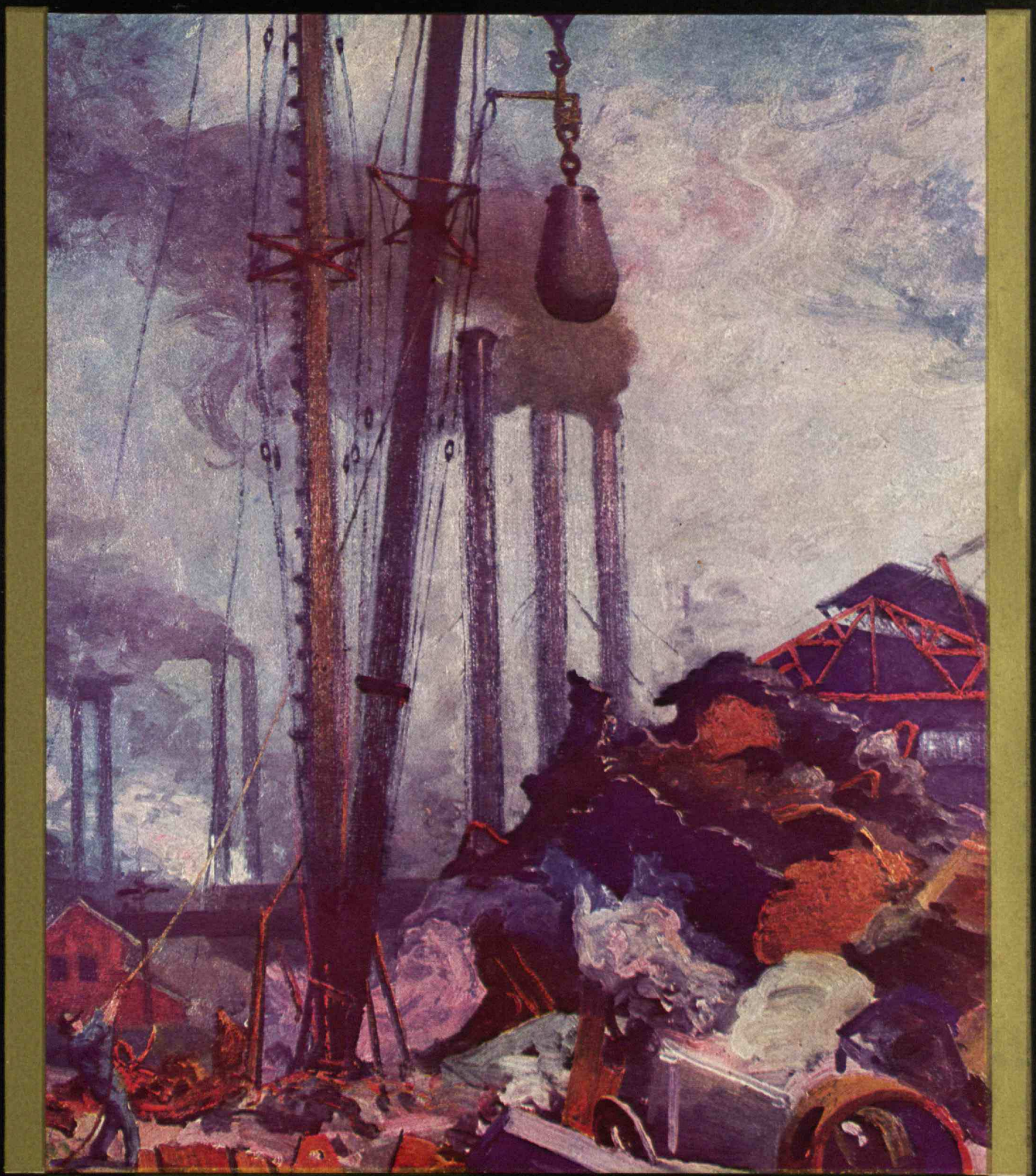
THE TECHNOLOGY REVIEW

JULY 1931



SERVICE

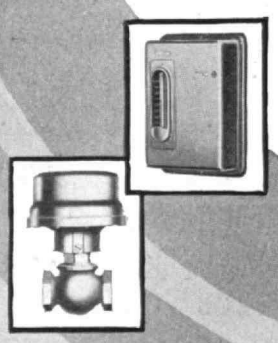
30 Convenient Johnson Branches Insures Emergency Attention within Twenty-four Hours Anywhere. Every Johnson Installation Inspected Annually Without Charge. Each Johnson Installation made by Johnson Mechanics Only.

Los Angeles Public Library

Bertram G. Goodhue, ... *Architect*
C. M. Winslow, ... *Associate Architect*
C. M. Winslow and B. G. Goodhue Associates, ... *Continuing Architects*

How Plenum Heating System In Los Angeles Public Library Is Johnson Controlled

THE Los Angeles Public Library is an outstanding modern building, using the Plenum System Of Heating, Johnson Controlled. The mixing dampers in the ducts supplying air to each room and other spacious area of the building, are controlled by Johnson Model Intermediate Thermostats . . . . opening and closing the dampers gradually, and holding the dampers partially open or partially closed for a short or long period as conditions require. There are also booster heaters for each duct; and these booster heaters are controlled by the same Johnson Model Intermediate Thermostats, operating the steam valves . . . . so that as the hot air damper closes the steam valves are also closed. The remainder of the Johnson System installation in this building consists of Johnson Duct Thermostats on the tempering and reheating coils of the building's heating and ventilating apparatus . . complete Johnson Control governing the building's condition at all times.



JOHNSON SERVICE COMPANY
149 E. MICHIGAN *Established 1885* MILWAUKEE, WIS.

Albany	Des Moines	Portland
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Chicago	Los Angeles	Calgary, Alta.
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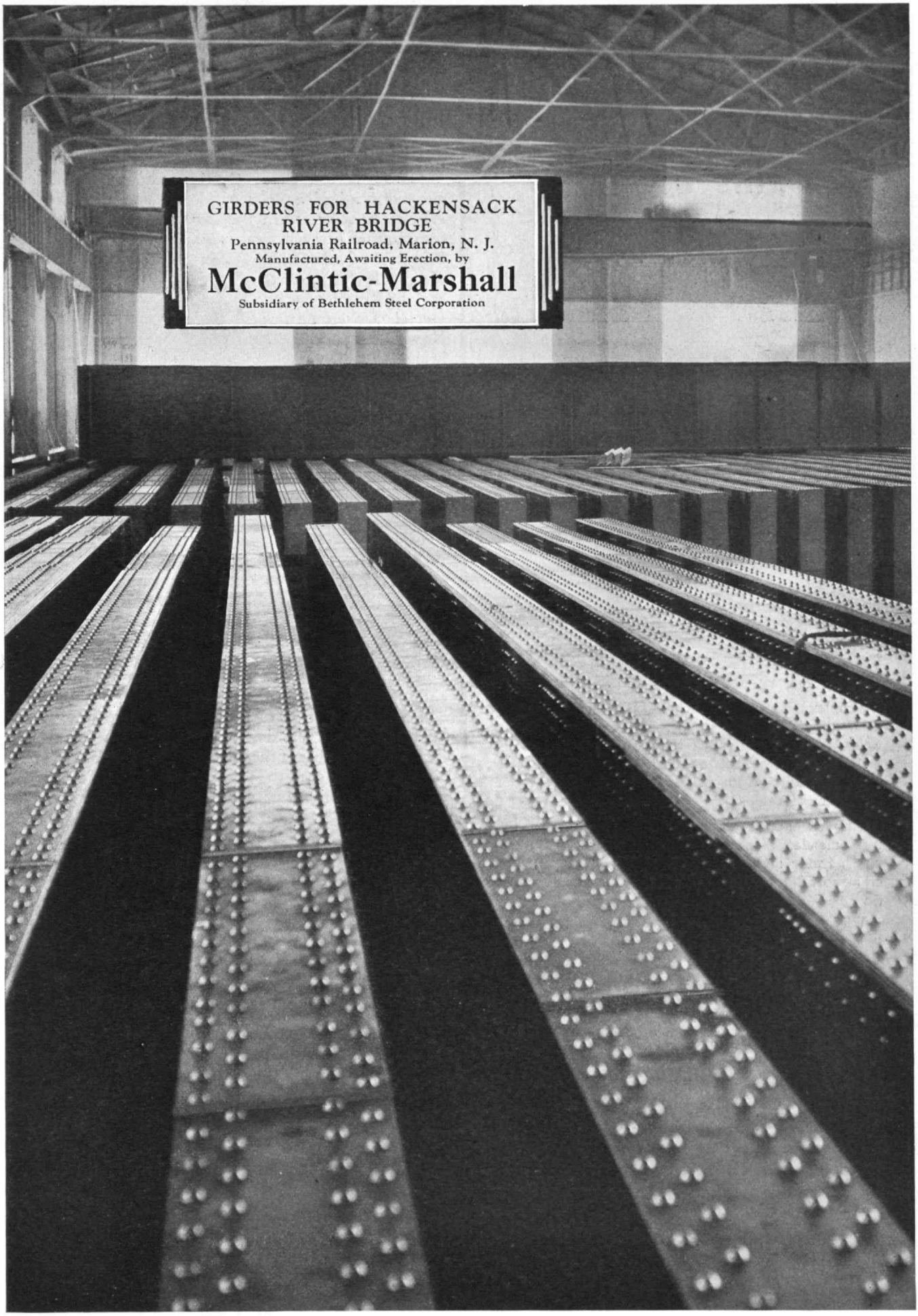
Dallas	Philadelphia	Toronto, Ont.
Denver	Pittsburgh	Vancouver, B.C.

JOHNSON HEAT AND HUMIDITY CONTROL

THE TECHNOLOGY REVIEW, July, 1931. Vol. XXXIII, No. 9. Published monthly from October to May Inclusive and in July at 10 Ferry Street, Concord, N. H. Publication date: twenty-seventh of the month preceding date of issue. Annual subscription $3.50; Canadian and Foreign subscription $4.00. Entered as second-class matter at the Post Office at Concord, N. H., under the Act of March 3, 1879.



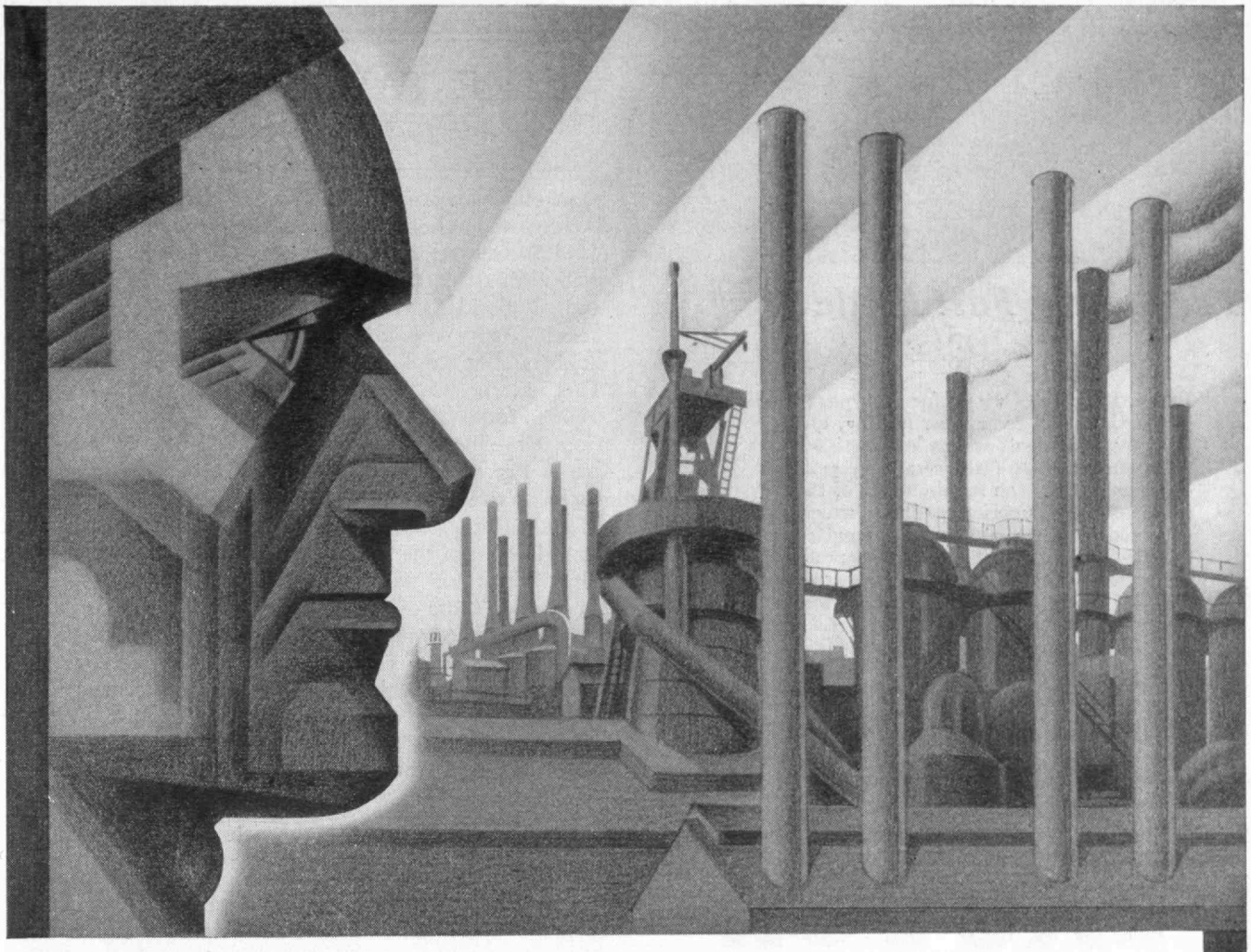
T. J. Skillman, *Chief Engineer*, Pennsylvania Railroad Company A. R. Wilson, *Engineer of Bridges and Buildings*

THE TABULAR VIEW

OTHMAR H. AMMANN, author of "Brobdingnagian Bridges" on page 441, is internationally distinguished as a bridge engineer. He has been connected in various capacities with the investigation, design, and construction of such famous structures as Queensboro Bridge, the Quebec Bridge across the St. Lawrence River, the arch bridge across the St. John River for the Provincial Government of New Brunswick, the bridge of the C. & O. railroad at Sciotoville, Ohio, and as assistant chief engineer for the design and construction of the Hell Gate Bridge over the Hudson at 57th Street, New York. From 1923 to 1925 he was construction engineer for New York City, from which position he was appointed Chief Engineer of Bridges of the Port of New York Authority. In this new position he was in general charge of the planning and construction of the Outerbridge Crossing over the Arthur Kill, the Goethals Bridge, the arch bridge across the Kill van Kull, and the suspension bridge across the Hudson between Fort Washington, N. Y., and Fort Lee, N. J. He is also a member of the board of engineers for the proposed bridge to span the Golden Gate at San Francisco, the greatest project of its kind conceived by engineers. Since 1930, he has been Chief Engineer of the Port of New York Authority in charge of planning, construction, and maintenance of all its projects, including preliminary studies for the suggested vehicular tunnel under the Hudson at Weehawken, and for various terminal projects. ¶ Mr. Ammann is a native of Switzerland and a graduate in civil engineering of the Swiss Polytechnic Institute at Zurich in 1902. He came to the United States two years later and became a citizen in 1924. In 1918 he was awarded the Thomas Fitch Rowland prize of the American Society of Civil Engineers for his paper on the Hell Gate Bridge and Approaches, and this June he received the degree of doctor of engineering from New York University. His article in this issue is the outgrowth of an Aldred Lecture delivered by Mr. Ammann at the Institute during the past year.

"OUR race has lived on earth for at least a million years, and for only 5,000 years have there been any written records to tell us the kind of man who lived here. For all the rest of this time, if we would rebuild the picture of his life, we must depend on the fragments he left behind him, and of these, the least fragmentary are the remains of his stone construction." For all these many

(Continued on page 436)



STEEL

The Steel Mill»» the birthplace of the raw materials of many industries. Here the grinding wheel makes its first impress in this world of metals.

Revolving at 9000 surface feet a minute, speed of a mile every 35 seconds, the grinding wheel attacks and removes the outer shell of the virgin steel billets.

Between rolls, precision ground, steel bars and sheets of many lengths and shapes pass on and out to the thousands of fabricating industries.

The Steel Foundry»» tons upon tons of metal snagged from castings . . . . thousands upon thousands of grinding wheels consumed annually.

Thus the streams of sparks of the grinding room announce the Norton entry into the world of steel »» Norton grinding wheels and Norton grinding machines produced by Norton Company at Worcester, Massachusetts.

NORTON

Grinding Wheels . . . . Abrasives for Polishing . . . Abrasive Aggregate . . . . Floor and Stair Tile . . . . Grinding and Lapping Machines . . . . Refractories . . . . Porous Plates . . . . Pulpstones . . . .

Great Industries No. 2

THE TABULAR VIEW

(Concluded from page 434)

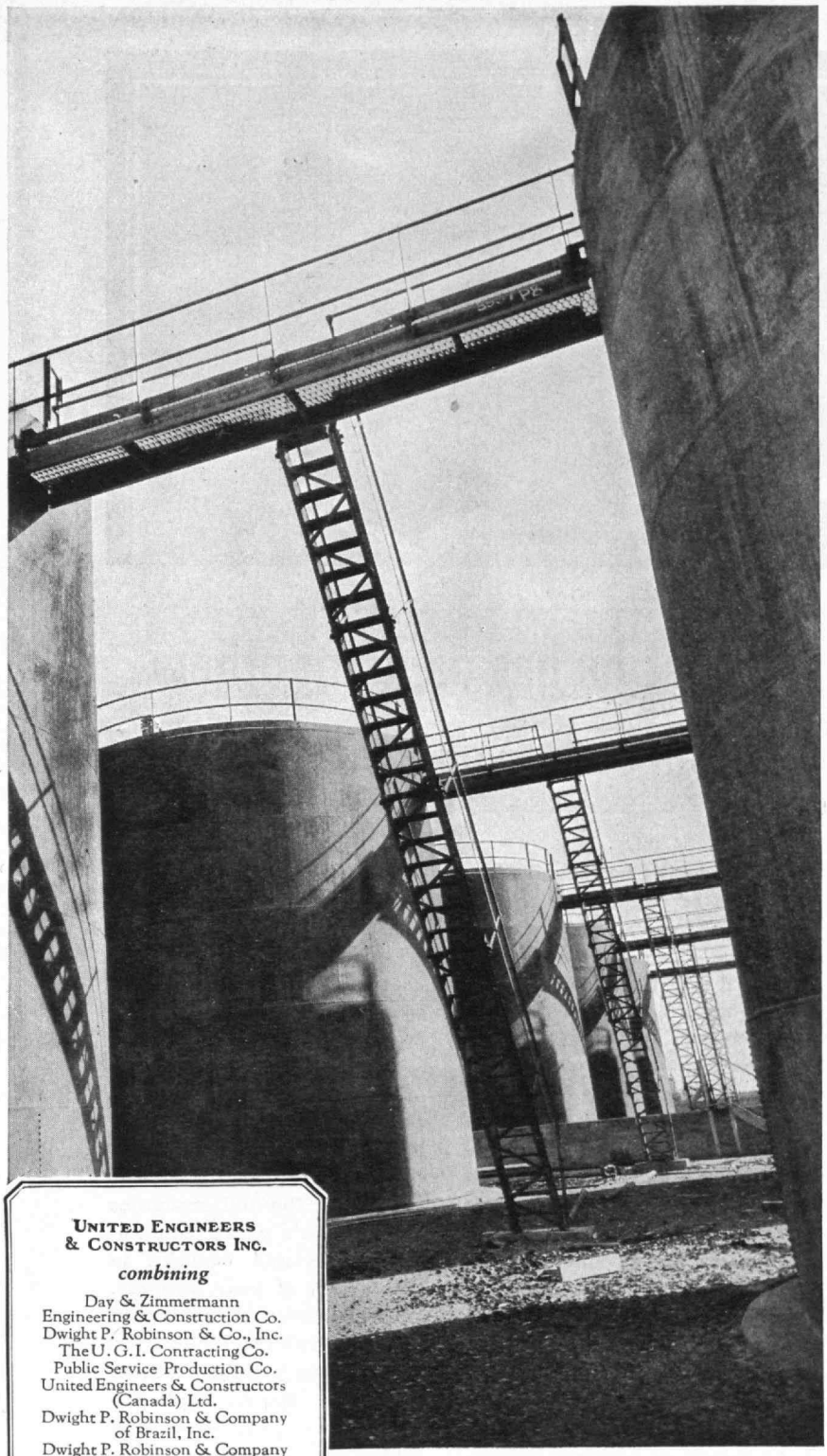
years of construction there is no adequate history for the layman, and in his article appearing on page 445, THOMAS F. MCSWEENEY ably sets forth the need for such a History of Building Construction. His is the voice of a builder, and the builder's voice has been long in making itself heard. The history of his profession is Mr. McSweeney's hobby and he has collected a large library on the subject. This year he has been giving a course on his favorite topic to students in the Department of Building Construction at the Institute. Mr. McSweeney is himself a graduate of the Institute in the class of 1916, obtaining his bachelor's degree from the Department of Sanitary Engineering. Until recently, he was Vice-President and General Manager of the Pilgrim Granite Corporation. ¶ The illustrations for this article were done by DAVID J. ABRAHAMS, Class of 1922, a Boston architect. Curiously enough, Mr. Abrahams received his Institute degree in the Department of Engineering Administration. He became interested in architecture after he accepted a position selling building materials, and trained himself for this specialized profession by self-study, special work in the Institute's Department of Architecture, and by taking evening courses in the Lowell Institute School.

HAROLD E. LOBDELL contributes the second and last of his papers on the development of the locomotive. For those who are reading these columns with no intimate acquaintance with the Institute, Mr. Lobdell, Class of 1917, is Dean of Undergraduates at Technology, Publisher of The Review, and has an especially acute interest in railroads and their problems. His interest in this form of motive power vies with that of Edwin H. Whitney of Rehoboth, Mass., who is a famous student of the locomotive.

OTHER contributors to the July issue are Messrs. SAMUEL H. CALDWELL and HAROLD L. HAZEN, instructor and Assistant Professor respectively, in the Department of Electrical Engineering. They are both graduates of the Institute, Mr. Caldwell in the Class of 1925 and Mr. Hazen in the Class of 1924. ¶ The cover of this issue is a reproduction of a copyrighted painting, entitled "The Skull Cracker," by GERRIT A. BENEKER.

AN announcement last month in New York of an electric, pipeless organ invented by RICHARD H. RANGER, '11, recalls another electrical musical instrument described in the May, 1930, Review. We refer to the instrument developed by ARTHUR C. HARDY, '18, under the supervision of du Val R. Goldthwaite. There is reason to believe that future orchestras will be composed of various electrical instruments, and musical composition may then be entirely altered to fit these devices.

WITH this issue The Review closes Volume XXXIII. The next issue you will receive will be the October number, which goes in the mails on the 27th of September. The Review is not published in August and September.



Repeat order for Gulf Refining Company

—additions to Staten Island Storage Plant increase capacity to 2,592,000 barrels

EXTENSIONS at Staten Island—recently completed—give the Gulf Refining Company greatly increased facilities for serving the New York market.

The plant, which we designed and built in cooperation with the client's organization, occupies a 500-acre tract, stores 2,592,000 barrels of oil and includes oil pumping, drainage and steam plants, two large tank farms, 75 miles of piping, oil separating and reclaiming plant and other facilities.

The work came to us as a repeat authorization following our completion of the first unit last year.

During the past 10 years, 74% of our work has been repeat orders like this from clients previously served.

Our experience is available for industrial, power, railroad and monumental undertakings anywhere in the world.

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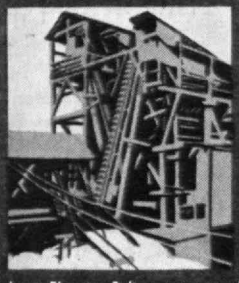
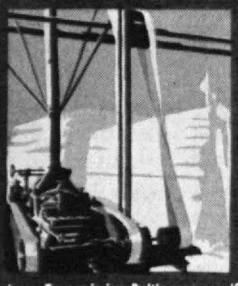
MAXIMUM RETURN TO CLIENTS PER DOLLAR INVESTED

Goodyear Oil Suction and Discharge Hose on the Lockport Docks of the Vacuum Oil Company

Goodyear Air Hose as installed by the G.T.M. for heavy pneumatic tools in quarry



Goodyear Elevator Belt as recommended for New Braunfels Limestone Co., New Braunfels, Texas



Goodyear Transmission Belting as specified by the G. T. M. for Steele-Alderfer Co.

What he has done for others... he can do for you...with RUBBER

When rubber has benefited scores of industries and hundreds of individual businesses, it stands to reason that it will have some value in yours. Let the G.T.M.—Goodyear Technical Man—show you why. He will tell you of the innumerable operations just like yours that he has aided with Goodyear Mechanical Rubber Goods. He will show you how rubber when expertly applied to mechanical industry saves money and builds sound new profits.

Examine the thumb-nail sketches of industrial operations shown on this page. See the saving specification of rubber in Goodyear Transmission, Conveyor, or Elevator Belting, Industrial Hose, Molded Rubber Goods, and Packing. Each one of these installations was made by the G.T.M. after a searching analysis of the special operating conditions. Each one is typical of thousands of others and of the speed, vigor, and economy of production which can be yours.

The G.T.M. can aid you as fully as he has aided the enterprises shown on this page. He is backed by *The Greatest Name in Rubber*—Goodyear. He opens the full resources of Goodyear's great technical laboratories and factories to the benefit of your business. Doesn't the record of this man and his products require the proof of your job? Isn't it reasonable he should begin his work for you now? To see him, just write to Goodyear, Akron, Ohio, or Los Angeles, California, and ask the G.T.M. to call.

THE GREATEST NAME IN RUBBER

GOODYEAR

BELTS · MOLDED GOODS · HOSE · PACKING

Cutter

MODERN ROAD ENGINEERING: WINDING ROAD THROUGH BUCK CREEK GAP EAST OF MOUNT MITCHELL, N. C.

THE TECHNOLOGY REVIEW

Edited at the Massachusetts Institute of Technology

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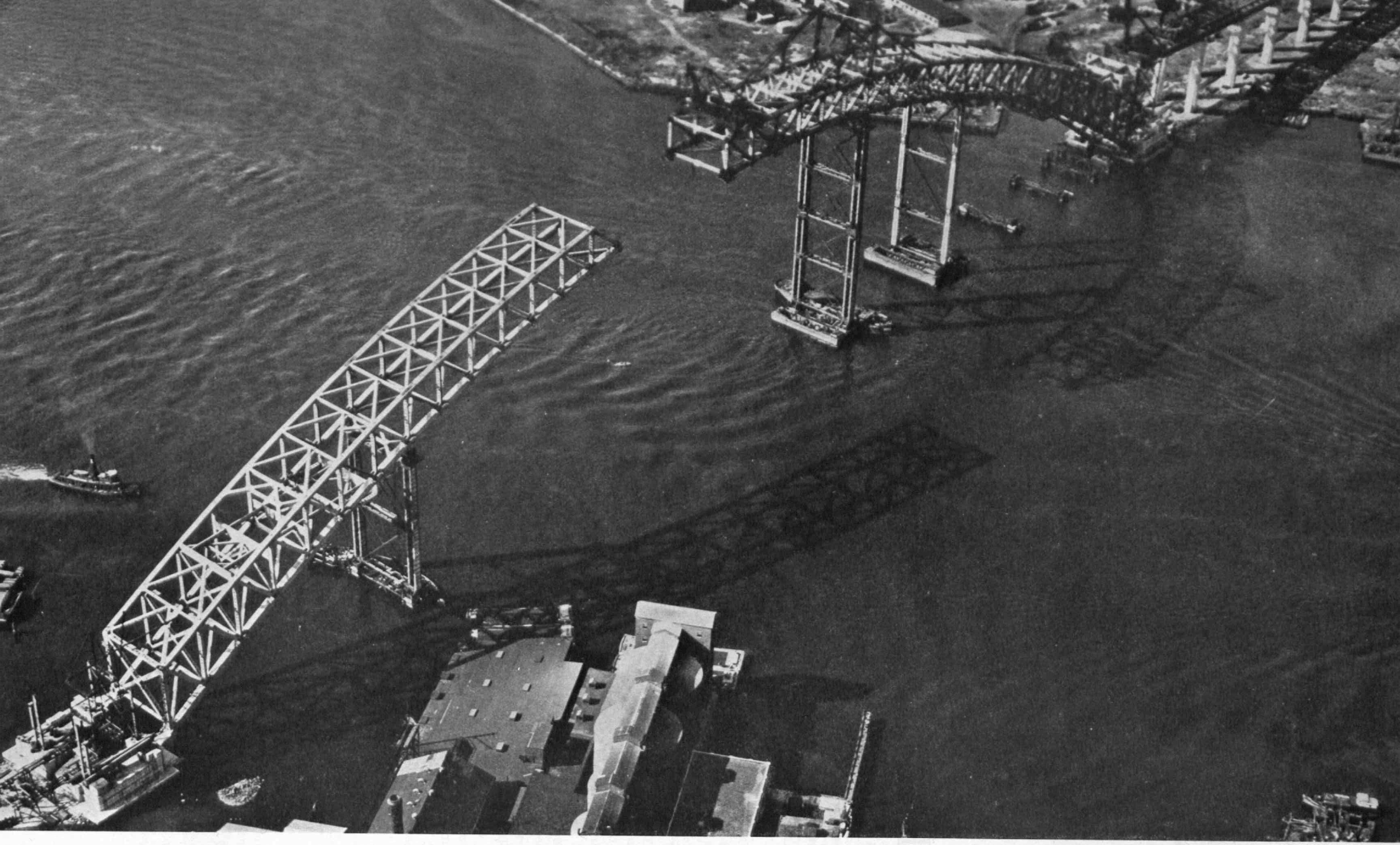

Fairchild Aerial Surveys, I

THE KILL VAN KULL BRIDGE

ERECTING THE WORLD'S LONGEST STEEL ARCH BY MEANS OF COMBINED CANTILEVER AND TEMPORARY FALSEWORK METHODS