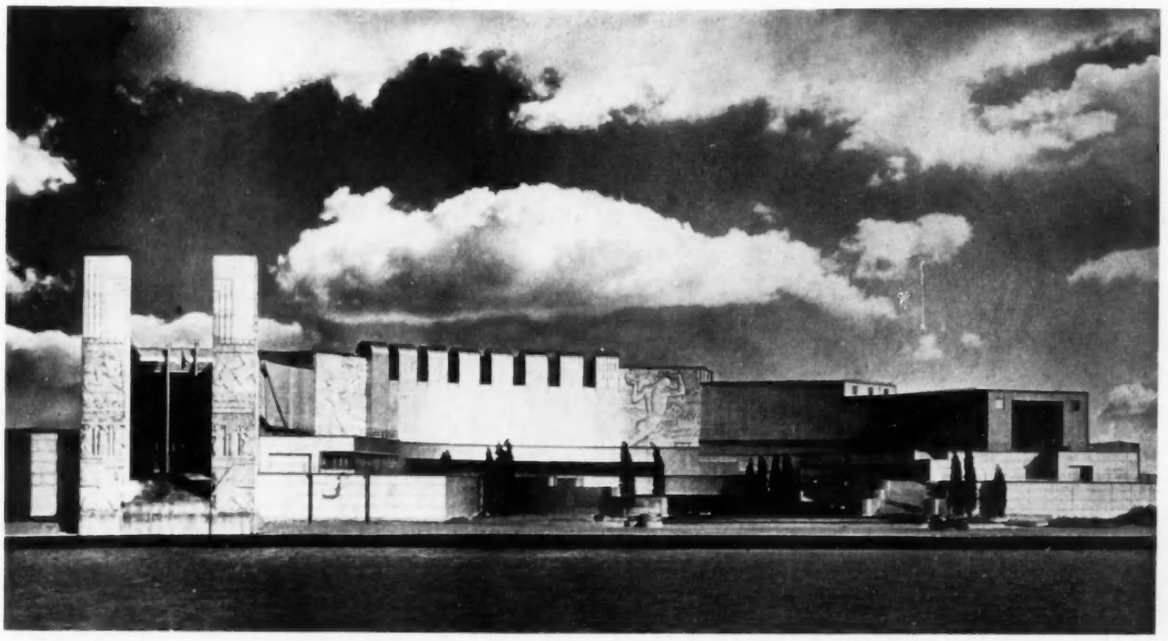


Children's Theater—"The Enchanted Island."

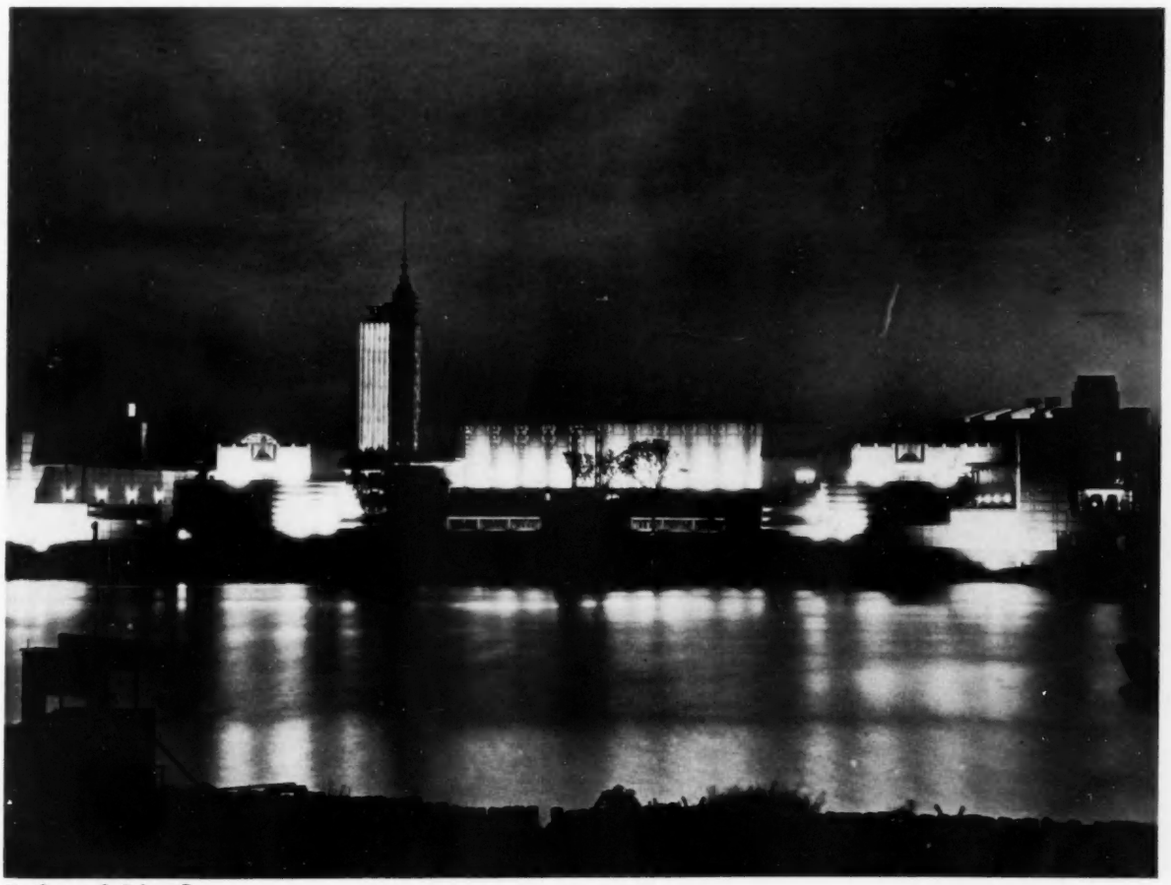


"The Enchanted Island"—an amusement park for the children. George H. Buckley, architect.

A CENTURY OF PROGRESS
CHICAGO EXPOSITION OF 1933

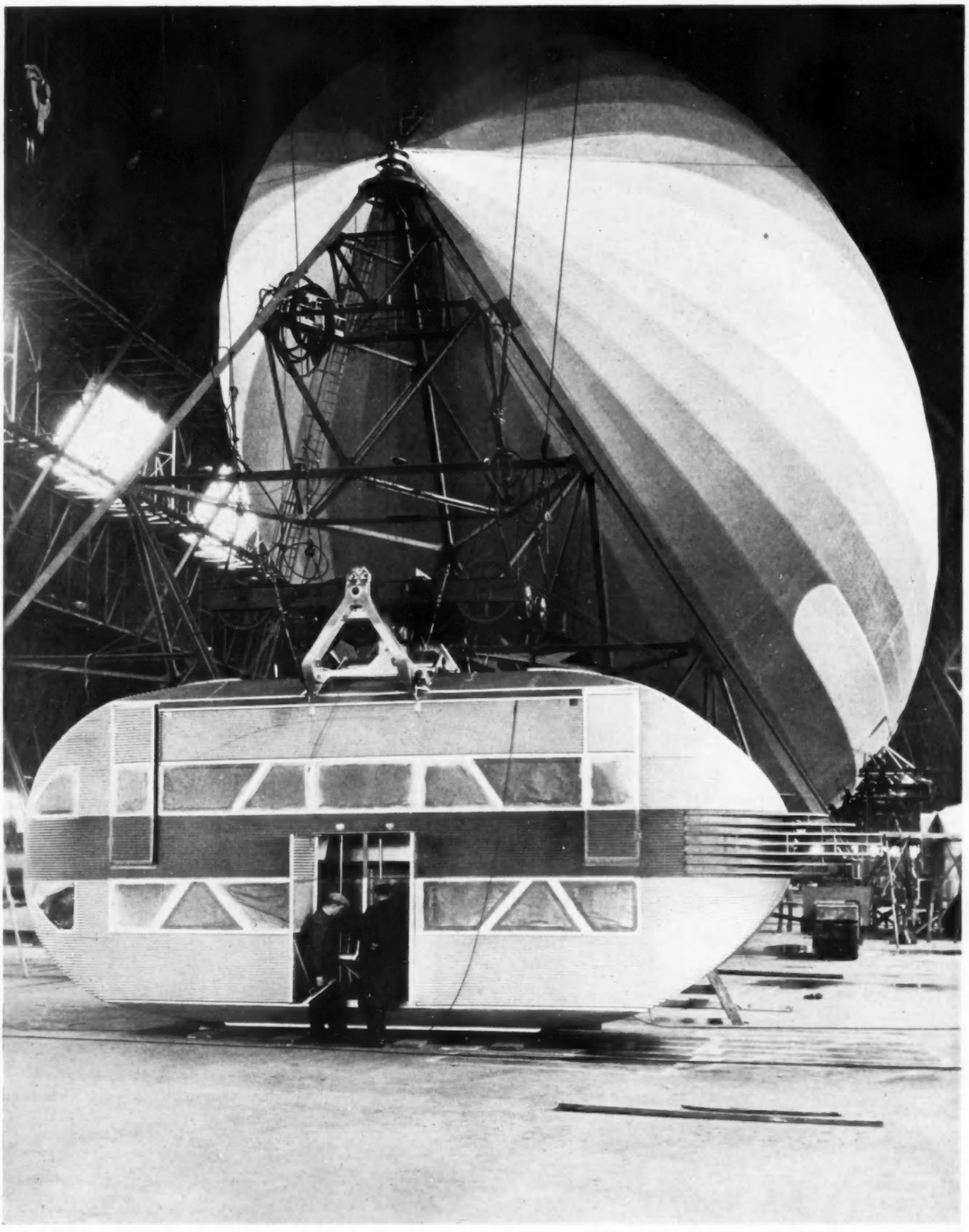


Electrical Building. Raymond Hood, architect.



Kaufmann & Fabry Co.

Hall of Science. The central tower is illuminated with neon tubes. Paul Philippe Cret, architect.



A CENTURY OF PROGRESS
CHICAGO EXPOSITION OF 1933

Detail view of a "rocket car" which will carry passengers on the Skyride across the Exposition lagoon.

"SKYRIDE AND OBSERVATION TOWERS" — DESIGNED BY N. A. OWINGS AND J. D'ESPOSITO
ROBINSON AND STEINMAN, CONSULTING ENGINEERS

AMUSEMENT FEATURES OF THE EXPOSITION

By NATHANIEL A. OWINGS, In Charge of Concessions

An Exposition portraying a Century of Progress must include special features of amusement types with at least some claim to being new. Investigation of the "show business" indicated a lack of originality, due partly to economic conditions. It was essential therefore, that the Exposition develop a limited number of "features."

Four have been provided:

1933 *Exposition*	*Other Fairs*	*Type*
"Skyride"	Eiffel Tower '89 Ferris Wheel '93	Thrill
"Enchanted Island"	Treasure Island—Wembley	Juvenile — Amusement, Thrill, Utility
"Pageant of Transportation"	Need not supplied	Historical—Dramatization
"A Million Years Ago"	"Creation" Spectacle '93	Popularized Paleontology

Existing economic conditions assisted in producing these features. Architects and engineers rendered professional services for a chance to get a twenty per cent bonus plus their usual fee out of gate receipts. Foundations and steel, fabricated and erected, elevators, cables and, in fact, all things for structures complete and ready to operate were available from industry on a similar basis.

"THE SKYRIDE AND OBSERVATION TOWERS"

General Description

The "Skyride" is essentially a suspension bridge, offering two features: (1) a ride across the lagoon in rocket cars, at an elevation of 200 feet above the ground; (2) a ride to the observation platforms at the top of each tower, 600 feet above the ground.

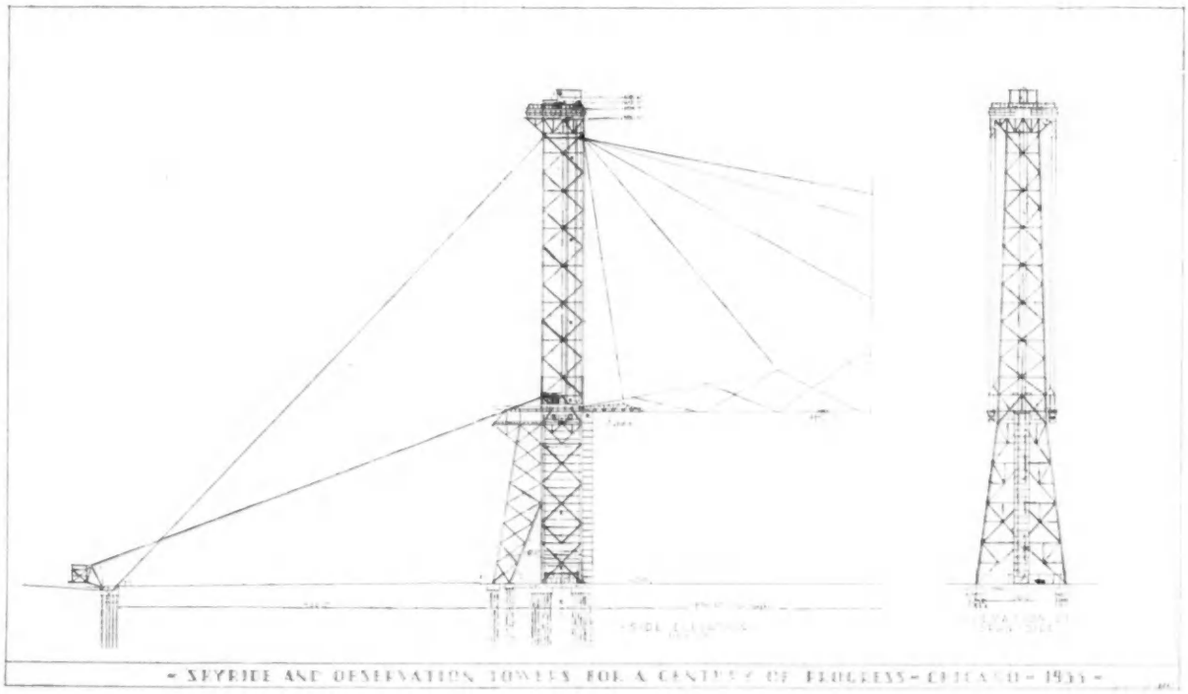
The main span of 1,850 feet between towers rates the structure among the long-span bridges. The only bridge now in existence with a clear span of a length exceeding that of the "Skyride" is the George Washington Bridge over the Hudson River with a span of 3,500 feet.

Architectural Design

The towers were designed: (1) to express the dependence of each upon the other and the dependence of both on the cable system; (2) to use wherever possible standard shapes in the most economical way. The engineers were not required or permitted to incorporate so-called ornamental features in the design. Four glass windows, each 24 inches wide and 400 feet long are inserted in the elevator shafts from the 200-foot level to the 600-foot level; floodlights set on the top of each elevator car will produce an ever changing lighting effect as cars travel up and down the shafts.

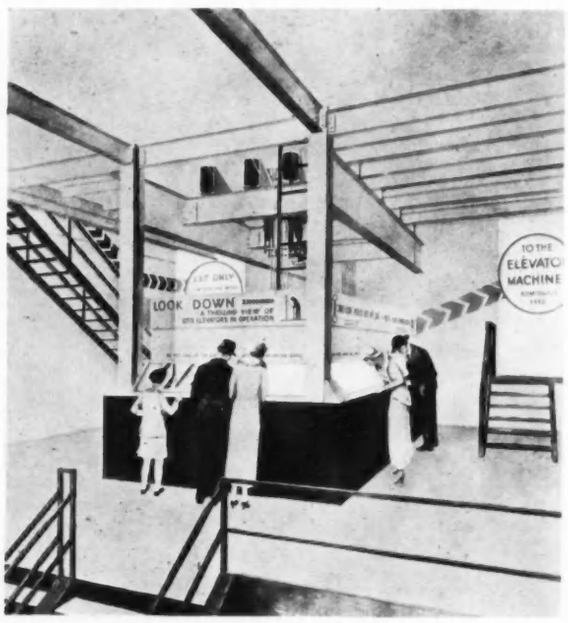
Cable System

In suspension bridge design, the "Skyride" presents certain unusual features. The method of stiffening the main span system provides a horizontal track without excessive cable deflections.



SKYRIDE AND OBSERVATION TOWERS FOR A CENTURY OF PROGRESS - CHICAGO - 1933

The conventional steel truss, as the stiffening member, was discarded and a double intersecting lacing system consisting entirely of wire rope strands was used. Also of note are the two backstays in each backspan. The upper backstay ties the main span upper suspension system to bars embedded in the concrete anchorage. The lower backstay carries the combined stresses from the lower main span suspension system and track ropes to the counterweight box at the anchorage. This counterweight box is free to turn on a pin in a shoe bearing on the rear of the anchorage and in this manner induces a fixed stress into the lower backstay. The object of the counterweight arrangement is to fix the stress in the track ropes at a value which will be constant except for slight variation due to temperature and live load. All cables are supported at the main towers by means of pin-connected links in order to minimize bending on the towers because of temperature and live load cable stresses. The main cable members are composed of groups of strands, varying in number from two to six, but the individual members of each group are not bound together or seized to form a single unit as is conventional practice. The strands vary in size from $1\frac{1}{4}$ to $1\frac{9}{16}$ inches in diameter. The track strands are $1\frac{1}{2}$ inches in diameter and of lock smooth coil construction.



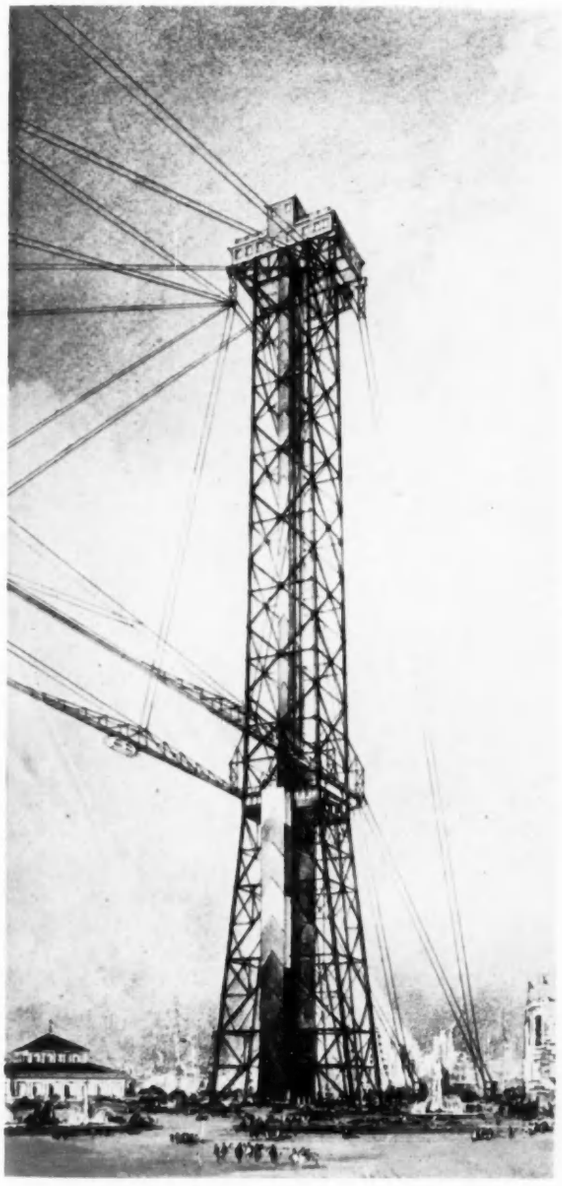
At the top of each tower visitors will be able to view cars moving up and down the elevator shaft.

Tower Design

In the tower design an inclined bracing tower was employed from the ground to the 200-foot level. This battered leg, called the "tail," serves three purposes: (1) supports the tower against longitudinal wind; (2) supports the tracks around the curve at ride level; and (3) gives a directional effect to each tower.

Elevators

Each tower is served by a bank of four elevators. Two of these elevators serve the "Skyride" or 200-foot level; two serve the top observatory or 600-foot level. The speed of the low-rise elevators is 500 feet per minute, that of the high-rise 700 feet per minute. Each low-rise elevator car carries thir-



Prospective drawing of Sky-ride Observation Tower.

Progress photograph showing Tower under construction.

ty persons; these two elevators in each tower can carry 1,700 persons per hour to and from the "Sky-ride" level. Each high-rise elevator car can carry 20 persons; both of these cars for each tower can carry 900 persons per hour to and from the observatory floor level. Total capacity for both towers per hour: 5,200 persons.

1. *Elevator Cab Design.* The elevator cabs are designed to stress the machinelike quality of the entire structure. The interior of the cab is made entirely of aluminum with exposed rivet heads, and marine type fixtures provide the illumination. The general character resembles so-called battleship construction.

2. *Elevator Hoistway.* At the top of each tower the Otis Elevator Company has provided as their exhibit a view down the elevator shaft through shatterproof glass, permitting an unusual opportunity for the inspection by the public of an elevator system in actual operation. The machinery rooms are also designed as exhibits and are accessible to the public view.

Cable Car

Ten cable cars will be in service to carry passengers across the span. There are two levels in each car, the lower level accommodating twenty persons and the upper level sixteen. The cars will be pulled across the span by means of continuous hauling ropes operated by motors located at the towers. The attachment between the car and the hauling

Rocket cars for the "Skyride" being constructed at Akron, Ohio.

rope is by means of a gripper. The car is pulled along four stationary track cables. The travel of all cars is in a continuous counterclockwise direction, the turn being made around each tower on tracks supported above the tail columns. The track ropes end at their junctions with short steel trusses extending from the tower and from that point on, the car moves under its own power, achieved by motors located in the truck from which the car is suspended. The speed of the car is about 520 feet per minute. Each car is suspended from a single trunnion at the center. This single point suspension is safest and most adaptable to the structure as designed. It presupposes balanced loading of passengers which will be taken care of at the loading platforms at the main towers. The cars will be released about 720 feet apart.

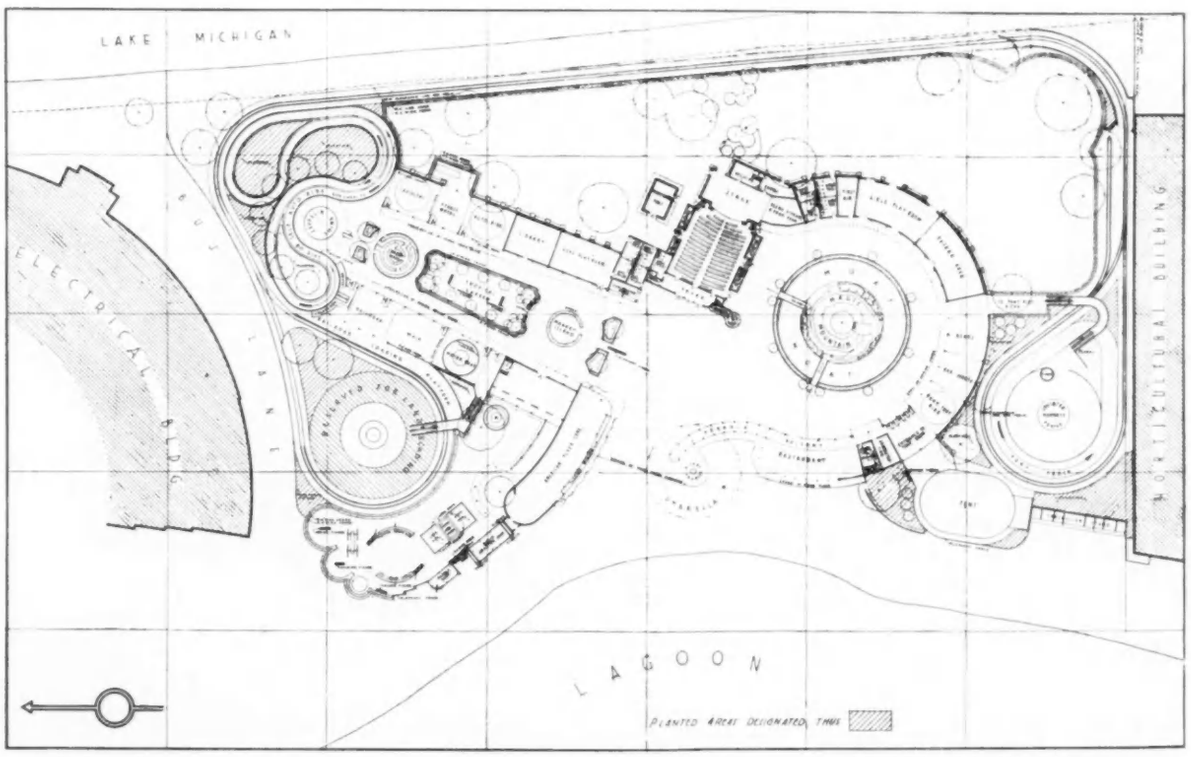
Safety

Every possible and practical safety device has been incorporated in the design of the structure. The elevators are the most modern; the mechanism to attach and release the car gripper on the hauling ropes is electrically controlled; the braking of the car as it leaves the track cables is automatic. Economy was important, but was not permitted in any instance to outweigh the factor of safety of operation.

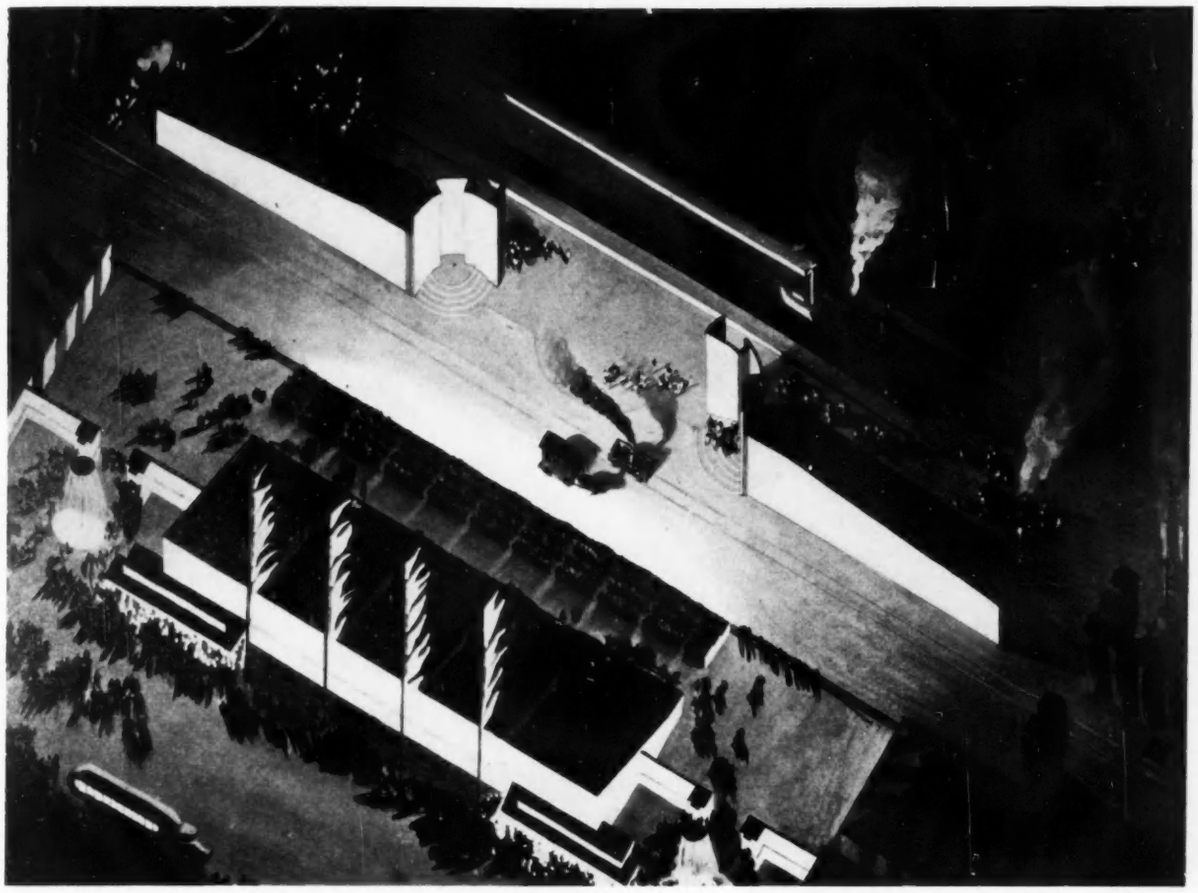
"THE ENCHANTED ISLAND"

Purpose

1. Provide facilities for care of children by the hour or day.
2. Provide juvenile amusements.
3. Provide a children's theater dedicated solely to children's plays.
4. Demonstrate the most modern methods of handling, training and amusing children.



Plot plan of "The Enchanted Island," an amusement park for children.



"Pageant of Transportation" — an outdoor dramatization.

Location

A 5-acre track between the Electrical Building and the Horticultural Building was chosen for the location because of its ideal facilities for the care and amusement of children. There is only one road through this area, which is on the entrance side. The area is inclosed on the opposite side by Lake Michigan and by the Horticultural Building on the south and the Electrical Building on the north. The playgrounds are entirely isolated from the public.

Plan

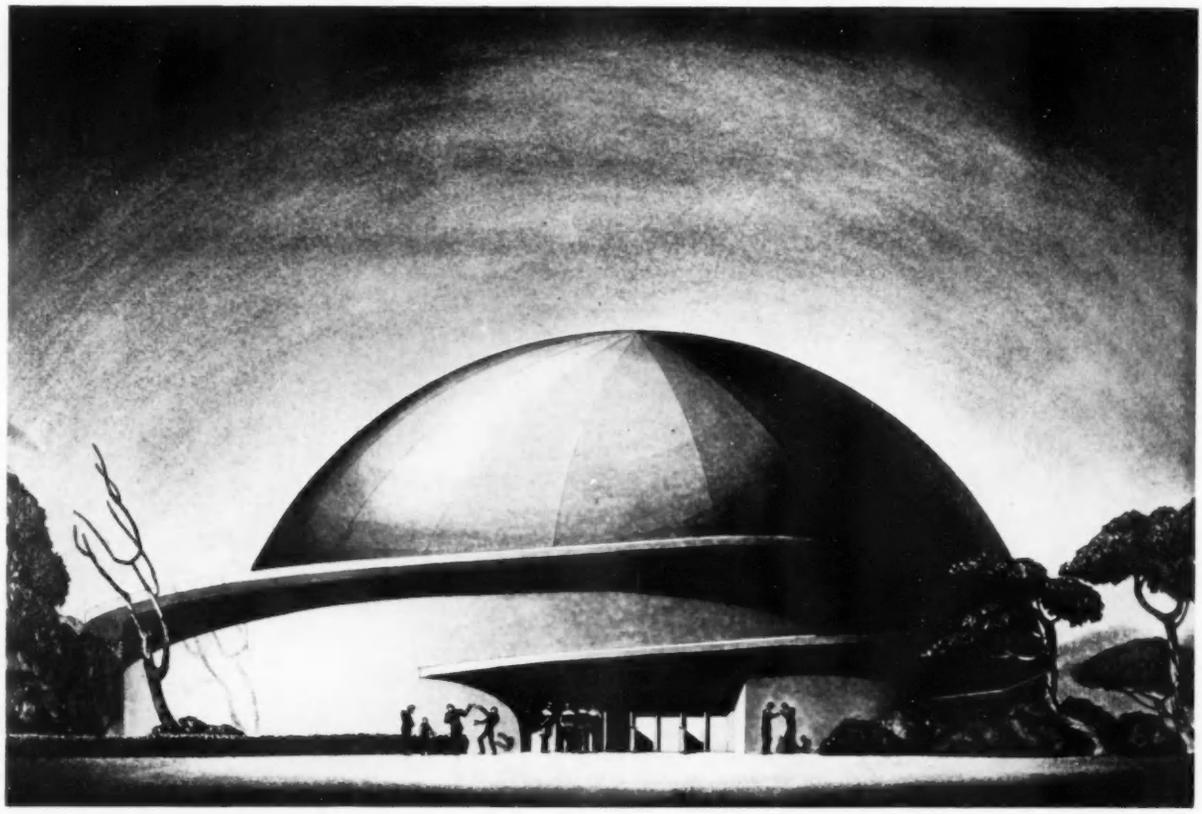
The architects were provided with a program which was developed by the leading child experts in the Middle West. This program was purely theoretical and it was necessary for the architects to provide a flexible layout that could accommodate any of the items mentioned in the program while permitting the expansion or contraction of the scheme.

Requirements to be incorporated:
Children's theater—450 seats.
Children's restaurant—200 seats.
Playrooms and playground for children from 3-5 years of age.
Playrooms and playground for girls from 6 to 14 years of age.
Playrooms and playground for boys from 6 to 14 years of age.
Pony track. Miniature zoo. Tropical garden.
Miniature railroad—½-mile run.
Miniature lake and mountain.
Monkey island. Children's library. Toy shop.
Eight miniature amusement rides.

Open pavilions were provided, using a typical bay 10 feet wide and 25 feet deep as a unit. As the above features were settled, it was relatively simple to fit them into the pavilions. In some cases parts of the pavilion were inclosed to form the playrooms, in other cases picket fences were used to separate the various spaces.

Decorative Effects

The interior of the restaurant was designed by Tony Sarg. The entire scheme is a miniature fairyland. Alfonso Iannelli has executed the murals and sculpture for the exterior and interior of the theater, as well as twelve huge figures of famous characters popular with children. These are flat cut-outs with the characters painted in a very stylized and posteresque manner. The Magic



"A Million Years Ago"—reproductions of prehistoric mammals and reptiles.

Mountain was designed in clay at small scale and treated in broad flat planes with no attempt to reproduce a natural effect.

Landscaping

Shade trees are scattered throughout the area. Hedges are used to frame each feature so as to provide a green background for every vista. The tropical garden will consist of royal palms, orange trees, cactus and tropical flower beds, together with a hedge maize.

Summary

A quality of gayety has been provided in the general architectural design by the use of exotic forms, such as the 60-foot umbrella forming the entrance to the area which is a combination of open steelwork and gay canvas, the use of brilliant color both in the painting and in the canvas used for decoration and for shade. Care has been taken to scale the architecture so as to form the proper background for the juvenile patrons.

"PAGEANT OF TRANSPORTATION"

Location

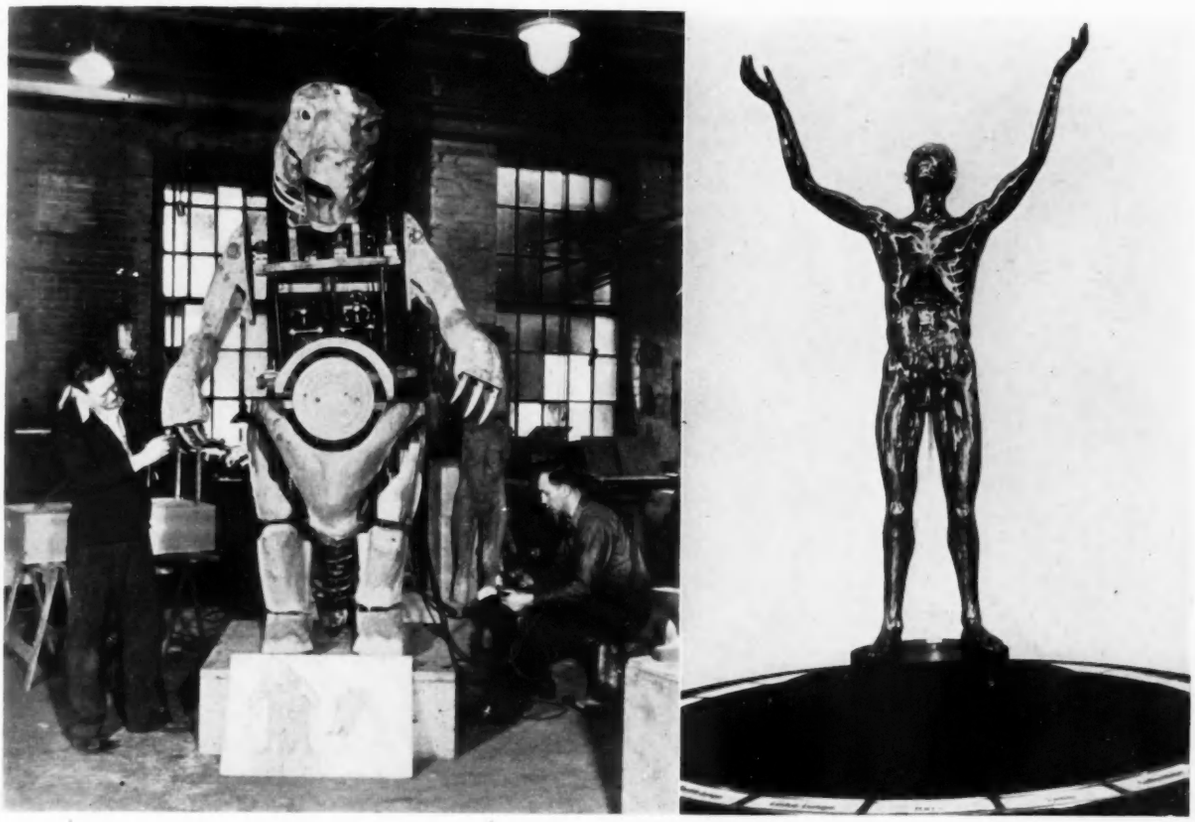
Opposite the site of the Travel and Transportation Building, east of Leif Eriksen Drive, facing Lake Michigan.

Purpose

To provide an animated dramatization of the history of transportation. The necessity for making it an outdoor show is apparent and the problems connected with it are manifold. It was necessary to design a stage for the presentation of full-size equipment varying in scale from the bicycle to a huge locomotive and to devise some method of capturing the character of the various periods without the use of scenery. It was important to devise a means of producing a pageant that would be equally effective in bright sunshine, cloudy weather, or under night conditions. High velocity winds are frequent and had to be taken into account on this unprotected site.

Plan Requirements

1. A grandstand seating 2,500 persons facing Lake Michigan.
2. A series of boxes seating 600 persons.
3. A fore stage consisting of a 30-foot wide roadway running the full length of the area.
4. A single line of railroad track running the full length of the area with a switch at each end branching into storage tracks providing 1,200 lineal feet of trackage.
5. An elevated stage 100 feet wide with pylons on each end to form the proscenium arch. The dressing rooms and storage facilities form a back-



Two exhibits: a prehistoric ground sloth; a transparent model for medical demonstration.

ground for the two fore stages. This elevated stage is about 50 feet deep.

6. A wall 4 feet high divides the elevated stage from the boat stage. This consists of a runway 10 feet wide extending between pylons. Reproductions of boats will be pulled across by means of small tractors. The sight lines of the grandstand are so arranged as to give the illusion of the ships actually sailing on the Lake.

7. Shelter for horses and equipment. Tents 150 feet long are located at each end of the entrances to the grandstand. They are made of wide striped duck and serve to frame the grandstand from the road.

8. Public address system equipment and a complete stage lighting layout has been provided for night shows.

9. Scenery aside from the reproductions of the three boats has been eliminated, primarily owing to the difficulty of producing scenery that will not appear ridiculous in broad daylight.

The proper setting will be created by the use of authentic costumes of the various periods for the cast and by the use of pieces of equipment, both railway and highway, which are either excellent reproductions or the originals themselves. The problem of displaying equipment varying in size from a bicycle to a huge locomotive was solved by providing a simple and austere background, neutral in character.

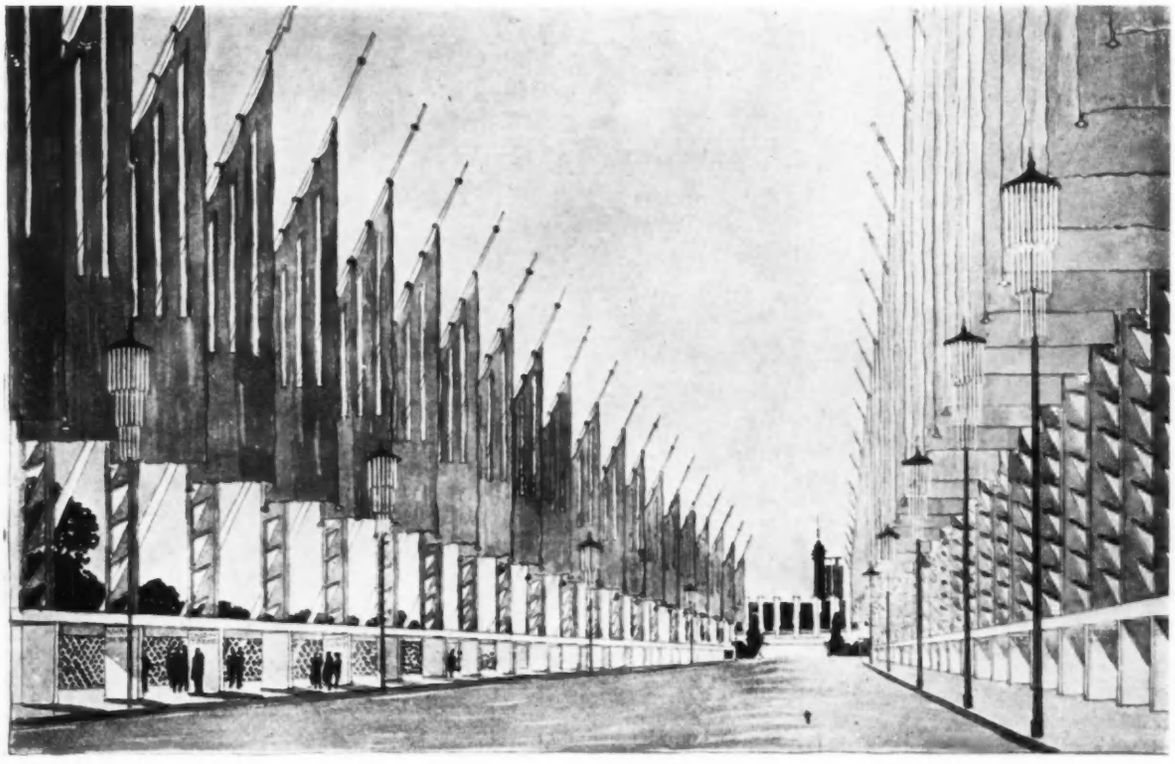
"A MILLION YEARS AGO"

Location

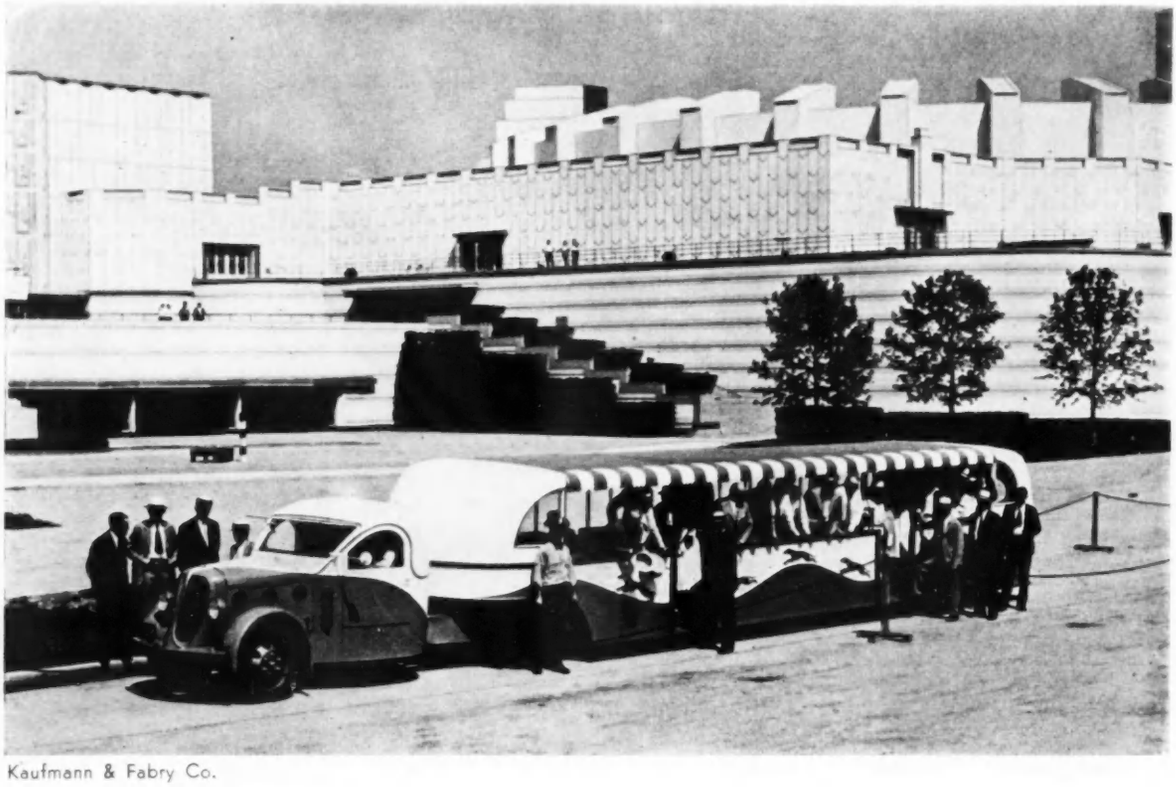
Northeast of the 23rd Street Plaza on the edge of the Lagoon. Purpose is to house a series of animated reproductions of mammals and reptiles of the Paleozoic Age, together with a series of full-sized tableaux of the evolution of man.

Plan

Because of the nature of the show and the necessity for handling large numbers of people rapidly, a circular plan was adopted with a revolving sidewalk which provides a positive guarantee of a continuous movement of people through the building. The central dome covers the main display which consists of the mammals and reptiles in combat in their natural habitats. The revolving sidewalk encircles this area. As one enters the building this central portion is shut off from view and on the outer side of the walk is a series of tableaux of the history of man. As one slowly passes through, the central portion comes into view; when one has moved through three-quarters of the circle animated tableaux again appear on the outer side of the walk and the central portion disappears from view. The central portion is arranged on a slope, and since the walk is level a variety of views of each animal is possible.

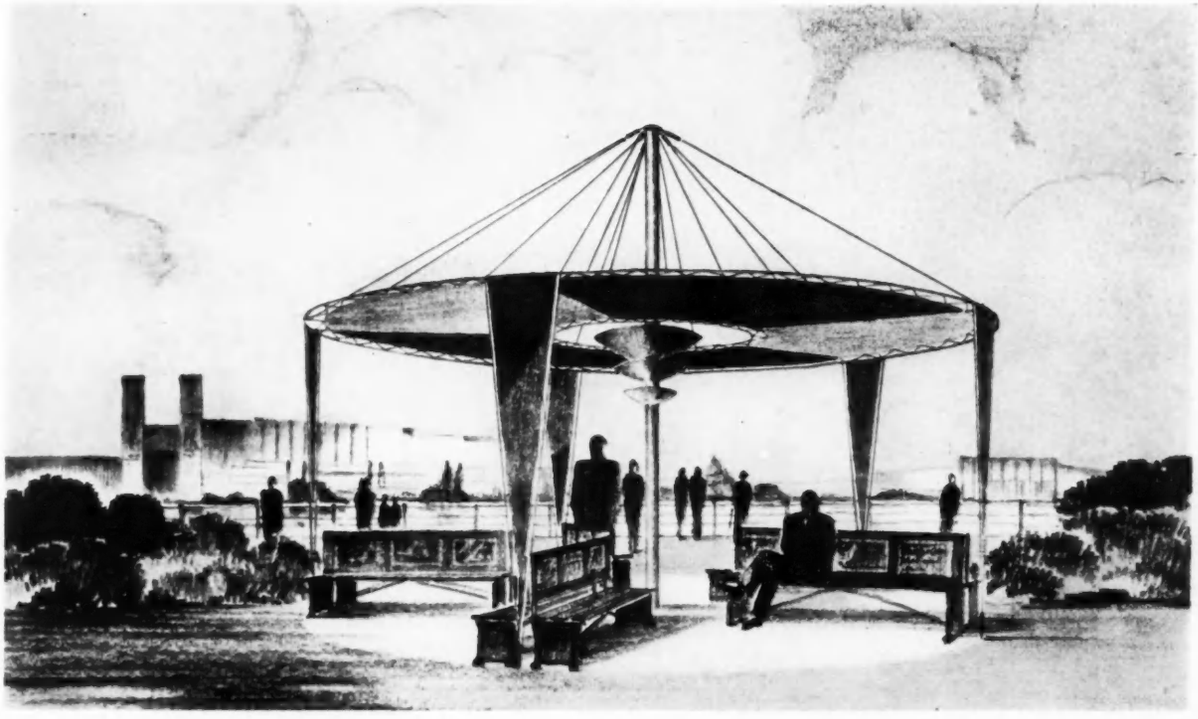


"The Avenue of Flags" — a preliminary sketch by Joseph Urban.



Kaufmann & Fabry Co.

Sixty blue and silver trailer buses will carry visitors around the Exposition grounds.



A TYPICAL CANVAS SHELTER — SKETCH BY CHARLES DORNBUSH

THE GADGETS: SHELTERS, FLAGS, DECORATION

By CLARENCE W. FARRIER, Assistant Director, Department of Operations and Maintenance

The design of the buildings and grounds of A Century of Progress necessitated the development of an entirely new grammar of architectural expression in the various appurtenances and adjuncts which must be placed around the grounds of an Exposition. For lack of a better name these objects have been dubbed "gadgets" by the Exposition staff.

These so-called gadgets are little shelter structures, kiosks, flag standards, lighting fixtures, elements of pure decorative value and the like. The departure from classic architectural forms and decoration in the buildings permitted the use of simple structural forms without ornamentation other than the natural materials in the objects.

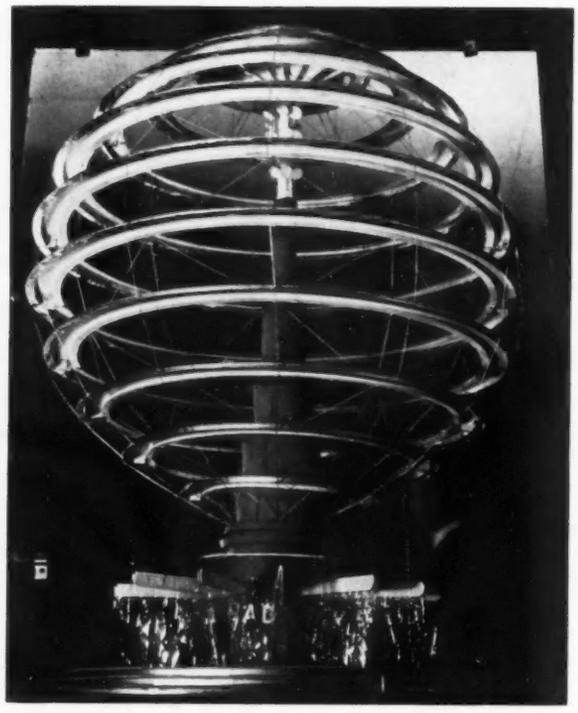
Many times the number of these objects were designed than will actually be in existence on the Exposition grounds, since frequently it was necessary to obtain sponsors for their erection. Some interesting designs will remain unbuilt because of the lack of such sponsorships. One of these was a large object to be placed in the 12th Street Entrance circle of the Exposition. To distinguish it from the other gadgets which were being designed, it received the name of "Hoot-Nanny." It was a spherical structure about 85 feet in height, consisting of a central core or tower extending from the foundations up to the top of the sphere through the axis of the sphere. By means of cables, flat zonal rings making up the surface of the sphere were suspended from the top of the axial tower. This object had a fountain assembled around the base of the tower underneath the sphere, and the whole structure was illuminated by a combination of incandescent and gaseous tube sources.

It is highly probable that this object in the 12th Street Entrance will be replaced by another object which can be built from patent metal scaffolding. The frames of this patent metal scaffolding will be ornamented by cloth banners in several colors; bells are to be suspended on the cloth banners in such a manner that they will tinkle in the wind.

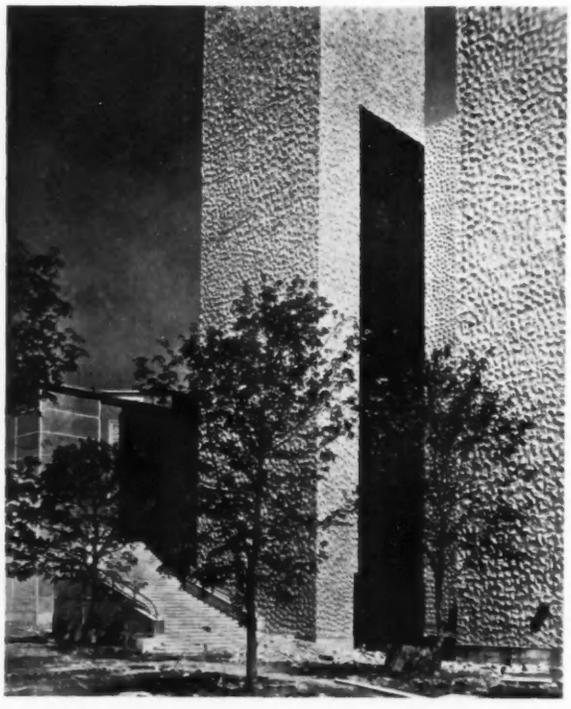
Many gadgets have been incorporated in the buildings. For example, on top of the Government Building are located three large structures, each triangular in plan, which extend to a height of 150 feet. These structures have no other purpose than that of decoration, calling attention by their size to that focal point in the grounds. At night they will be illuminated.

In that portion of the Electrical Group known as the Communications Gardens, four large artificial trees have been erected. These trees are approximately 100 feet in height. They were constructed by covering the outside of steel frames with wire lathe and then daubing the whole with cement plaster. They are in gigantic size a representation of some of the clipped forms used in Italian gardens.

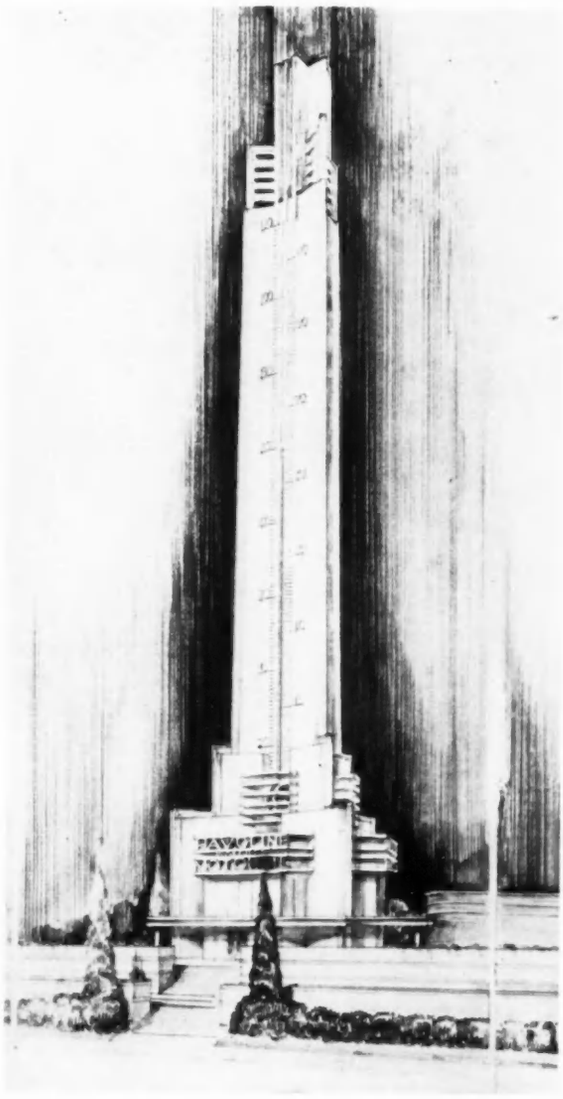
At the main entrance to the Travel and Transportation Building is featured a very large double marquee, molded partly in abstract forms. The



Model of the "Hoot-Nanny," a decorative gadget originally intended for a main entrance circle. The structure scales to a height of 85 feet. At the base of the tower is a fountain.



A view of the steel and cement plaster trees in the Communications Gardens, a part of the Electrical Group. The trees, 100 feet high, represent clipped forms used in Italian gardens. Raymond Hood, architect.

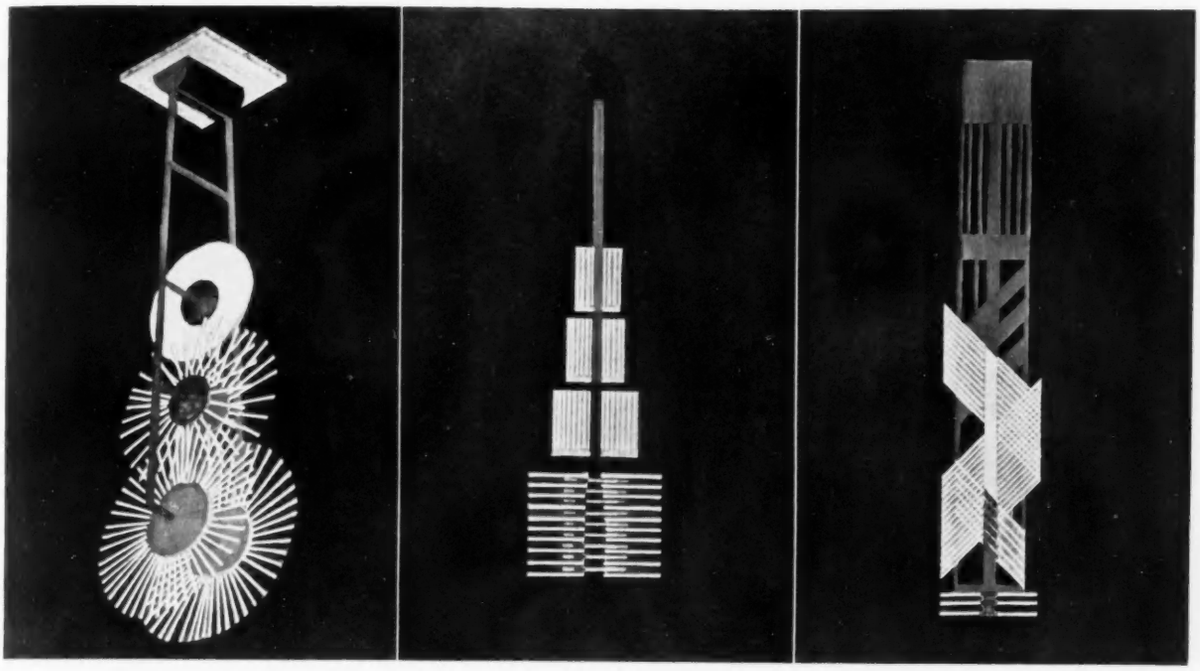


A huge thermometer, 240 feet high, which will record the daily temperatures. Iannelli and Pope, designers.

underside of the upper marquee will be illuminated in colored shadows by means of colored floodlights placed on top of the lower marquee.

The rather severe lines of the main portion of the Travel and Transportation Building are relieved by placing in front of this structure a number of floodlighting fixtures which will serve to illuminate the exterior at night. Posts carry the lights which are supported upon a metallic frame made of light structural angles welded together. Similar sets of floodlighting fixtures are used to illuminate the lagoon façades of the Agricultural Building, the Hall of Social Science Building, the Communications Building, and the Electrical Building.

To render a festive air to the interior of the court of the States Building, lighting fixtures have been made up of painted steel forms on which tiny light bulbs, outlining the patterns of the painted



Lighting fixtures using new tubular incandescent bulbs. Sketches by Charles Dornbush.

steel, are utilized as the illumination source. The illumination from these sources will be soft but adequate and the branching patterns of the fixtures will blend in with the patterns of the trees.

Distributed around the grounds will be a number of canvas shelters made of pipe supports and frames, cables and canvas. These shelters will provide shaded areas under which people can sit upon chairs and benches. They are constructed by suspending a circular pipe ring, on which the canvas is stretched, from the top of the central pipe machine. The canvas is in colors and of varied patterns. Because of wind conditions on the Exposition site it is necessary to guy the rings to concrete dead weights in the ground.

The second largest gadget to be located on the grounds is now under construction. It is a gigantic thermometer, 240 feet in height, which will serve to advertise one of the well-known oil companies. The actual thermometer mechanism is located in the base and by a rather complicated switching device which controls the lighting of successive lengths of gaseous tube illumination, the temperature is read on the face of the thermometer.

An array of flagpoles of unusual form will line Leif Eriksen Drive in the Exposition grounds from the Administration Building to the Hall of Science. Each flagpole is tilted at about an angle of 60° over the road and is supported thus by a latticed steel column located at the edge of the road. The height of the tip of the flagpole above the ground is about 85 feet. From these sloping flag poles huge red banners about 50 feet in length and 10 feet in width will be hung. The flags will be illuminated at night by floodlights concealed on the poles.

Reflected plan of astronomical figures outlined in small incandescent bulbs mounted on a wire network stretched over a circular court. Sketch by Harold McDowell.

A number of lighting fixtures have been designed using the new low intensity tubular incandescent lamp. This lamp is about 2 inches in diameter and 36 inches long and offers many opportunities for unusual effects. It can be used at any angle and opens up a new field in lighting fixture design. Another unusual lighting device was developed for use over an open circular court. It consists of a stretched wire net with small lamps fastened to it in such a manner as to outline astronomical figures in a pattern over the court.

PAINTING THE EXPOSITION BUILDINGS

By OTTO TEEGEN, in Charge of Exterior Color

The reason for using color on the exterior of the Exposition buildings is threefold: First, to help correlate many buildings differing in character, shape and mass, and arranged on a very informal plan. Second, to give interest to materials not inherently beautiful and, when used alone on large unbroken wall surfaces, apt to appear austere. In this sense, the color becomes decoration. Third, to give a spirit of gayety and carnival, and to create an atmosphere altogether different from the homes and towns from which the millions of visitors will come.

The Director

Early in 1932 Joseph Urban of New York City was appointed director of all exterior color, and consultant on problems of special lighting and the correlation of all decorative effects on the Exposition grounds. In this capacity he has provided the exterior color schemes of all buildings, including suggested schemes for special exhibit buildings not directly under the control of the Exposition.

The Problem

First, to find a paint which would match the colors of Mr. Urban's palette, established especially for this Exposition.

Second, since the life of the Exposition is theoretically only five months or one hundred and fifty days, to find a paint that would hold up perfectly in body and color for about eight months, allowing two months for painting before the Exposition opens, and another month for good measure. In this relation it is important to appreciate all the conditions to which the Exposition buildings are subjected. These conditions include extreme heat in summer, extreme cold in winter, with accompanying winds, rain and snow; a location on the lake, near railroad tracks and a manufacturing city which pours forth soot and dirt; and finally materials new and untried, and of temporary construction.

Third, to apply approximately 15,000 gallons of paint within a period of two months or, counting fully a quarter of that time out for bad weather, within a period of 33 working days.

The Palette

This consists of twenty-four colors, all of the brightest intensity; one green, two blue greens, six blues, two yellows, three reds, four oranges, two grays, white, black, silver and gold.

Very seldom is a combination of more than five colors used on any one building; usually three or four are applied. Approximately 20 per cent of all painted surfaces is in white, 20 per cent in blue, 20 per cent in orange, 15 per cent in black, and the remaining 25 per cent is divided among the yellows, reds, grays and green. Silver or aluminum is used on all exposed asphalt emulsion roof areas, and gold on the dome and pylons of the Federal Building. A gray with a greenish cast is used on the exposed concrete bases of the buildings, not only as a line of demarcation between the ground and the immediate color of the building, but as a neutral background for the planting and shrubbery.

Surface Materials

These vary. Most Exposition buildings are made of ½-inch gypsum board which arrives on the job with a shop coat of aluminum. For large curved surfaces and long runs as on the Travel and Transport and Electrical buildings, metal siding has been used. Plywood, asbestos cement board and Masonite are used in smaller quantities. There is considerable exposed steel in the "Skyride" structure, and also heavy timbers and wood surfaces on the various bridges and foot passages. Concrete is found exposed on all foundation bases, and stucco on the pylons and giant trees of the Electrical Building. Plaster appears in the form of sculpture. The roofs are either tar and gravel or tar paper covered with asphalt emulsion. Galvanized metal used on copings, cast iron for the handrails, and steel for window sash are relatively small quantities.

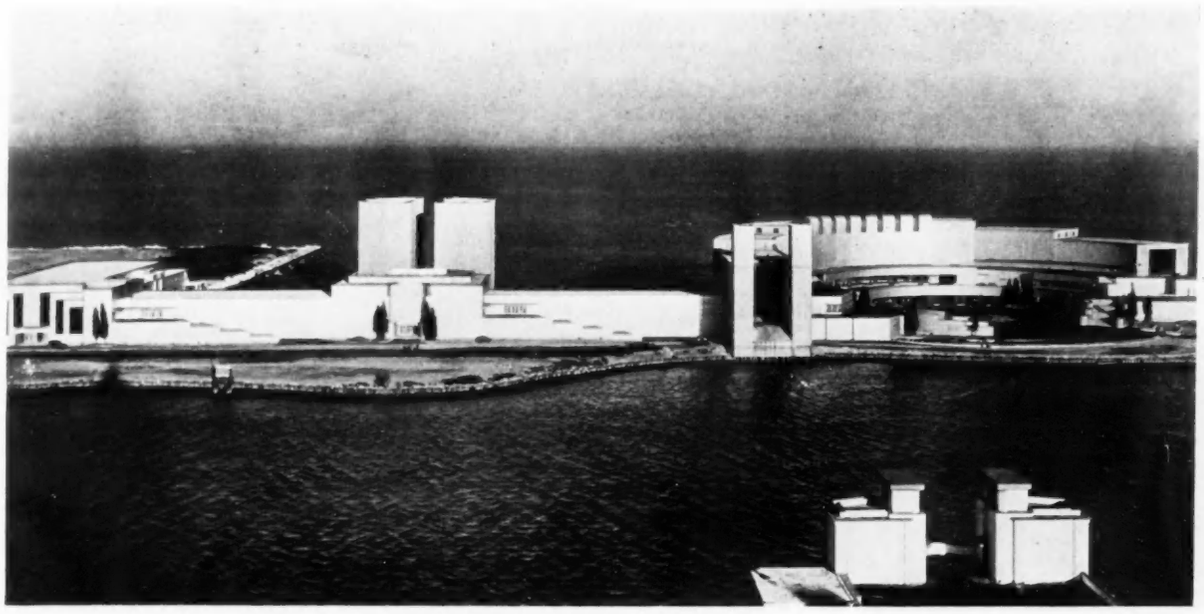
A knowledge of the materials is an essential factor in judging the paint to be used, for paints that are ideal under ordinary circumstances have often been found to be unsatisfactory when applied to materials subject to the Exposition's conditions.

Experimentation

Although some earlier experiments in paints had been carried on by the Exposition, the information herein contained is based on observations since August 1932, when the writer, Mr. Urban's representative at the Exposition, arrived on the grounds.

Since a few of the buildings had already been painted, all available data on that work were first collected and studied. The paints used previously included phenol-resin products, cement paints, lead and oil paints, rust inhibitive paints with fish oil base and casein paint. Innumerable samples from innumerable paint manufacturers had also been received and were being exposed to the weather.

The chief observation in the paints used was that all had dusted within a period of three to four



Electrical Group at the Chicago Exposition: (left) Hall of Social Science; (middle) Communications Building; (right) Electrical Building, housing exhibits showing the generation and utilization of electricity. White, red, yellow, gold, blue and silver are the colors used to decorate this group. Raymond Hood, architect.

months and in so doing had lost their color value completely. There were a few instances of blistering and peeling, but apparent fading was the outstanding fault—and that was important in view of the plans to make the color the outstanding feature of the Exposition and to have that color as brilliant at the end as the day on which it was applied. However, it should be stated here, with due respect to the paints mentioned above, that the failures registered were not entirely the fault of the products themselves but often the reaction within the building materials on which they were applied. Because of the materials and construction considerable changes in temperature occur between the inside and outside wall surfaces, causing heavy condensation. Under these conditions the paint is exposed to the elements from the rear as well as from the front. However, these conditions were not at fault in the fading that took place.

It was decided almost immediately that instead of exposing the usual manufacturers' sample panels, it would be better to take a certain wall area of typical material and construction exposed to the wind, sun and rain, and allow all who desired to submit samples of paint to apply them on that wall. In that way the manner in which the samples were applied could be observed and all paints studied under uniform conditions. Accordingly, a portion of the Electrical Building exposed to the south, with sun most of the day, and to the lake, whence winds and rain prevail, was allocated.

Some samples were put on by the middle of August when the sun was still high and hot; the rest were applied by the middle of September. These have been under constant observation during the winter. By November, the kinds of paints to be used on all buildings had been determined and contracted for, so other areas with other exposures were selected from time to time and particular samples placed there for observation.

Paint Mediums

All procedure in the selection of paint has been based on the hypothesis that particular surface materials require particular paint; in other words, no one paint will do for all surfaces. It is possible, however, to bring the classifications to three, namely, aluminum, oil and casein. All paints used on the exteriors, and on the interiors as well, of all Exposition buildings are the products of the American Asphalt Paint Company of New York, Chicago and San Francisco.

Aluminum

Some of the Buildings could not have gone through the winter of 1932 without an additional protective coat of paint. The metal siding was beginning to corrode at the joints and the shop prime coat on the gypsum board had worn off in places. Experiments indicated that a high-grade aluminum would act best as a sealer, and accordingly during October and November a coat of Valdura asphalt aluminum was applied. The metal surfaces were wire-brushed and the gypsum board was thoroughly dusted, but with no other precautions the aluminum was applied directly to the surface. On the Administration Building where two kinds (four coats) of paints were already present, it was neces-

sary to sandblast the entire asbestos cement board surface. This work was finished in January and the aluminum was applied immediately.

Aluminum paint leafs better in warm weather than in cold and for that reason it is planned to apply all aluminum intended for finished exposure sometime during May. The areas involved are principally the "Skyride," all exposed roof areas, some exposed structural steel and all window frames and pipe rails.

Oil

The following passage describes considerations in the use of oil paint. The first statements are as of last August, when the various advantages and disadvantages of oil paints were being weighed. The second statements are based on observations made since that time and are opinions to date.

1. August, 1932. The consensus of most paint manufacturers indicates that Mr. Urban's palette cannot be matched in oil.

April, 1933. The palette has been matched quite exactly with the exception of two colors. Considerable research and study was required to do this.

2. August, 1932. The oil paints used on the buildings previously painted have faded 50 per cent over a period of four months, some colors as much as 75 per cent.

April, 1933. Samples of the colors with a china wood oil vehicle intended for use on the Exposition buildings have been placed in a fadeometer for a period equal to six months. Fading noted approximately 40 per cent, in some instances 25 per cent.

3. August, 1932. A mat dull finish is desired for soft reflective purposes during the night illumination. A flat oil still has a slight gloss which will be apparent particularly if the surface materials absorb the paint unequally.

April, 1933. The gypsum board has absorbed the vehicle unequally.

4. August, 1932. According to the code of the Chicago Painters' Union, all oils must be brushed and no brush larger than 4½ inches may be used. Since all the painting must be done during two months next spring, can the work be finished in time with this handicap?

April, 1933. A 4½-inch brush still remains the maximum in oil work. No oil can be sprayed.

5. August, 1932. At least two coats of oil will be necessary. This requires additional expense and time.

April, 1933. True.

6. August, 1932. Surfaces must be thoroughly dry for application of oil. Oil cannot be applied on a moist surface satisfactorily, and next April and May there will be many wet days.

April, 1933. True. Too true about the wet days.

7. August, 1932. Oil dries slowly, and a rain falling shortly after it has been applied is apt to ruin it.

April, 1933. More drier has been added within reason, and so far fortune has been with the Exposition.

8. August, 1932. Rain falling on an oil painted surface does not seem to wash off the dust collected on that surface.

April, 1933. True. Dust will not wash off until after the paint begins to chalk which occurs after fading has taken place.

Casein

Casein paint is a cold water paint of which the binder is a casein in emulsion rather than a glue as one generally finds in calcimine. The type being used on the Exposition buildings is manufactured in paste form. To each gallon of paste is added approximately 1½ pints of water to bring the material to the correct brushing consistency.

Casein allows a greater proportion of pigment in its solution than does oil, in that the inert pigments used for thickening purposes in oil become the covering pigments when used in casein. Many pigments are more or less transparent in oil while in casein they are opaque and give full value.

Casein has been used extensively abroad but relatively little in this country except for interior purposes. The use of casein on the exteriors of the Exposition Buildings represents the first large experiment in this country.

Casein hardens within a couple of hours after application although it takes 48 hours to dry thoroughly. When dry, it is not affected by rain in the sense that it runs or streaks; rain effects it in one way only, and that is by wearing away the surface little by little until all the paint is washed away. When such a cleansing takes place after each rain, the dirt that had collected on the surface washes off, and when the wind and air have again dried the surface it presents a completely clean face. How long it will take to wash a coat of casein away depends on the particular color, the material on which it has been applied and the exposure. It is in no sense a preservative paint, but one particularly adapted to temporary use as in expositions, and especially in an exposition such as this where pigmentation is such an important item.

The following describe consideration in the use of casein:

1. August, 1932. Since Mr. Urban's palette has been made with tempera and opaque colors it should be possible to match some colors and intensities in a cold water paint.

April, 1933. The palette has been matched exactly.

2. August, 1932. Casein gives a mat texture favorable to artificial illumination.

April, 1933. True, and it might be added, it has astonishing reflective values in the daylight as well.

3. August, 1932. Believe casein will fade but little. This depends in part on the quality of pigment to be used.

April, 1933. Casein samples matching the palette were applied for outdoor exposure last August and September. Eight months have passed since then, and with but two exceptions, colors are as bright now as the day they were applied. There has been some washing visible on the blues where but one coat was applied.

4. August, 1932. The code of the Chicago Painters' Union will allow the spraying of cold water paint. Since expedition is a consideration next spring, it will be possible to spray three times as large an area during any interval of time as could be brushed in oil. A more even surface can also be obtained with a spray gun.

April, 1933. Although the Union has allowed the use of the spray, it has been found, with the wind that usually prevails in this region, that too much paint is lost in mist. Another factor is that the Union men are not particularly familiar with the spray machine and can make better time with a brush. The Union allows the use of a 10-inch Dutch brush for cold water paint, so by virtue of this the casein is actually applied much quicker than the oil despite the fact very little is being sprayed.

5. August, 1932. One coat of casein will be sufficient for almost all the colors.

April, 1933. This is not true of all colors. The yellows, for example, are so transparent two coats are necessary. The same holds true of the white. The blues are for the most part better with two coats and in many instances the first coat of blue is being applied in oil, and the second in casein.

6. August, 1932. If the weather is rainy and surfaces of the buildings are moist, casein can still be applied for it welcomes a wet surface.

April, 1933. This is true; in fact, if the surface is hot from the sun, it is good practice to sponge it first with water before applying the casein.

7. August, 1932. Casein dries very quickly and a rain falling on it a couple of hours after application will not harm it.

April, 1933. A thunder shower followed two hours after the above mentioned samples were applied in September and no perceptible damage was done.

8. August, 1932. Casein when rained on, will throw off the dust that has collected on its surface, and in so doing retain its former brilliance.

April, 1933. True, as described.

Painting Contract

The painting is being handled on a rather unusual but satisfactory and efficient basis. The Exposition has contracted directly with the American Asphalt Paint Company, the manufacturer of all the paint used on the buildings, not only for the supply of paint, but for the labor as well. In other words, the Exposition buys units of painted surfaces from the manufacturer, who supplies the labor and the paint. The manufacturer in turn makes contracts with paint contractors who are responsible to him for the quality of work done.

This method has many obvious advantages. Every manufacturer, as a matter of pride and advertisement, wishes his paint to look its best after application. Too often irresponsible paint contractors do not take sufficient care in the application and a bad job results. The contractor in that case condemns the manufacturer, who in turn blames the contractor. The sad part is that when the work was being done the manufacturer had no control over the application. The owner meanwhile sits by and gets the bad job. With the method adopted by the Exposition contract, the manufacturer has direct control over the application of his product, and since the work will stand as an advertisement for him, he is as anxious to get a first class job as the owner.

It is also apparent that so far as the owner is concerned, this method cuts to a minimum the efforts usually required in letting general paint contracts.

Procedure

After the color schemes have been decided, regular color working diagrams of all elevations of each building and often colored isometrics are made. The areas of each color by building are estimated from these drawings, and knowing the approximate covering capacity of the various paint mediums, the total quantity of paint of each color by gallons can easily be determined.

These quantities are turned over to the paint manufacturer who immediately begins production. The Exposition meanwhile issues purchase orders for units of painted surface by color and the number of coats.

The manufacturer makes his contract with his painting contractor on the basis of unit painted surfaces. The contractor does not have to worry about the cost of the paint since he is supplied by the manufacturer, nor does he have to worry about how far his paint will carry. He merely sees that the paint is applied well and according to the drawings.

Although some painting was started as early as March, the weather has until the present time been very bad and little more than first coats of oil have been applied. Beginning April 17, however, the final coats will be released, and it is contemplated that all painting will be completed by the first of June.

COLOR TREATMENT OF EXHIBIT SPACE

By SHEPARD VOGELGESANG, in Charge of Interior Color

The Exposition buildings are designed to house exhibits; the interiors are, therefore, a series of backgrounds. These backgrounds are of two kinds: (1) space surrounding exhibits and (2) enframements.

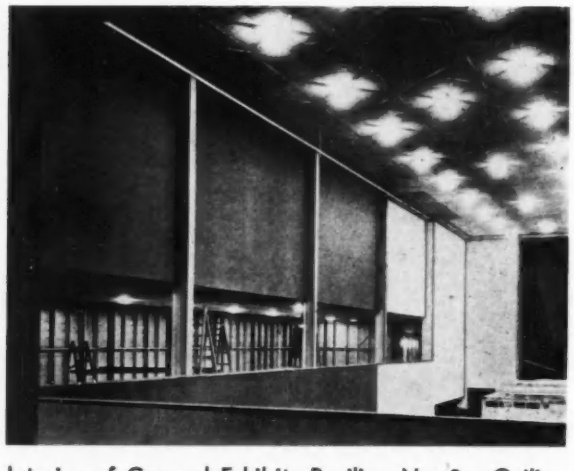
Each building is designed as a combination of great halls and connecting links. The connecting links are aisles with exhibit islands between flanking booth space, ramps with stepped exhibit space or gallery exhibit space, staircases with gallery exhibit space, staircases with no exhibit space, and exterior ramps and staircases.

Treatment of Exhibit Halls

Great halls are classified as spaces surrounding exhibits. They are of two kinds: (1) halls where the exhibit material is free standing and central, and (2) halls where the wall surface is part of the exhibit background.

The first pavilion of the General Exhibits Group is a clearly defined envelope for a central exhibit. Here the walls are treated uniformly and the decoration—a band of darker color—runs continuously around the room. The second pavilion of General Exhibits is a clear example of partial use of wall surface for exhibit purposes. Here the color is broken to lead the eye around to the drawing of oil fields and cracking machinery, which occupies the south wall. The ceiling is banded and divided to unite the front, rear and sides of the room to form a whole.

The Great Hall of the Electrical Building is another example of use of one side of the space for exhibit purposes, and the other side as a foil. The Great Hall of the Hall of Science combines the requirements of central exhibits with those of wall display but remains dominantly a design for the two exhibits occupying the long center axis. The ceiling treatment emphasizes the center axis and the great staircase and gallery enframes one group of exhibits. The other group of exhibits is placed against the background of the opposite wall. The long Hall of the Travel and Transport Group is also a combination of wall background and a surrounding for central displays. Here the separate backgrounds are used to make a vertical panel repetition similar in theory to a surrounding wall and pilaster treatment. The separate colors used in the panels maintain the separation of the panel unit, while the selection of their color for value and intensity harmony maintains uniformity of treatment.



Interior of General Exhibits Pavilion No. 3. Ceiling of stretched canvas in white, sulphur yellow and orange. Light blue green walls; part left unfinished in light color.

Treatment of Enframements

The connecting link areas are pure enframement spaces. The enframement consists of columns and lintels. Within the booth unit back of this enframement the exhibitor establishes his own background and floor arrangement. The units are generally 20 feet by 20 feet and are sold in blocks of one to ten. Exhibit islands have generally no enframement of column and lintel on the booth lines, but are surrounded by the uniform column and lintel treatments on the opposite boundary of the aisles.

Uniform column and lintel treatment is of primary importance to the connecting link type of exhibit. A Century of Progress determined on an exposed steel column and a light shelf lintel. The exposed steel column is free standing or has an engaged partition which constitutes a structurally frank unit of minimum bulk with greater plasticity than a square or round unit would offer. Contrasting colors can be carried on the web and flange and can be reversed in location to establish an axis at right angles to the main traffic route. This would be possible also with a square unit, but the rectangular prism would lack the emphasis of salient and interior planes.

The light shelf which forms the lintel is arranged for illumination behind cut-out letter signs. The background is nearly always white for purposes of efficient illumination. The shelf itself offers opportunities for continuity of color on the under soffit and the lip of the letter shelf. The soffit is usually painted in contrast to the columns below it and the lip may repeat a color of the columns. Often this horizontal band and column treatment connects with the great halls in color or announces the limit of extent of one of the units.

General Exhibits Pavilion No. 1. Light blue walls; orange red ceiling; white lighting fixture; aluminum battens.

Agricultural Building. Ceiling in aluminum. Light shelf on right has orange-red lip, midnight blue soffit; reverse on left side.

Treatment of Ceilings

Ceilings are another important connecting unit. In some cases they use the "Follow the Green Line" principle. This is applied in the Hall of Science where the Great Hall establishes electric blue, white, gray and aluminum as colors and the Science exhibits are linked by a turquoise blue ceiling and gray and white lintel and column treatments. Medical Science in the same building is announced by a blue-red lip and light shelf treatment which culminates in the niche surrounding the central medical exhibit. Yellow is used to denote the industrial exhibit areas and the three colors are combined on ramps and staircases where no special exhibit character governs.

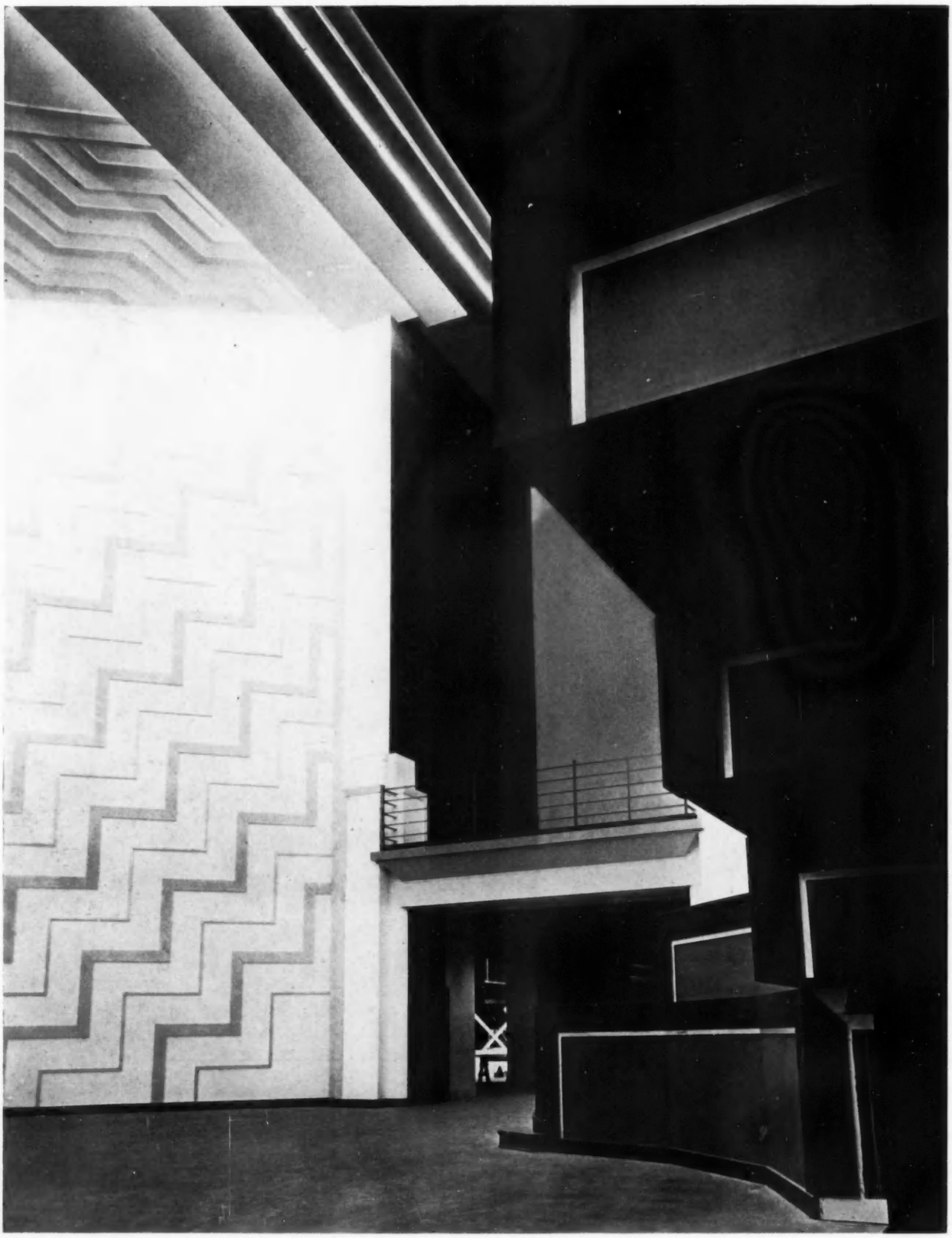
Color in Illumination

The interiors are all lighted artificially to secure a maximum of control. Colors must, therefore, be selected for their appearance in artificial illumination—a condition difficult in the blue range. Ceilings flooded directly in light, and thereby used as agents of indirect illumination for the area below, are in white or aluminum. Color on such areas would result in unpleasant color saturation in the lighting as well as reduced efficiency. Ceilings with lighting units which flood downward can be treated in color, likewise ceilings provided with units which have their own reflectors.

The other factor in artificial illumination is the gaseous tube — neon, ultra-violet, and Cooper Hewitt. The effect of these luminants on color must be watched with extreme attention. They can produce some of the most beautiful effects in lighting science—even and continuous flooding of areas with a quality of transforming a color, when properly selected, to an atmosphere rather than a material. They will react differently, however, on different colors and different materials. Blue under red may turn black, red under blue a dead brown and so on. They can be used only with white or aluminum or with a related color, blue on blue, red on red, etc. Combinations are dangerous. Green and blue, for instance, darken a blue green background astonishingly, apparently a light subtraction. Unlike incandescent light they are most effective when thrown on oil paints rather than water paints. All these factors must be determined by experiment before installations or applications are made; experience is valuable, but at present limited.

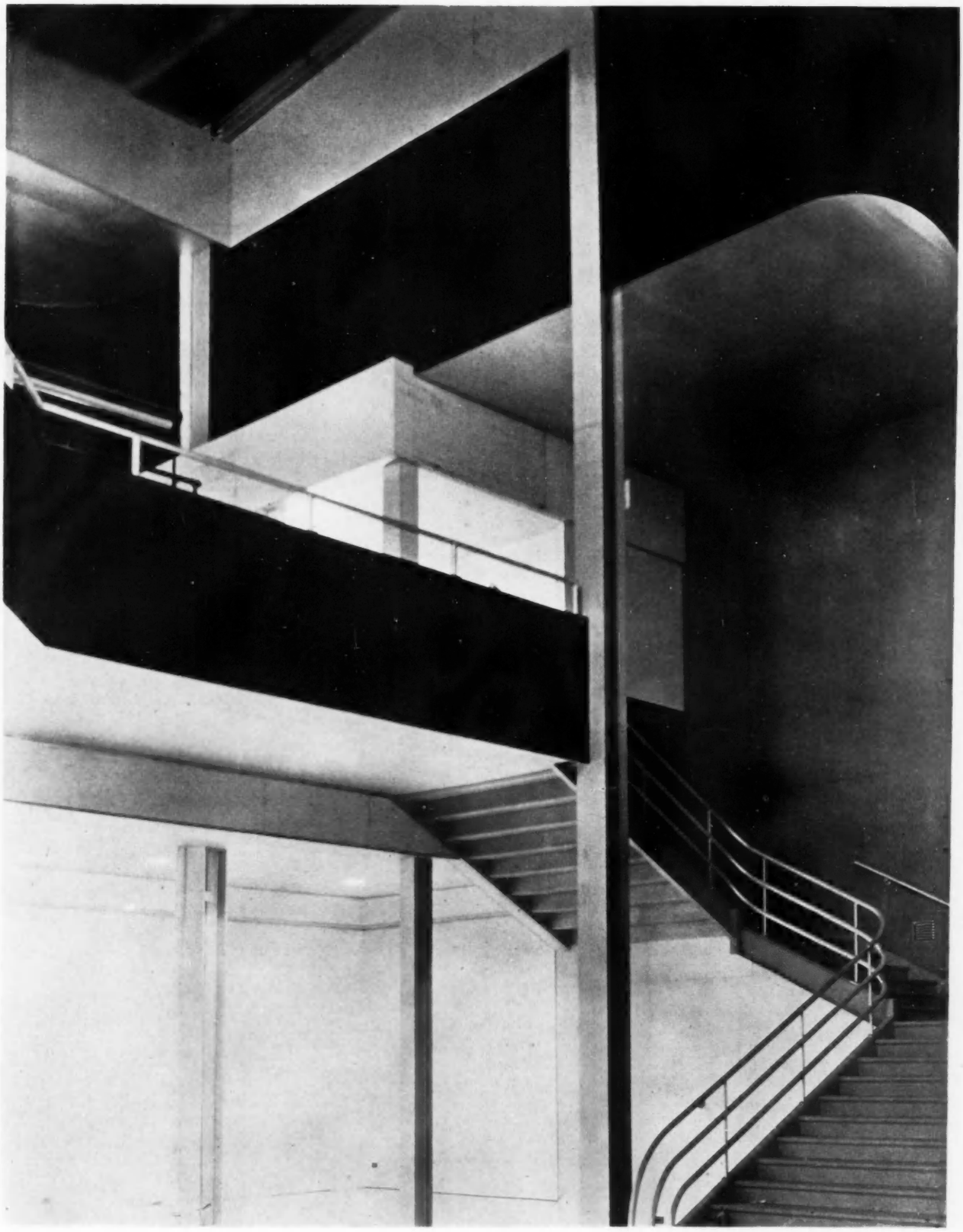
Application of Color

So far as possible application of paint follows exactly the structure to which it is applied. There are few imposed hand designs not at least defined by a batten treatment. Mural paintings are established by offsets, column and lintel enframements, and staircase or ramp dadoes. The application of paint is highly diagrammatic. The interiors of



Main hall in Hall of Science. White walls with battens in aluminum and French gray. Stair soffits in electric blue with trimmings in midnight blue and gold.

A CENTURY OF PROGRESS — CHICAGO EXPOSITION OF 1933



Staircase in Communications Building of Electrical Group. Oxblood ceiling; aluminum beams with light blue stripes. Stair ceilings in aluminum; stair wall in oxblood.

A CENTURY OF PROGRESS — CHICAGO EXPOSITION OF 1933

Electrical Building. Blue red ceiling; Federal red walls with orange effects; black walls at foot of stairs. Steel trusses painted aluminum; copper fins conceal red neon tubes.

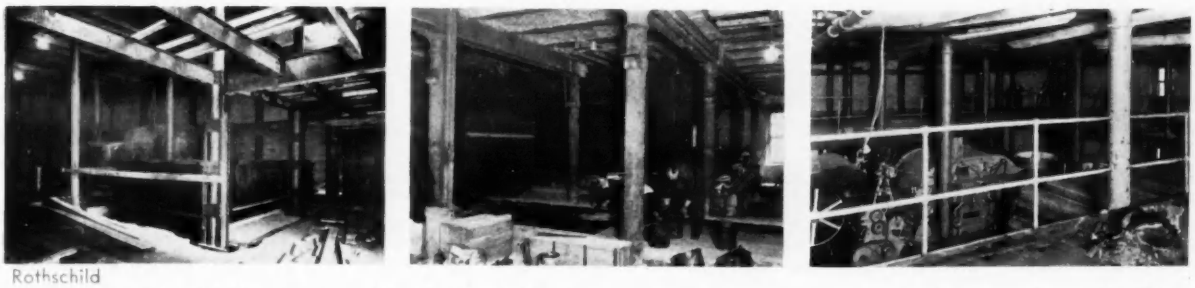
the buildings can be made to read structurally much as a chart or map is made to read by application of color. Important structural members in such a scheme are columns, ceilings, curtain walls and lintels. Usually these areas are kept distant in color treatment.

This diagrammatic application of color to architecture makes the drawings properly color diagrams rather than renderings. So far as possible the color department works with the design department in the preparation of the drawings. Treatments are suggested as they are being developed; columns are exposed against certain walls, furred over to a flush wall on others; battens and offsets are applied to define color areas as needed.

When working drawings are ready they are sent to the color section in the Exhibits Department for interior treatment and to the color division of the Works Department for exterior treatment. Both departments work directly on the working drawings and follow the same system. A color palette was developed for the exteriors and interiors with some duplications in each palette. The colors of this palette are applied full strength and without rendering to the working drawings, which are then numbered with stickers, each color being designated by a number, and photostats are made. The next step is figuring the areas; an estimate based on the unit price per color for unprimed work and on the unit prices for clearing and priming is prepared. Priming is most generally aluminum; cleaning is comprised in the priming price per unit. The unit is a ten by ten foot square; base boards and other non-area features are accounted for separately, as is scaffolding. When the order is approved by the Manager it is issued by the purchasing department. The color diagrams are then sent to the field accompanied by photostats for the use of superintendents and contractors. Changes are few and are covered by additional drawings and written memoranda to the contractors and superintendents. The major changes are caused by last minute requests of exhibitors, by consideration of later mural treatment or by failure in coverage of color.

The contract for the color is handled by two firms* associating to supply aluminum oil and varnish paints and water casein-bound paints and by a third firm supplying water paint. The colors are factory mixed to match our color palette and come on the job ready for application. Except in the case of some light colors, one coat for interior work produces the finished result. The quality of the paints is exceptional in coverage, flatness and color trueness. The contractors are directly responsible to the paint manufacturer in the first two cases, in the last to a general contractor. The supervisors of the color division make inspections two to three times a week and are on call to interpret the drawings and inspect applications at any time. They are responsible for payments according to the contract, the purchase orders, and the extras ordered by themselves or the field superintendents.

*Interior paints are chiefly products of American Asphalt Paint Company. On the second floor of the Hall of Science *Crafcolor* is used. Other casein paints are produced by a subsidiary of American Asphalt Paint Company.



Rothschild

Remodeling the Fidelio Brewery, New York: (left) reinforcing columns to carry new balcony floor; (middle) installing pasteurization tanks; (right) installing bottle-washing machines. Joseph Douglas Weiss, architect.

PLANNING OF BREWERIES: PART III*

ALTERATIONS AND ADDITIONS

By JOSEPH DOUGLAS WEISS, Architect

The Prohibition Law forced a striving industry into comparative idleness. Fully 75 per cent of the breweries discontinued operations completely; they were dismantled or stripped of all their machinery. The remaining plants tried to get along as well as they could, making cereal beverages ("near beer"), using their plant facilities for refrigerator warehouses or manufacturing ice cream, soft drinks and even cheese. The breweries were originally not equipped for these tasks and therefore could not operate profitably. With the meager returns from these sources the buildings and equipment could naturally not be maintained properly and the brewers have found themselves unprepared to meet the present demand for beer.

In the entire country no new brewery has been erected to be ready to operate within the next few months. Therefore, it seems most timely to discuss the problems which confront the architect who is called in for consultation in the modernizing, or raising the capacity of existing plants.

Because of the highly specialized character of the brewing industry it is necessary to enumerate a number of principles which should govern the opinion of any architect whose advice is sought.

Future Expansion Plan

Before any alteration is proposed a future expansion plan should be prepared. Most breweries today consist of a variety of buildings which were altered and added to at various times. Any further alteration may very easily confuse the straight line of production and prove uneconomical. The buildings or the equipment in them may be found to have an expected life of only a few years. Some parts may have outlived their usefulness and not be necessary at all; others are antiquated completely. If a future expansion plan is to be accepted by the owners it should work toward economies.

Federal or State Laws

Every proposed alteration should be checked with Federal and State laws governing brewery construction. For the purpose of this article it suffices to say that the Federal laws require a complete separation of the premises where beer is manufactured from all those premises where beer is bottled or kept after bottling. The reason for this is that the taxes on bottled beer are paid in the brewery when the beer passes through the government-gauged tanks before entering the bottling department†.

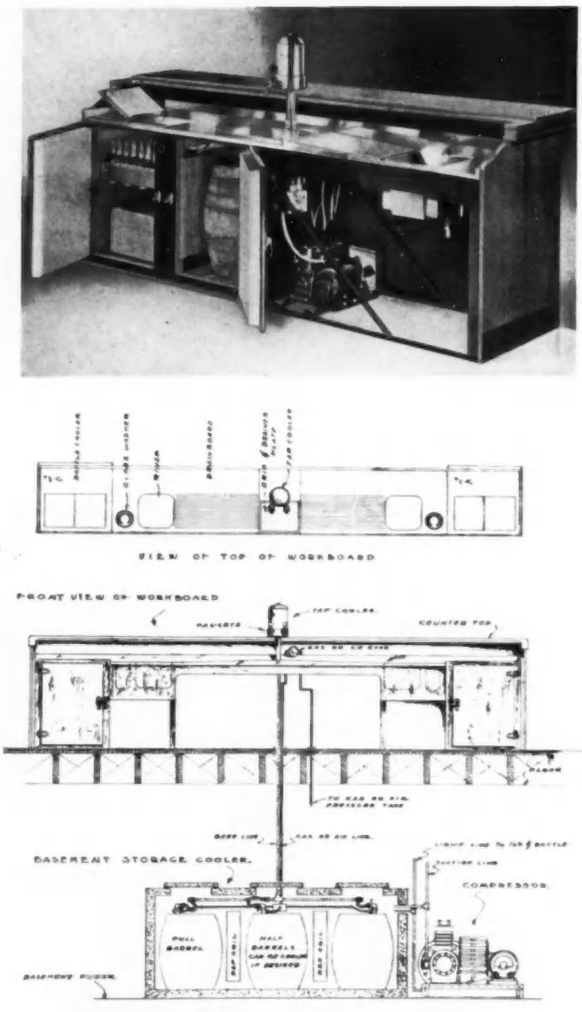
The law provides that there shall be no direct connection of any kind except the necessary pipe lines between the bottling plant and the brewery and that every door opening shall be plainly visible from a public street or an open yard. Every pipe line between the brewery and the bottling department shall be carried in a duct which should be big enough so that a Federal inspector will be able to see the pipes carrying beer, steam, air or brine through the entire length; if a pipe is carried on the outside, it has to be left exposed and plainly visible.

Carrying Capacity

Most brewery buildings are about thirty years old, but their age does not give the architect any hint as to their condition. The primitive methods of waterproofing used in the days when these buildings were built and their lack of repair make it imperative that one should investigate the condition of the steel construction, particularly in view of the fact that water is used throughout the manufacturing process. Every part of the steel frame should be tested to assure that scale and rust has not done appreciable damage to the carrying capacity of the steel. This is especially important because of the heavy loads necessary in modern breweries.

*Preceding studies of brewery planning and designs appeared in the January and February, 1933, issues of THE ARCHITECTURAL RECORD.

†The January, 1933, issue of THE ARCHITECTURAL RECORD described the process of bottling and the method of collecting Federal taxes.



Brunswick-Balke-Collender counter cooler workboard unit. Diagram shows arrangement of basement storage coolers.

Floor Drainage

Whenever the use of any floor is changed it is well to check the drainage. In many of the older breweries drains are only provided under several vats or tanks and with a change of use it may be necessary to rearrange the floor pitch. Sometimes this can be accomplished by building up the pitch with a thin layer of asphalt but in most cases the usual floors of cinder-concrete fill with concrete finish or mastic finish will have to be employed.

Clearances for Machinery and Piping

All door and window openings, and also any new reinforcement of floors or ceilings, should be checked for interference with machinery levels and the many kinds of pipe lines.

Accessibility of Mechanical Requirements

Whenever any change is proposed in the use of any space it should be checked for the accessibility of power, steam, refrigeration and water.

SPECIFIC REQUIREMENTS

A brewery plant consists of five main parts—the power plant, the brew house, the stock house, the bottling department, and storage buildings.

Any alteration to the boiler room and power plant presents no special problems. Most likely the brew house will not need any structural alterations. The reason for this is that whereas the brew house was built usually to be used for one brew a day, a process which lasts ten hours, its capacity can be easily doubled by working two shifts. Any alteration in the brew house will probably be handled by a mechanical engineer.

Stock House

The stock house, however, is usually the "neck of the bottle," where the first obstacles are met when the production of the brew house is increased. In providing more space for fermentation and storage of beer the most important problem is to find space with sufficient carrying capacity. A well-designed stock house using the most economical type of tanks should have a carrying capacity of 500 pounds per square foot.

The walls of the stock house must be insulated for a temperature of 34° F. Care should be taken to use methods of insulation which will adhere safely to the existing walls and ceilings. Door openings should be reduced to a minimum and refrigeration-type doors provided. Windows should be kept to a minimum; if they cannot be avoided they should be triple sash, fully weather-stripped.

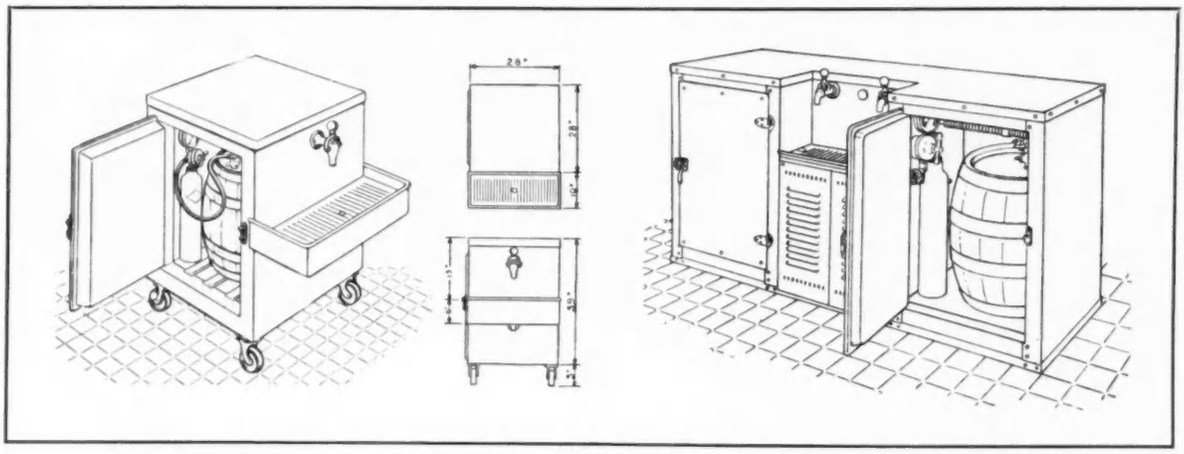
An efficient system of drainage is necessary because the tanks are often flushed: 2-inch hoses are used and four or five tanks may be flushed at the same time. A system of ducts for ventilation has to be provided.

Most breweries will build a new yeast culture room somewhere in the stock house. This room should have tile or other sanitary-type wall and floor finish. It should have artificial ventilation to assure a supply of pure air.

The type of equipment used on different floors will consist of tanks which may be made of (a) steel, coated inside with a special material, (b) stainless steel, (c) glass-enamel lined steel or (d) wood. Unless sufficient openings are available where metal tanks may be taken into the building, they will have to be assembled in the plants, which makes this type of equipment quite costly. Glass-lined steel tanks come in 3-foot sections. Wood tanks are erected on the floor.

Bottling Department

Alterations to the bottling department will be probably the most extensive in every brewery because, according to the expectation of brewers, almost 80 per cent of production will be sold in bottles. This necessitates modern machinery and handling methods.



Portable beer dispensers (left) and beer service bar (right). Liquid Carbonic Corporation.

Before any alteration is undertaken or recommended it is well to consider the following: Modern bottling equipment consists of a series of large-size steel tanks in which the bottles are pasteurized and washed. Some of these tanks will load the floors to as much as 1,500 pounds per square foot. The capacity of the machines is large and in order to handle the bottles and cases efficiently an elaborate conveying system is necessary. This, in turn, requires a great many openings through floors, walls, and partitions. The required power will necessitate the re-wiring of the building.

All these factors should be considered and carefully studied, because they work for a long drawn out and expensive type of alteration. In many cases it will be found that a new building is more economical, especially where space is available.

In the January issue of THE ARCHITECTURAL RECORD the bottling machinery was discussed in detail.

Conveyors

It is desirable also to enumerate the different types of conveyors used in this department:

Vertical lifts. Essentially freight elevators. They may be a single platform type or a series of platforms mounted on an endless chain.

Boosters. Conveyors carrying the boxes upward on an incline. They may be either belts or chains or equipped with push bars, arms or platforms, according to the size and type of packages they carry.

Gravity rollers. A series of ball-bearing rollers mounted on steel frames.

Slides. Made of sheet metal or steel strips.

Spirals. May be either slides or equipped with rollers.

Many other special type of conveyors may be used; the description of these, however, would not be within the scope of this article.

Where conveyors pass through floors, proper framing should be provided. Around the opening a curb at least 4 inches high is necessary to prevent bottles from rolling through to lower floors. In many states and cities fire shutters are required for these openings.

Conveyors usually go around each floor and care should be exercised that the fire exits are not blocked by the conveyor lines.

Provision should be made for the disposal of broken glass from the different floors. Unless a freight elevator is provided in the building a chute approximately 12 inches in diameter is perhaps the best solution.

Alterations to the Warehouse

The buildings which house the empty cases and bottles or full cases and bottles will not present any new problems to the architect. They must be equipped with conveyors, and the same care should be taken as in the bottling department. The buildings are essentially similar to commercial warehouses.

REQUIREMENTS OF BEER GARDENS AND RETAIL BEER DISPENSING ESTABLISHMENTS

Beer is sold either in bottles or on draught from barrels. Bottles should be kept in refrigerated boxes maintaining a temperature of approximately 40° F. Draught beer should be chilled to 45° F. to be most palatable. Many manufacturers are now building bar units which are self-contained, with built-in mechanical refrigerating equipment for proper temperature control.

Barrel beer requires either air or CO_2 for expulsion through the faucets. Space for the air pump or CO_2 drums should be provided near the dispensing place.

The design and construction of a beer garden or restaurant does not present any unusual problems. Most State laws provide that only restaurants having the capacity to serve at least twenty persons and clubs with certain minimum annual dues may serve beer to be consumed on the premises.

MODERNIZATION IN FIRST QUARTER, 1933

WITH SPECIAL REFERENCE TO THE INFLUENCE OF ARCHITECTS

By L. SETH SCHNITMAN

Contracts awarded for alterations and modernization of existing structures of all descriptions during the first quarter of 1933 represented about 17 per cent of the total of all construction contracts let in the 37 States east of the Rocky Mountains during the period. Alterations to existing buildings for the first quarter of the year, exclusive of engineering projects, represented 26 per cent of all contracts for building construction, both new and alteration. Total awards for modernization and alterations of all types amounted to $33,052,800 for the initial quarter of the current year. Of this amount $30,747,000 represented alterations to existing buildings and $2,305,800 went into the modernization of engineering facilities, such as power plants, bridges and the like.

What is perhaps of greater significance to the architect is the fact that during the first quarter architect-planned alterations and modernizations to existing buildings, apart from engineering, totaled $14,969,800 or almost 50 per cent of all building modernization work undertaken in the territory east of the Rocky Mountains. Although architects planned only 1,786 modernization jobs out of a total of 6,052, it is of large importance to note that the average architect-planned modernization job was 2¼ times as large as the average privately-planned modernization job. The average sized architect-planned modernization job totaled $9,032 while for privately-planned modernization jobs the average size project was only $3,967.

For commercial buildings architects were responsible for 63 per cent of all modernization contracts; for public buildings the ratio was 68 per cent; for educational buildings the percentage was 72. Architects planned 44 per cent of all modernization work in connection with existing factories; 43 per cent of hospitals and institutions; 42 per cent of religious and memorial edifices; 53 per cent of social and recreational facilities; 54 per cent of apartments and hotels; and as much as 32 per cent in the case of small houses where it has far too often been stated that the architect's influence is only nominal.

All classes of modernization work undertaken in the first three months of 1933, including both architect and privately-planned, showed a decline of 27 per cent from the total of $45,375,200 reported for modernization in the corresponding quarter of 1932. At the same time construction awards for new facilities let during the initial quarter of the current year showed a decline of 32 per cent from the corresponding quarter of 1932.

It appears altogether probable that for the remainder of the year 1933 modernization work will continue to show a better relative comparison with 1932 than new construction. Especially is this true because of the threat of inflation and the desire of realty owners to take advantage of prevailing low prices for materials.

MODERNIZATION, ALTERATIONS, AND ADDITIONS IN FIRST QUARTER 1933
(Included in F. W. Dodge Corporation's Contract Record for 37 Eastern States)

	Architect-Planned	Privately-Planned	Total	Architects' Percentage of Total
Commercial Buildings	$5,727,300	$3,415,500	$9,142,800	62.6
Factories	3,201,700	4,127,800	7,329,500	43.7
Educational Buildings	1,482,900	570,600	2,053,500	72.2
Hospitals and Institutions	288,000	387,800	675,800	42.6
Public Buildings	766,300	357,600	1,123,900	68.2
Religious and Memorial	329,800	459,800	789,600	41.8
Social and Recreational	554,600	493,800	1,048,400	52.9
Apartments and Hotels	2,104,300	1,771,400	3,875,700	54.3
One- and Two-family Houses	1,514,900	3,192,900	4,707,800	32.2
Public Works and Utilities	160,500	2,145,300	2,305,800	7.0
TOTAL	$16,130,300	$16,922,500	$33,052,800	...
Total Number of Projects	1,786	4,266	6,052	...
Average Value of Projects	$9,032	$3,967	$5,461	...

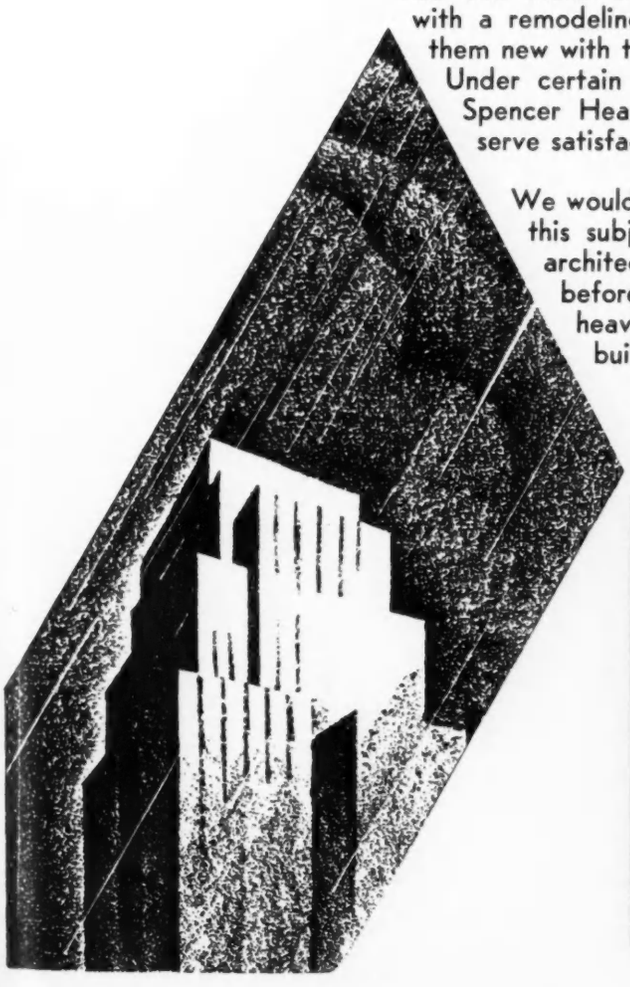
Operating costs can strike like lightning too!

Fortunate is the building that has a Spencer Central Cleaning System in these times! Its cleaning costs are the lowest ever known and yet the quality of the cleaning job is as high as at any time.

And tenants are more observing nowadays — they gather in the buildings that have clean floors and decorations unharmed by years of dirt and dust.

You can make old buildings new with a remodeling job — and keep them new with the Spencer System. Under certain conditions, the new Spencer Heavy Duty Portable will serve satisfactorily.

We would like to place the facts on this subject in the hands of every architect and building manager, before the lightning bolts of too heavy operating costs strike the buildings you are interested in.



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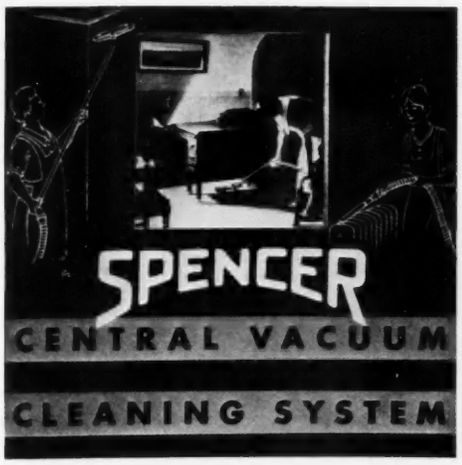

BUILDING TRENDS AND OUTLOOK

By L. SETH SCHNITMAN

Considering the widespread slowing down in business occasioned by the banking holiday the March results in the construction field must be considered encouraging. Normally March shows seasonal expansion in new construction awards; in spite of the banking holiday some seasonal expansion over February occurred. The March contract total of $59,958,500 covering all classes of construction compared with $52,712,300 for February and $112,234,500 for March, 1932.

Of larger present significance, however, is the fact that residential awards during March expanded about 36 per cent as contrasted with February; the March total for this class of work was $16,021,000 as against $11,805,300 for February and $33,208,600 for March of last year. Of the March, 1933, residential total practically 80 per cent represented awards for 1- and 2-family houses; this is of significance in that it is in the small-house field where conditions of improvement usually occur first.

For the first quarter of 1933 residential building contracts totaled $39,777,200 as against $85,130,200 for the corresponding quarter of 1932. Of the 1933 quarterly total 75 per cent was for 1- and 2-family houses while the remainder was for apartments and hotels.

MATERIAL PRICE MEASURING ROD*

The prices in this tabulation enable one to visualize at a glance the main trend of the material market. Their significance does not extend beyond that point, and the explanation below should be read carefully.

F. W. Dodge Corporation Composite Prices as Indicated in Explanation—

Material	This Month	Month Ago	Year Ago
Portland Cement	$2.05	$2.05	$2.00
Common Brick	11.69	11.70	11.93
Structural Steel	1.60	1.60	1.60
Lumber	15.50	15.48	15.85

Prices given in this comparison are composite and do not in all cases refer to one item. For instance, the price of structural steel is the composite of prices of shapes and plates f.o.b. Pittsburgh; the price of lumber is a composite of five items of Southern pine and five items of Douglas fir f.o.b. mill; the price of cement is a composite of prices in fourteen different cities per barrel, carload lots, to contractors; price of brick is composite in fourteen cities per M, delivered on the job.

*As previously published in *General Building Contractor*.

AMERICAN STEEL & WIRE COMPANY

WIRE FABRIC

Where Beauty Demands Permanence

The great buildings of today—monuments of beauty and efficiency—demand permanence of construction to preserve them throughout the ages. The best assurance of this is the short span concrete floor arch reinforced with Wire Fabric. Where such procedure is followed, American Steel & Wire Company Wire Fabric, because of its proved strength and uniformity, is generally specified as standard. Information, including engineering data on Wire Fabric for concrete reinforcement, will be furnished on request.

1831 — MORE THAN 100 YEARS of PROGRESS IN WIRE MAKING — 1933

AMERICAN STEEL & WIRE COMPANY

208 South La Salle Street, Chicago
94 Grove Street, Worcester

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

Empire State Bldg., New York
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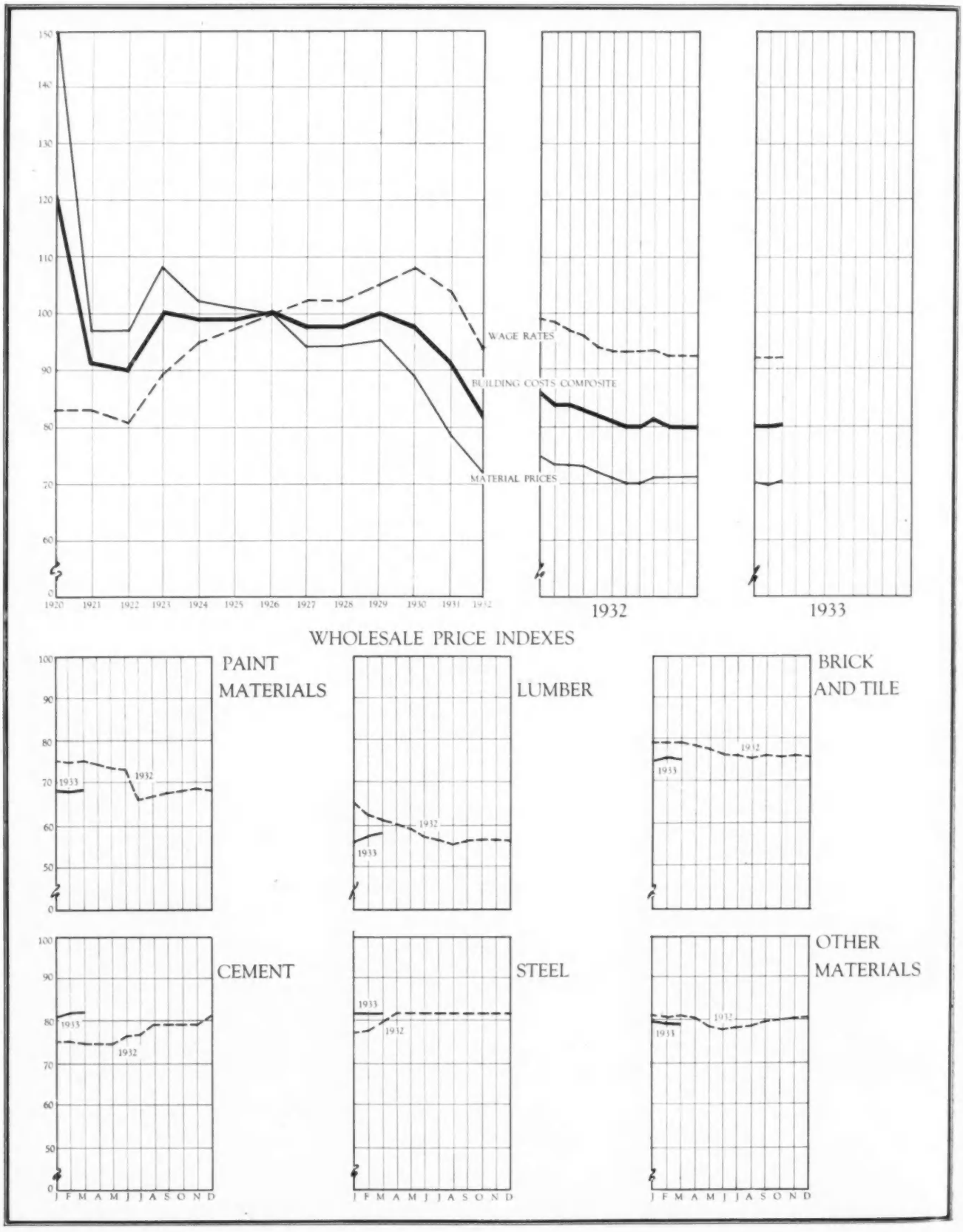
AND ALL PRINCIPAL CITIES

Pacific Coast Distributors: Columbia Steel Company, Russ Building, San Francisco

Export Distributors: United States Steel Products Company, New York

MATERIAL PRICES, BUILDING WAGE RATES AND BUILDING COSTS COMPARED

1926 Monthly Average = 100



WAGE SCALES IN THE BUILDING TRADES

Information Furnished by National Association of Builders Exchanges and Compiled by Division of Statistics and Research, F. W. Dodge Corporation, as of April 15, 1933

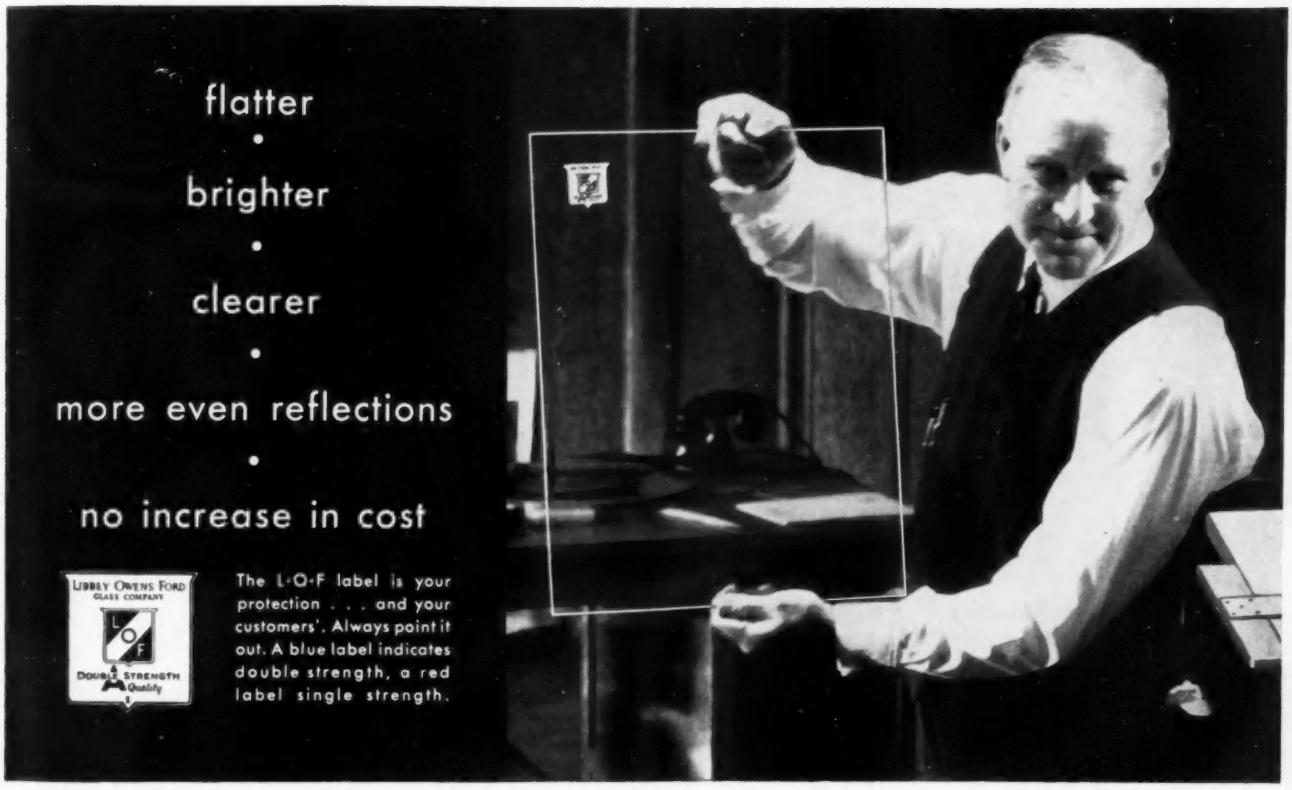
	Asbestos Workers	Bricklayers	Bricklayers' Tenders	Carpenters	Cement Finishers	Electricians	Hoisting Engineers	Iron Workers—Ornamental	Iron Workers—Structural	Laborers	Lathers	Painters	Plasterers	Plasterers' Tenders	Plumbers	Roofers—Composition	Roofers—Slate & Tile	Sheet Metal Workers	Steamfitters	Stone Masons	Tile Setters	Tile Setters' Helpers
Akron	$1.00	$1.25	$0.45	$0.70	$0.70	$0.75	$0.70	$0.60	$0.60	$0.40	*$0.87½	$0.65	*$1.00	$0.62½	$0.85	$0.80	$0.80	$0.80	$0.85	*$1.25	*$1.25	*$0.50
Atlanta	1.00	1.25 1.40	.30 .45	.70	1.25	.90 1.10	.60 1.00	.35 1.85	1.25	.25 .35	1.00 1.25	.75	1.25	.30 .45	1.25	.80	.80	.90 1.00	1.25	1.00 1.25	1.25	.40
Baltimore	1.01	*1.00	1.00	.65	*1.00	*1.10	*1.25	*1.37½	*1.37½	.20 .33	*1.25	*.90	*1.25	1.00	*1.00	.75	.75	*1.12½	*1.00	1.00	1.25	.72
Boston	1.25	*1.30	.70	*1.17½	1.17½	*1.25	1.17½	*1.20	*1.20	.70	*1.25	*1.12½	*1.37½	*.95	*1.25	*1.17½	*1.05	1.17½	*1.25	*1.30	*1.30	*.95
Buffalo	1.12½	*1.25		*1.00	1.12½	*1.30	1.00	1.12½	1.12½	.30 .60	1.12½	*1.00	1.25		1.00	.85	1.10	1.10	*1.00	*1.25	*1.18¾	
Chicago	1.37½	*1.37½		*1.31¼	1.31¼		1.31¼			.82½	*1.37½		*1.37½		1.37½	1.37½	1.40	1.37½	1.37½	1.37¼	1.37½	1.00
Cincinnati*	1.15	1.37½	.70	1.20	1.02½	1.25	.80 1.25	1.25	1.25	.45	1.31¼	1.15	1.37½	.70	1.25	.92½	1.07½	1.07½	1.25		1.25	
Cleveland*	.80 1.17½	1.00 1.37½		.90 1.12½	.90 1.12½	1.00 1.37½	1.12½	1.00 1.25	1.00 1.25	.57½ .72	.85 1.37½	.80 1.12½	.96¾ 1.37½		1.25	.66 1.15	1.00 1.37½	.90 1.12½	.90 1.25		.80 1.25	
Columbus	1.00	1.30	.62½	1.00	.80	1.00	1.15	1.25	1.25	.40	1.00	.80	1.00	.62½	1.00	.80	1.00	.80	1.00	.75	1.25	.50
Dallas††	10.50	10.00	.50	8.00	10.00	*11.00	10.00	10.00	0.00	.35	10.00	*9.00	*10.00	*.50	12.00	8.00	9.00	*10.00	12.00	10.00	*12.00	†*.75
Dayton*	1.25	1.30	.80	1.00	1.15	1.55	1.25	1.35	1.35	.35	1.10	1.00	1.25	.80	1.15½	.85	1.00	1.00	1.15½	1.30	1.50	.60
Denver††	9.00	12.00 *13.00	6.50 7.00	10.00	10.00 11.00	10.00 11.00	10.00	10.00 11.00	10.00 11.00	4.00 5.00	11.00	*10.00	12.00	7.00	11.00	7.00 8.00	7.00 8.00	9.00	9.50	12.00 13.00	10.50	†.62½
Des Moines	1.00	1.25	.65	1.00	1.00	1.00	1.00	1.00	1.00	.55	1.00	1.00	1.25	.75	1.25	1.12½	1.12½	1.12½	1.25	1.50	1.25	.80
Detroit	1.37½	1.25 max.	.55 .60	.80 1.00	.70 .90	1.25 1.40	.60 1.00	1.00 1.20	1.00 1.25	.50 .55	1.37½	.80 1.00	1.00 1.25	.70 .80	1.00 1.50	.70 .90	.80 1.00	.80 1.00	1.25 1.50	1.25 1.50	1.00 1.25	.80
Duluth	.85	1.00	.35 .45	.75	.75 .85	.90	.80	.80	.90	.35 .45	.85	.75	1.10	1.00	1.90	.70	.70	.75	.95	1.00	1.25	.80
Erie	.80 .90	1.31¼	.50 .60	.75 1.00	1.00	1.00 *1.15	1.12½	.60 .90	1.10 1.12½	.35	1.12½	.75 .90	1.31¼	.50 .60	1.18¾	.60 .70	1.00	1.00	*1.18¾	1.31¼	1.00	.50 .60
Grand Rapids	.65 .80	1.25	.40	.60	.65	.90	.75	.80	1.00	.35	.80	.60	.80	.40	.90	.50	.70	.70	.90	1.25	1.25	.50
Houston	1.00	1.00		1.00	1.00	.95	1.00			.50	1.00	.62½	1.00		.75	.60	1.00	1.00	1.00	1.00	1.00	
Indianapolis	1.32½	1.62½	.90	1.22½	1.17½	1.50	1.37½	1.45	1.45	.40 .45	1.37½	1.25	1.57½	1.00	1.00	.60 .90	1.27½	1.22½	1.50	1.62½	1.50	.60
Kansas City	.90	1.32½	.80	1.00	1.00	1.00	1.00	1.00	1.00	.60	1.00	1.00	1.06¼	.80	1.00	.92½	.92½	1.00	1.00	1.12½	1.25	.62½
Los Angeles††	10.00	8.00	6.00	7.00	8.00	7.00	8.00	9.00	10.00	4.00	10.00	7.00	9.00	6.00	9.00	7.00	7.00	8.00	10.00	8.00	6.00	†.75
Louisville	1.12½	1.00	.50	.80	1.00	1.00	1.00	1.00	1.00	.25 .35	1.12½	.90	1.00	.50	1.12½	.30 .50	.85	.85	1.12½	1.25	1.00	.50
Memphis	1.00	1.37½	.50	.50	.50	1.00	.75	.75	.75	.20	1.00	.75	1.25	.50	1.25	.25 .40	1.12½	1.12½	*1.25	1.37½	1.25	.50
Milwaukee	1.00	1.00	.90	.85	1.00	1.25	1.15	1.05	1.05	.50	1.00	1.00	1.00	.90	1.00	1.00	.92½	.92½	1.00	1.00	1.00	.65
Minneapolis	1.06¼	1.10	.55 .65	.75 .85	.75 .85	.90	.80	.90	.90	.45	.75 .85	.80	1.10	.70	.95	.70	.70	.80	.95	1.10	1.25	.65
Nashville	1.00	1.00		.65		1.00				.30	1.00	.80	1.00	.30	1.00	.65	.65	.65	1.00	.90	1.25	
New Haven*		1.20	.50 .60	.80 1.06¼	1.20	.80 1.00	1.16¾ 1.27½	1.37½	1.37½	.50 .60	1.27½	.80 1.00	1.20	.50 .60	1.06¼	.65	1.50	1.06¼	1.06¼	1.20	1.20	
New Orleans	.65 .80	1.25	.85	.55 .75	1.00	1.25	1.25	1.25	1.25	.35 .50	1.25	.75 .90	1.25	.75	1.00 1.25	.40	.90 1.15	1.05 .90	1.25	1.50	1.25	.35
New York City††	11.20	13.20	8.80	11.20	c11.20	11.20	13.20	11.20	13.20	6.60	11.20	11.20	12.00	8.50	c12.00	10.28	12.62	11.20	11.20	13.20	11.50	8.50
Oakland††	6.40	9.00	5.60	7.20	7.20	8.00	9.00	7.20	9.60	5.00	8.00	7.00	8.80	6.00	8.00	7.00	7.00	7.50	9.00	9.00	8.00	5.00
Oklahoma City††	8.00	8.00	4.00	6.00 8.00	8.00	6.00 8.00	8.00	8.00	8.00	3.50	.80	7.00 8.00	.80	4.00	.80	6.00	6.00	8.00			11.00	†.62½
Omaha	1.32	1.00	.45	.80	.90	1.00	1.00	.90	.90	.35	1.00	.80	1.00	.45	1.00	.72½	.87½	.87½	1.00	.90	1.00	.50 .60
Philadelphia	1.00	1.50		1.00	1.05	1.25	1.18½	1.25 1.37½	1.00 1.37½	35 .40	1.37½	.80	*1.37½	.90	1.04	1.00	1.25	1.25	1.04	1.25	1.25	6.00
Pittsburgh	*1.50	*1.50		*1.25		*1.56¼	1.37½ 1.43¾	*1.37½	1.37½	.70	*1.50	*1.18¾	*1.50		1.50	*1.25	*1.50	*1.31¼	*1.50	*1.40	1.33¾	.88
Portland, Ore.††	8.00	*9.60	7.20	7.20	*7.20	*8.00	6.40 9.60	8.80	8.80	7.20	*8.80	7.04	*9.60	*7.20	*8.80	7.20	7.20	*8.00	*8.80	*9.60	8.00	6.40
Reading	.70 .80	.90	.75	.75	.85	.75				.35	.75	.70	.85	.75	.90		.80	.80	.90	.75	.90	.50
Richmond	.60 .65	1.25		.50	1.00	.80	1.25	1.50	1.50	.20 to .50	1.25	.60	1.00		1.00	1.00	1.00	1.00	1.00	1.25	1.25	.35 to .50
Rochester	.91	1.12½	.55	*.90	*1.12½	*1.15½	.90	.80-*1.00	.80-1.00	.55	*.90	*.90	*1.12½	.55	*1.06¾	*.80	*.80	.90	*1.06¾	*1.12½	1.12½	47½
Salt Lake††	6.50 7.20	2.00	.62½	.90	1.00	1.00	1.00	1.00	1.00	1.50	8.00	7.00	1.25	80¼	1.00	.90	1.00	1.00	1.00	1.12½	8.00	4.00
San Antonio††	6.00 10.00	6.00 10.00	2.00 3.00	2.00 7.00	3.00 8.00	3.00 7.00	4.00 7.00	1.75 4.50	5.00 10.00	1.50 2.50	4.00 7.00	3.00 7.00	4.00 8.00	2.00 3.00	5.00 8.00	5.00 6.00	4.00 6.00	3.00 7.00	5.00 8.00	3.50 8.00	4.00 10.00	2.00 3.00
San Francisco	6.40	2.00	7.00	7.20	7.20	9.00	9.00		9.60	5.00	8.00	7.00	8.80	7.50	8.00	8.00	8.00	7.20	8.00		8.00	5.00
Seattle††	8.00	9.60	5.28	7.20	7.20	*8.80	8.00	8.00	8.80	4.75	*8.80	*4.50	*9.60	*6.40	*8.80	7.20	7.20	8.00	*8.80	9.60	8.00	
Sioux City	.90	1.00		.75	.75	1.00		1.00	1.00	.35	.90	.60 .90	1.00		1.00	.60 1.00	.60 1.00	.90		1.25	.60 1.00	
St. Louis	1.25	1.50	1.00	1.25	1.31¼	1.67½	1.35- 1.47	1.47	1.47	.78¾	1.25	1.25	1.50	1.06¼	1.43¾	1.17½	1.25	1.25	1.43¾	1.25	1.25	.76½
St. Paul	1.18	1.10		.75 .85	.75 .85	.90	.80	.90	.90	.45	.75 .85	.80	1.10	.70	.95	.70	.70	.80	.95	1.10	1.25	
Washington, D.C.	*1.50	1.75	.50 .75	*1.37½	1.25	*1.65	*1.37½	*1.65	*1.65	.75	*1.62½	*1.37	*1.75	*.75	*1.50	*1.37½	*1.37½	*1.50	*1.50	*1.25	*1.50	.75
Wichita	.60	.75 1.25	.25 .40	.40 .75	.40 1.00	.50 .87½	.30 .75	.40 1.00	.40 1.00	.20 .40	.50 1.25	.50 .87½	.60 1.25	.25 .50	1.00	.50 1.00	.50 1.00	.50 1.00	.75 1.12½	.75 1.25	.50 1.00	.25 .40
Youngstown††	*1.37½	12.00	6.80	10.00	9.00	11.00	10.00	12.00	12.00		12.00	10.00	12.00	6.80	11.00	10.20		10.00			10.00	.70

NOTE.—Where two figures are shown they are the minimum and maximum. All figures are for hour rates except as indicated. ††8-hour day. †Rate per hour. *On 5-day week basis c Correction. Asterisk after city indicates all trades on five-day week basis.

ABOVE DATA ARE WAGE SCALES AND DO NOT NECESSARILY INDICATE ACTUAL WAGE RATES BEING PAID IN THE RESPECTIVE TRADES.

LIBBEY·OWENS·FORD

IMPROVED QUALITY WINDOW GLASS



Architects who would like to know more about this improved product are invited to write the Libbey·Owens·Ford Glass Company, in Toledo, Ohio, or to call any one of the district sales offices, located in New York, Boston, Atlanta, Minneapolis, Chicago, St. Louis, Philadelphia, Kansas City, Detroit, Shreveport, Buffalo, San Francisco, Los Angeles, Cincinnati, or look in Sweet's Catalog for detailed information.

LIBBEY·OWENS·FORD
QUALITY GLASS

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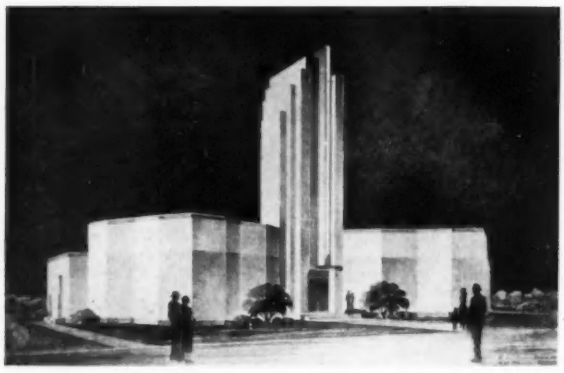
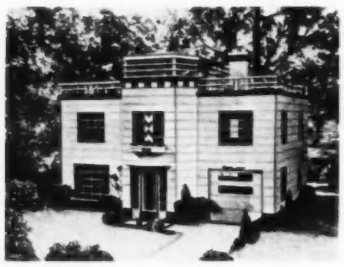
EXHIBITS AT CENTURY OF PROGRESS EXPOSITION

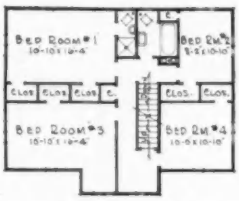
Houses Constructed for the Home and Industrial Arts Exhibit of Chicago's 1933 World's Fair

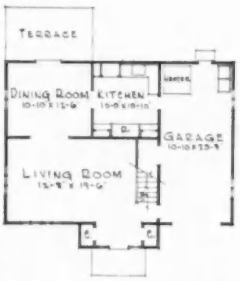


GLASS-BLOCK BUILDING

Glass as a building material is demonstrated in this structure being erected by the Owens-Illinois Glass Company. The glass block walls present a constantly changing color combination caused by the vitreous color applied to the surfaces of the block or, in other cases, by the cement paint applied to give the mortar proper suction and bond to block. Through the walls light is diffused throughout the building interior. A high degree of insulation results from the fact that the glass block has an air-tight, hermetically sealed center.





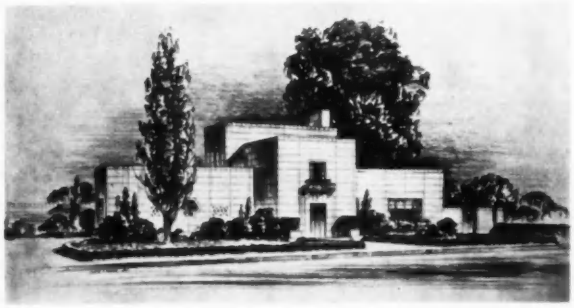


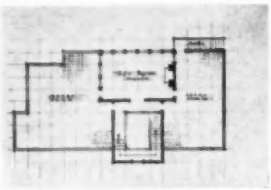
HOUSE OF SHEET METAL

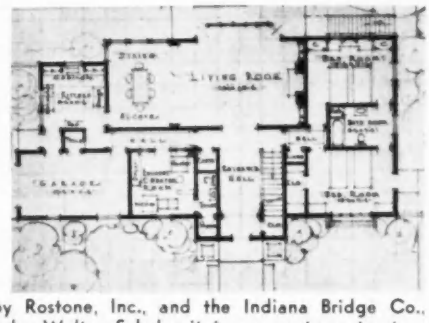
This seven-room house, built by the American Rolling Mill Company and Ferro Enamel Corporation, is constructed entirely of sheet metal, with panels of vitreous enameled sheet metal for the exteriors. Robert Smith, Jr., is the architect.

WOOD HOUSE

This house, being built by the Lumber Industries, through the National Lumber Manufacturers Association, was designed by Ernest Grunsfeld, Chicago architect. It is a one-story house, modern in design, comprising two bedrooms, a bath, a living room, kitchen, dinette, garage and heater room.

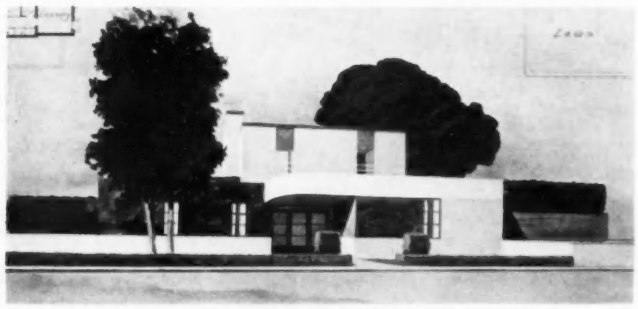






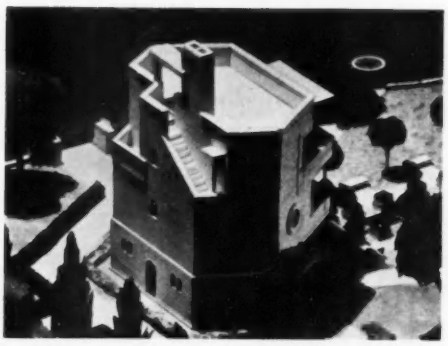
ROSTONE HOUSE

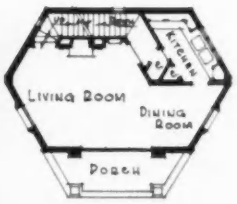
Rostone, a new material made of limestone waste and shale, is used in the construction of this house by Rostone, Inc., and the Indiana Bridge Co., of Lafayette, Ind. Designed by Walter Scholer it is a one-story structure with a glass-inclosed solarium above the living room. The roof deck will be an outdoor recreation area.

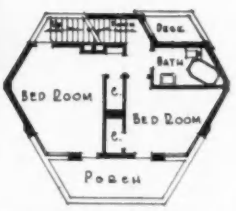


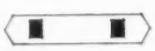
MASONITE HOUSE

This house, built by the Masonite Corporation, is a four-room bungalow with a solarium or covered room opening on to the roof. The architects are Frazier and Raftery of Chicago.









BRICK HOUSE

This house, being erected by the Common Brick Manufacturers Association, comprises three stories, balconies and a roof garden. Walls and floors are of reinforced brick. Interior walls take advantage of natural brick coloring. There are no square corners in any of the rooms. Andrew Rebori is the architect.

Pool-Wise
Reflections

Provide Safety Where Needed

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Bare feet slip on smooth-surface tiles when wet.

The slipping hazard at the swimming pool is preventable —indoor and outdoor pools.

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MANUFACTURERS' ANNOUNCEMENTS

THE EDITORS INVITE YOU TO USE THE COUPON ON THIS PAGE AS A CONVENIENT WAY TO OBTAIN MANUFACTURERS' PUBLICATIONS DESCRIBING IN DETAIL THE PRODUCTS AND MATERIALS MENTIONED.

501

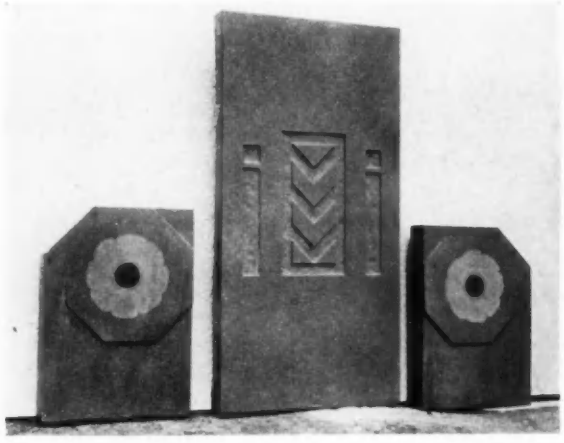
"AGELESS" SCREEN CLOTH

Freedom from corrosion, discoloration and leaching is claimed for Inconel "Ageless" Screen Cloth by its manufacturers, the International Nickel Company. Tests of this new screen cloth are said to have proven its resistance to staining, corrosion and leaching after long exposure to salt atmospheric conditions and corrosive industrial chemical discharges. Durability and life-long good appearance are Inconel's claims to the architect's consideration.

502

TORIDHEET WALL-FLAME OIL BURNER

A new wall wiping flame-type automatic oil burner is announced by the Cleveland Steel Products Corporation, Cleveland, Ohio. The new unit claims a number of improvements. The Ropeller which is attached to the lower end of the motor shaft permits feeding of fuel oil through the center of the motor. Die cast aluminum is used in the construction of the stack, adjustable legs and air shutter. The motor is a single phase, alternating current, capacitor type. It is designed for vertical operation, and its only moving part is the rotor which revolves at 1760 r.p.m. Lubricating oil is supplied to all bearings by an entirely new system of lubrication. A reservoir at the bottom of the motor contains sufficient oil for three to five years of normal operation. Distributor fans are supplied in various sizes to meet the requirements of the heating plant combustion chamber. The new burner is adaptable to 96% of home installations and can be installed in steam, vapor, hot-water or warm-air systems in new or existing homes.



503

ROSTONE—A NEW PROCESSED STONE

Every advantage in strength, permanence, hardness and chemical stability is claimed for Rostone, processed from purverized shale, alkaline earths and quarry waste, and produced in slabs and molded shapes. It is available in a variety of colors with polished or textured surface treatment and is adapted to both interior and exterior use.

As to physical properties, the following, according to the manufacturers, is a brief summary. The material is a hard, close-grained stone of smooth texture and free from lamination. As normally produced it will exhibit a crushing strength of 8,000 pounds per square inch and up, and tests as high as 22,000 pounds have been attained. Its moisture absorption is approximately 8 per cent, and this can be controlled effectively within 5 per cent to 12 per cent limits. The weight is 130 pounds per cubic foot. Tests for hardness, resistance to abrasion, toughness, freezing and thawing and fire-resistance are all most satisfactory. Rostone does not exhibit efflorescence and it forms an excellent bond with mortar. Its weatherproof qualities as well as permanence of color have been shown through outdoor exposure for a period of over five years. Cutting, carving, sand-blasting and polishing are handled as with any natural stone.

504

NEW PORTABLE PUBLIC ADDRESS SYSTEM

The development of a portable "public address" system which provides improved quality of reproduction, simplicity of operation, and is housed in a single self-contained carrying case, is announced by the RCA Victor Company. The new apparatus, together with special auxiliary equip-

To Obtain Further Information

about any products mentioned, indicate the number or name of product and send to THE ARCHITECTURAL RECORD, 119 West 40th Street, New York, N. Y.

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.....

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Sure guides

to good lighting

Macbeth "Monax" and Macbeth "Galax" are more than coined names designating two types of illuminating globes. More than sixty years of experience and research in illumination stand behind each name. We do not presume to say: "Specify!" but we do request careful inspection and consideration of both products by every architect interested in efficient and trustworthy illumination. Look for these trade marks when selecting lighting globes . . . Consult the Macbeth Catalogue in volume "D" of Sweet's. For additional information . . . or for any service we can give . . . phone your nearest Macbeth branch office or address: MACBETH-EVANS GLASS COMPANY, Charleroi, Pennsylvania.

Macbeth

Illuminating globes

ment, was designed for public address and sound reinforcement systems in a wide field: the usual public auditorium and banquet work, stage presentation in the theater, the concert hall, dance halls and at summer resorts, announcements and paging work in large industrial organizations, schools, hotels or wherever sound is to be picked up at its source, amplified and projected to either a collective or individual audience.

The new "velocity" ribbon microphone, radically different in principle from all previous microphones, is an integral part of the new RCA Victor system. This microphone is provided with an adjustable desk or table stand. The amplifier is an exceptionally "high gain" unit utilizing Class "B" amplification and providing an output of 20 watts. Two electro-dynamic type loudspeakers are mounted behind grilled openings in the front half of the carrying case, with a 30-foot extension cable which, together with the 30-foot cable connected to the microphone, permits placing the loudspeakers at any desired point from the microphone. The system is provided with volume and tone color controls, a microphone transfer switch, and a special Voice-Music switch for accentuating voice pick-up alone or with a musical background. Special phonograph equipment, consisting of a single and double turntable unit in individual carrying cases as auxiliary equipment to the public address system, has also been developed. Both phonograph units are alike in providing for operation on either 33⅓ or 78 rpm speeds, except that the larger unit has a "fader" switch for fading from one turntable to the other, as in presenting an uninterrupted program of recorded sound.

505

NEW INSULITE LOK-JOINT LATH

The Lok-Joint feature of this new lath eliminates the bevel and permits the use of a shiplap, thus maintaining an even wall thickness and insuring full insulation at the joints. The Insulite Company points out that the Lok-Joint simplifies plastering inasmuch as the metal "loks" are spaced 16" apart and support the lath at all half-way points between studs, resulting in a more firm and even plaster base.

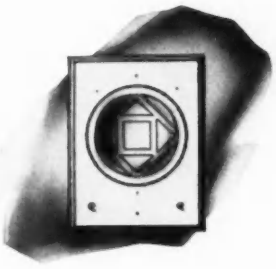
506

DARK HARD-BOARD INTRODUCED BY INSULITE COMPANY

The Insulite Dark HardBoard is announced as companion product to the Light Hard-Board now in wide use. Both Light and Dark Insulite Hard-Board are specialized products for the fabrication of articles or the inclosure of areas where hard surface, glassy-smooth finish, durability, super-transverse and tensile strength are required. They are built to resist wear and rough treatment. They may be sawed, cut, nailed, punched or glued. Both boards are easily and attractively finished with thoroughly satisfactory results.

For *building-wide* HEARING

. . . ONE system with MANY uses!

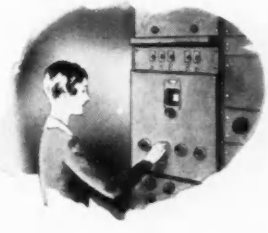


Plans for many types of large buildings should include a Western Electric Program Distribution System. This amplifies and distributes sound to all rooms where loudspeakers are provided. The source of speech or music may be microphones, a Reproducer Set or a Radio Receiver.

In schools, the principal speaks in all classrooms at once, fire drills are conducted more smoothly. In hotels, paging is surer, swifter—one orchestra plays throughout the building—speeches are clearly heard by all at conventions. Hospitals, city halls, auditoriums find this system valuable too.

A Western Electric Reproducer Set—which plays phonograph records—supplies full-toned music for a few cents an hour. Schools use it for music appreciation courses, dancing classes. Hotel guests enjoy music in their rooms. Hospitals put music "on the staff" to speed convalescence.

Broadcast programs—brought in by one or more centrally located Western Electric Radio Receivers — may be similarly distributed. Sound transmission experts will gladly assist you in planning installations. Western Electric's name assures utmost quality and dependability.



Western Electric

PROGRAM DISTRIBUTION AND PUBLIC ADDRESS SYSTEMS

Distributed by* GRAYBAR *Electric Company

GRAYBAR ELECTRIC CO. AR 5-33
Graybar Building, New York, N. Y.

Gentlemen: Please send us illustrated booklet on the Program Distribution and Public Address Systems.

NAME.....

ADDRESS.....

CITY..... STATE.....

507

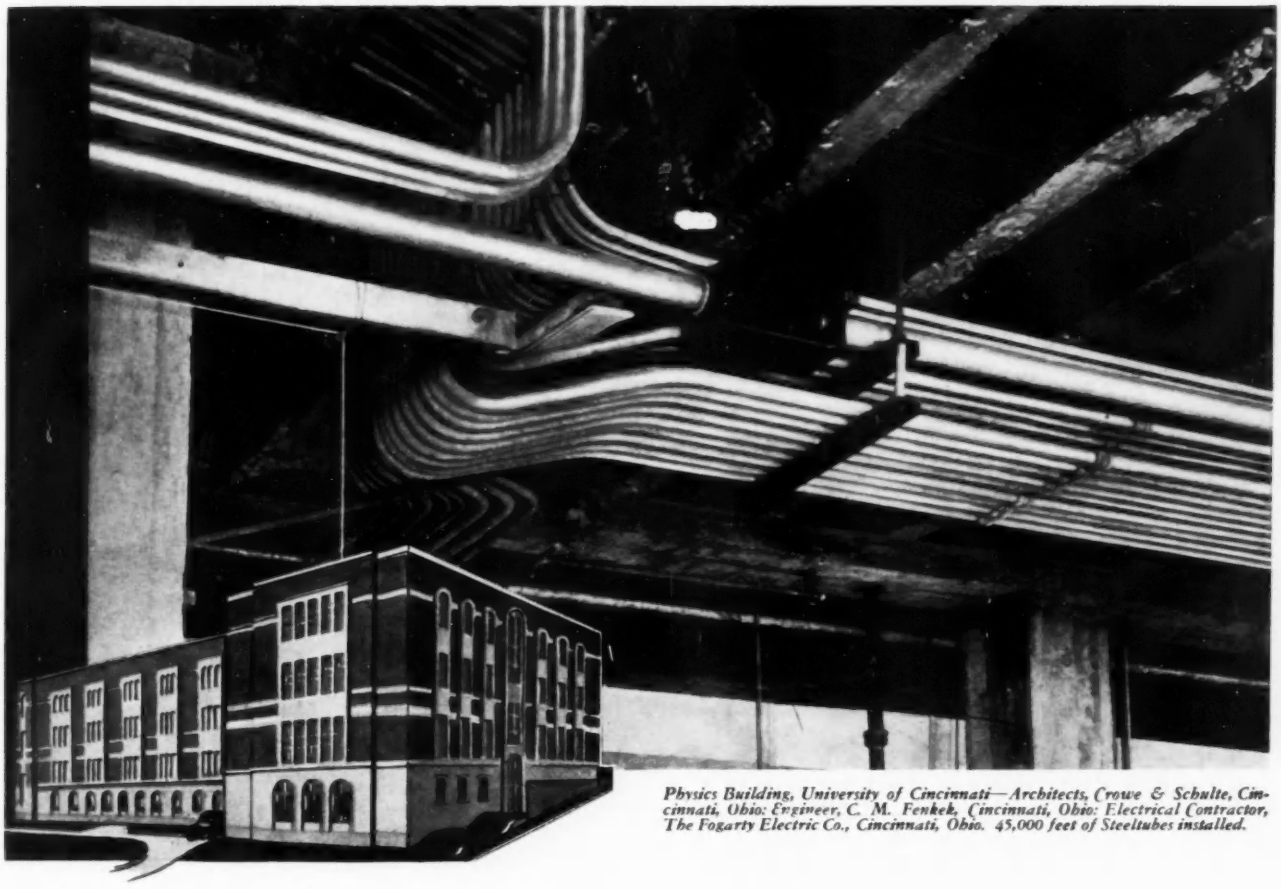
ALUMINUM IN ARCHITECTURE. Aluminum Company of America, Pittsburgh, Pa. 1932.

This book on aluminum was compiled as an illustrated handbook on the qualities and uses of aluminum for building. The compilers of the handbook had the architect in mind and the information given is of a nature that should assist in the solving of many problems concerning trim, structural aluminum, fabricating, finish and protection. The various kinds of aluminum are described with full discussion of the newer alloys and methods of manufacture. The physical properties are presented in a semi-technical manner. Of particular interest are the many applications that are now made of aluminum. The illustrations clarify the subject of uses and how this metal is applied to building uses.

TRADE ANNOUNCEMENT

The B. F. Sturtevant Co. and their subsidiary, The Cooling & Air Conditioning Corp., have moved and consolidated their New York Office in the Graybar Building, 420 Lexington Avenue, New York, N. Y. This company specializes in the manufacture and installation of complete air conditioning plants for all types of buildings and industrial uses.

UNIVERSITY OF CINCINNATI
. . . APPROVES STEELTUBES



Physics Building, University of Cincinnati—Architects, Crowe & Schulte, Cincinnati, Ohio: Engineer, C. M. Fenkel, Cincinnati, Ohio: Electrical Contractor, The Fogarty Electric Co., Cincinnati, Ohio. 45,000 feet of Steeltubes installed.

THE conduit installation in the recently completed Physics Building of the University of Cincinnati—like those in so many new and up-to-date structures, is Steeltubes throughout.

Architects struggling with the multiplicity of problems that present themselves with every building project will realize that there must be reasons for this. And there are plenty of sound reasons.

Builders today demand a better product at a lower price—Steeltubes gives the same degree of mechanical and electrical protection as higher priced old-style threaded rigid conduit. They are looking for products that speed up construction. Steeltubes is easy to cut and bend, requires no threading, and joints are quickly and easily made. And Steeltubes has received broad code and Government approval, so it is acceptable practically everywhere.

Write Steeltubes into your specifications. Protect the building owner from high costs. Believe the contractor when he tells you that he can give you a more workmanlike installation without any compromising on quality if Steeltubes is used. Steeltubes is stocked in all large jobbing centers. For additional details see Sweet's Architectural Catalogs, or write for literature.

THE MODERN THREADLESS RIGID CONDUIT

Steeltubes

OUR CATALOGUE IS FILED IN SWEET'S

Electrical Division

STEEL AND TUBES, INCORPORATED

World's Largest Producer of Electrically Welded Tubing

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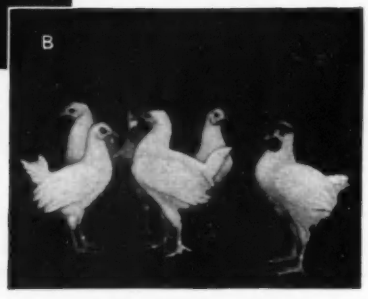
Would you believe these chicks are the SAME AGE ?

A. Six weeks old—sick, weak, and victims of rickets . . . because they were raised under ordinary glass . . . Four of the original seven died.



B. Six weeks old . . . all seven alive and normal, healthy, strong, and entirely free from rickets . . . because they were raised under Lustraglass.

Carefully controlled experiments by an authority on poultry husbandry definitely prove the biological benefits of sunlight transmitted by Lustraglass. The chicks raised under ordinary window glass were deprived of the ultra-violet rays which produce Vitamin D and prevent rickets. The chicks raised under Lustraglass received plenty of ultra-violet rays and were free of any rachitic symptoms. The photographs above show the remarkable difference.

The results of these experiments are confirmation of the fact that Lustraglass transmits a substantial volume of ultra-violet rays of sunlight . . . Because it transmits these valuable rays and because it is a clearer, whiter, flatter, more lustrous glass, and because it costs no more than any good window glass, architects and builders everywhere are specifying Lustraglass for every type of building. Send for the Lustraglass booklets A-430 and P-332. The latter contains an interesting report on the experiment with chicks.

Look for this label on every light of genuine Lustraglass.

LUSTRAGLASS
the ultra violet ray window glass

AMERICAN WINDOW GLASS CO.
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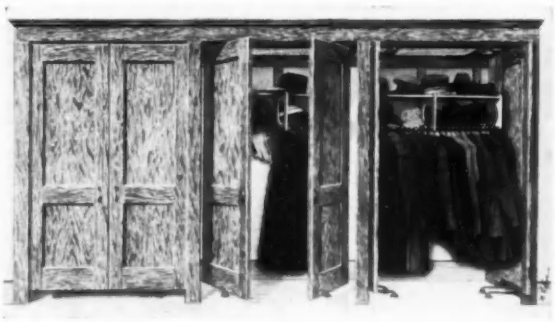

EVANS "Vanishing Door" WARDROBE

●

Class J equipped with either "Floor" type (as illustrated) or "Jamb" type hinges. This is Class D wardrobe if made with flush doors.

CLASSROOM WARDROBES
High in Quality — Low in Cost

This type occupies a recess flush with the wall. Plaster back and ends. No partitions, but with mullions between pairs of doors. Wire mesh ceiling. Blackboards if required.

The "Vanishing Door" hinges on which the doors are hung are made with double pivoted arms and swing the doors back into the wardrobe entirely out of the way. Simple—trouble-proof—and last as long as the building.

Wardrobes are furnished complete in the knockdown, with all woodwork cut to size, and only need to be nailed in place. The hinges are easier to put on than common butt hinges. The entire cost of installation is small.

We make many other types of school wardrobes, fully illustrated and described in 1933 Sweet's, Volume C, pages 774-781.

W. L. EVANS
WASHINGTON, INDIANA, U. S. A.

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. . . it assures the high quality of Hospital Equipment

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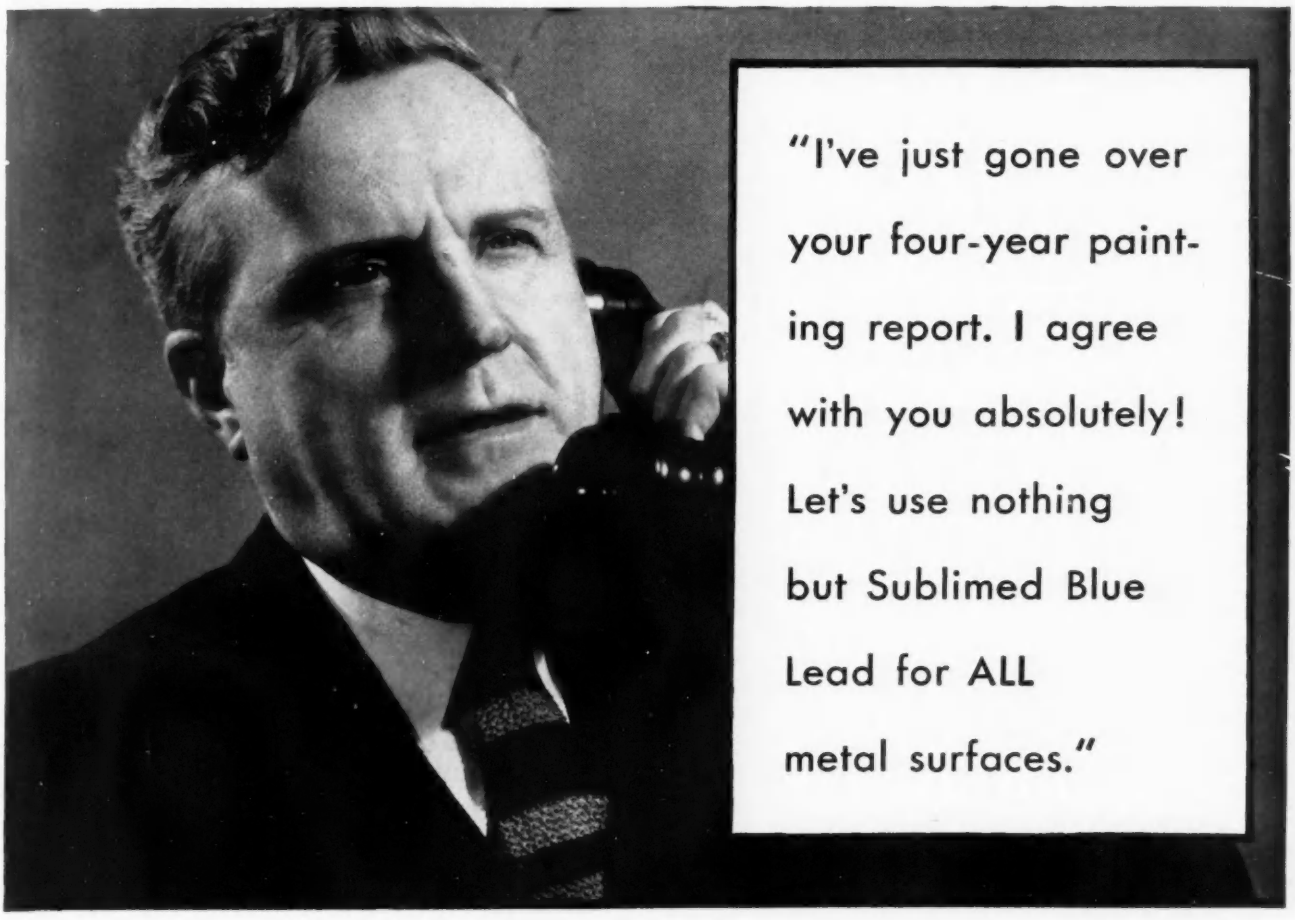
● Whenever you specify that hospital equipment be made of Monel Metal, you can rest assured that it will have quality built right into it. The presence of silvery Monel Metal is your assurance of inherent cleanliness and lasting durability. • Whether you are building a new hospital or remodeling an old one, be sure to specify Monel Metal for food service, laundry, clinical and built-in cabinet equipment. Send for literature.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET NEW YORK, N. Y.

Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.



• Wherever Sublimed Blue Lead has been given thorough tests in competition with other high grade rust-inhibitive paints, it has won enthusiastic supporters. More and more, everywhere, it is being accepted as the most efficient paint for *all* metal surfaces.

• Sublimed Blue Lead can be bought in paste form, under the Eagle label, or in ready-mixed form from reputable manufacturers. We recommend that architects interested in cutting costs, effecting desirable economies, investigate Sublimed Blue Lead at once. Its virtues are many.

• **Being pure lead,* it is most enduring — gripping metal surfaces tenaciously. **Being of extremely fine particles,* it stays in suspension, doesn't harden in the container or clog the spraying nozzle. Equally satisfactory for brushing, spraying or dipping. **Chemically stops corrosion,* because of great basicity. **Brushes easily,* flowing out like enamel. Painters like it. **Offers greatest economy. First,* because lower in first cost than red lead or other high grade metal paints. *Second,* because of its greater coverage — 600-800 feet per gallon. Offers economy of 40-50% in material cost. *Third,* because it is so long lasting. • For complete facts, mail the coupon for a free sample and descriptive book, "How to Use Sublimed Blue Lead."

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THE FIRM OF GRANGER AND BOLLENBACHER consists of Alfred Granger, John C. Bollenbacher, Frank L. Venning and John O. Merrill. This group of men have individually or in association built many well known structures, among them the Chicago and Northwestern Railway Terminal in Chicago; the George Smith Memorial addition to St. Lukes Hospital in Chicago; the Hyde Park Y. M. C. A.; Women's Memorial Hall, Indiana University; Indiana Union Building at Indiana University; Hyde Park Community M. E. Church, East Walnut Hills, Cincinnati; Chicago Club; Peirce Hall, at Kenyon College, Gambier, Ohio; and Medical and Dental College Building, University of Illinois in Chicago.

Alfred Granger is a Fellow of the American Institute of Architects
- Graduate of Kenyon College, 1887
- Graduate of Massachusetts Institute of Technology, 1889
- Beaux Arts, Paris—two years
- Practice since 1893
- Past President Chicago Chapter American Institute of Architects
- Past President Illinois Society of Architects
- Founder and Past President Architects Club of Chicago
- Architectural Adviser Tribune Tower Competition
- Member of Board of Trustees, Lake Forest Foundation for Architecture and Landscape Architecture
- Sc. D. Kenyon College, June 1930

John C. Bollenbacher is a Fellow of the American Institute of Architects
- Graduate of Indiana University, 1906
- Graduate of Massachusetts Institute of Technology, 1909
- Past President Chicago Chapter American Institute of Architects and active on Committees of the National Society

Frank L. Venning is a Member of the American Institute of Architects
- Graduate Armour Institute Architectural School, 1906
- Atelier Bennett—Atelier Puckey and general practice, 1906-1912
- Foreign study Rome—1913-1914
- Faculty University of Illinois—1915-1916

John O. Merrill is a Member of the American Institute of Architects
- University of Wisconsin College of Engineering, 1914-1916
- Graduate of Massachusetts Institute of Technology, 1921
- Past Director American Specifications Institute
- Past President University of Wisconsin Club of Chicago
- Treasurer Chicago Chapter American Institute of Architects

Dodge Report Service welcomes this opportunity to recognize the firm of Granger & Bollenbacher, and to thank these distinguished architects for their statement, which is reproduced on the facing page.

The Chicago Club, 400 South Michigan Avenue, Chicago, a recent commission executed by Granger & Bollenbacher, is one of the truly distinctive buildings of that city. An exterior view is shown at the left, while the south fireplace in the lounge is seen in the reproduction on the opposite page.

DODGE REPORTS

A Daily news service established in 1892, on building and engineering operations, that covers the 37 states east of the Rocky Mountains.

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ALFRED GRANGER
JOHN C. BOLLENBACHER

In this series of informal sketches about famous architects, we have been privileged to publish letters from:

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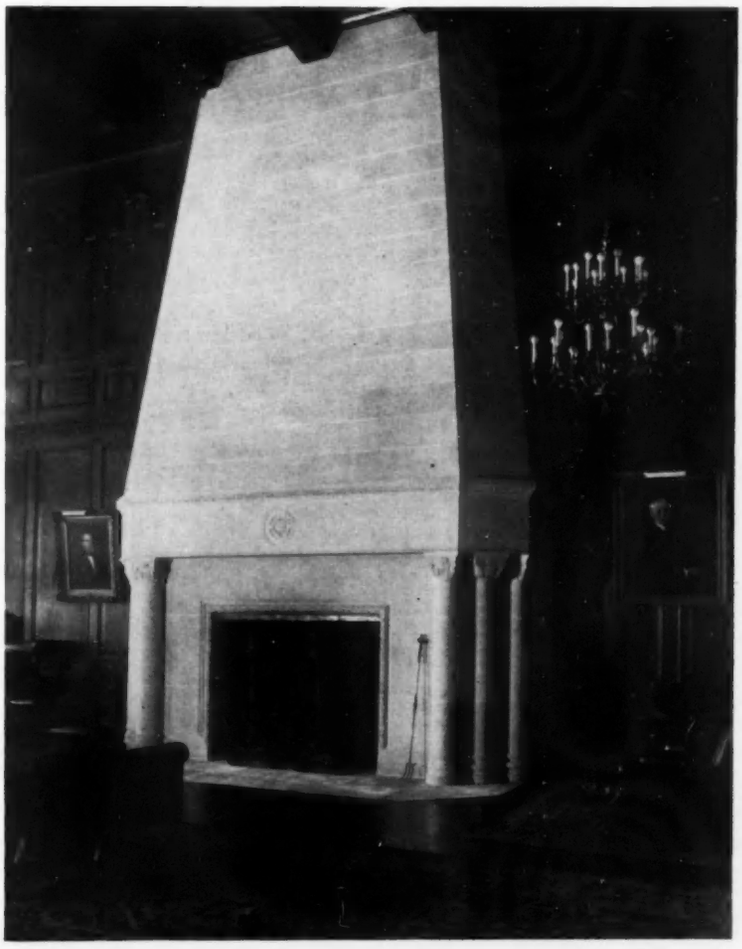

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