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THE AMERICAN ARCHITECT

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In This Issue
The Outlook for 1921

Architecture

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Engineering

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Building Construction

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A FOREWORD

T HIS index is for the 119th volume of THE AMERICAN ARCHITECT. This series of volumes constitutes an encyclopaedia of architecture in America. They mark the progression from a time when our architecture was but a re-echo of classic precedent to the present day when architecture, as practiced in this country, sets a standard for emulation all over the world.

The development of architecture in America is a reflex of our great advancement as a nation. The progress of THE AMERICAN ARCHITECT has been in keeping with this great advancement. It mirrors today, as it has always done, the highest ideals of a profession that is the oldest of all the arts, and it has blazed the way to a better appreciation of the dignities and the responsibilities of architectural practice.

Its twenty-six issues each year, more than twice as many as any other architectural publication, form a compendium to architectural practice.

Its many illustrations—more than four hundred full page plates and approximately twice as many text illustrations—give to readers a larger volume of suggestive material on architectural subjects than is to be found elsewhere.

Its various departments of Architectural Engineering, Economics as applied to building, Specification and Cubage Costs, place in the hands of subscribers, a fund of material that makes the magazine indispensable to architects, engineers and students who are keenly interested in our architectural development.

EDITORIAL COMMENT

Light-faced figures refer to text pages; bold-faced to serial number

—A—

American Architecture, 147, **2355**.
American Specification Institute, 93, **2353**;
175, **2354**.
Annual Convention of the A. I. A., 515, **2344**.
Architect, The Advancing, 649, **2370**.
Archives Building, A National, 245, **2358**.

—C—

Calder Committee, Report of, 427, **2343**.
Canadian Copyright Law, Proposed, 489, **2345**.
Chicago's Opportunity, 365, **2341**.
Civic Center in New York, 275, **2359**.
Confidence, 319, **2340**.
Confidence, Commonsense and Co-operation,
43, **2351**.
Congress and the Housing Shortage, 44,
2351.
Contractors Adopt Code of Ethics, 395, **2342**.

—D—

Daylight Saving, 275, **2359**.
Digest, A Nationwide, 453, **2344**.

—E—

Elimination of Waste in Building Industry,
555, **2347**.
Ethics in Architectural Design, 147, **2355**.
Europe Turns to American Architects, 69,
2352.
Excessive Bidding, 70, **2352**.

—F—

Farm Buildings, Improving, 613, **2349**.
Farm Conditions, Improving, 245, **2358**.
Fine Arts in the Government, 94, **2353**.
Fund to Assist Young Architects, 43, **2351**.

—G—

Greenwich Village, Los Angeles, 175, **2354**.

—H—

Holy Land in 1920, 122, **2354**.
How Much Will It Cost? 44, **2351**.

—I—

Ignoring Our American Art, 121, **2354**.
Illinois Chapter, A Timely Resolution of, 427,
2343.

—L—

League of New York Artists, 489, **2345**.

—M—

Military Honors to an Artist, 453, **2344**.

—N—

National Duty, A, 585, **2348**.
New Jersey Abolishes State Architect, 555,
2347.

—O—

Organized Labor Enters Field of General
Contracting, 205, **2357**.

—P—

Personal Equation Editorial by Sullivan
Jones, 176, **2354**.
Philadelphia Building Trades Work Toward
Building Resumption, 365, **2341**.
Plain Duty, 275, **2359**.
Prices, 94, **2353**.
Public Library, For What Is It Maintained?
585, **2348**.

—S—

Sketching for Architects, 515, **2344**.
Skilled Workmen for the Building Trades,
93, **2353**.
State Registration Fails in Indiana, 427,
2343.
State Societies, 649, **2370**.
State Societies and the Institute, 613, **2349**.

—T—

Traffic Congestion in New York, To Relieve,
395, **2342**.
Transportation Tangles, Reducing, 148, **2359**.

—W—

What Is a "Public?" 69, **2352**.
Where Does the Evil Lie? 121, **2354**.

TEXT ACCORDING TO SUBJECT

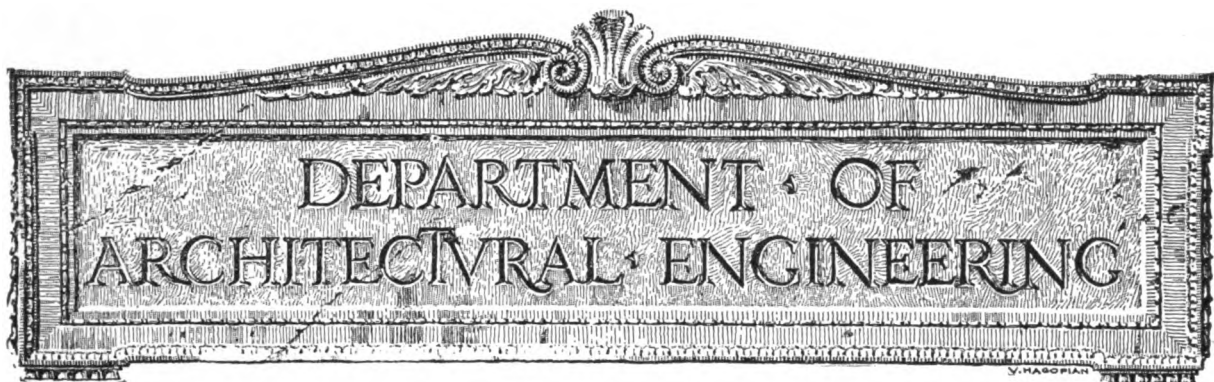
Light-faced figures refer to text pages; bold-faced to serial number

—A—

Ambassador Hotel, The. Warren & Wet-
more, Architects, 644, **2370**.
American Chippendale, Some Examples of,
321, **2349**.
American Institute of Architects, Fifty-
fourth Annual Convention of, 573, **2346**.

American Specification Institute, 172, **2354**;
320, **2349**.
American Specification Institute, Announce-
ment by Board of Governors of, 670, **2370**.
Architect and Engineer, Relation Between.
By Kort Berle, 4, **2350**.
Architects, What They May Think About in
1921, 11, **2354**.

Architectural Interiors of the United States
Shipping Board S. S. "Hawkeye State."
By Francis B. Ellis, 446, **2344**.
Architectural League of New York, Thirty-
sixth Annual Exhibition, 475, **2345**.
Architectural Management. By Francis B.
Ellis, 397, **2342**; 428, **2343**.
Architectural Quicksands. By Clinton H.
Blake, Jr., 390, **2342**; 484, **2345**.



The Fate of High Bridge

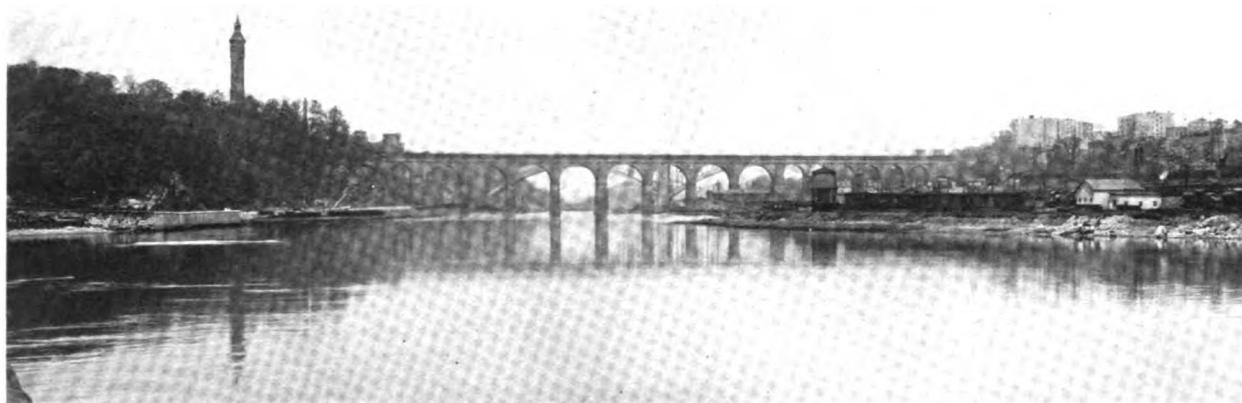
Do the Facts in the Case Warrant Its Reconstruction or Demolition

SPANNING the Harlem River at approximately a continuation of West 174th Street, New York City, is High Bridge, a multiple arch masonry structure, over which a controversy is now in progress. The issue is, whether this bridge shall be altered or demolished. In considering the subject, it might be well to sketch briefly its history.

High Bridge was built as a part of the old Croton Aqueduct system constructed between 1837 and 1843, the new supply being first introduced on July 4, 1842.

hazardous for self-propelled vessels and very difficult for tows.

The aqueduct supported by this structure was in use until a short time prior to this country's declaring war with the Central Powers. Various reasons have been given as the cause for its present disuse. The statement that it is no longer of any value does not hold in view of a statement made by Merritt H. Smith, Chief Engineer of the Department of Water Supply, who, at a recent meeting of the



HIGH BRIDGE AS IT APPEARS TODAY

The outlines of Washington Bridge are visible just behind High Bridge

The original plans appear to call for 15 circular arches, 8 of which had a span of 80 feet and the remaining 7 of 50 feet, with a clear height of 100 feet above mean high water. As the current is very swift at certain elevations of the tides owing to the difference in the elevation of the waters of the Hudson and East Rivers, the threading of the arches is

American Society of Civil Engineers, at which the subject of High Bridge was under discussion, made the following statement:

"Let me tell you when it (the High Bridge Aqueduct) was shut down, and why it was shut down. On February 3, 1917—do any of you remember it?—we sent back the German Ambassador. We had four

THE AMERICAN ARCHITECT



ANOTHER VIEW OF HIGH BRIDGE SHOWING RAILROAD TRACKAGE PARALLELING WATERWAY.



HIGH BRIDGE AS IT WOULD APPEAR IF ALTERED IN ACCORDANCE WITH THE DESIGN OF THE DEPARTMENT OF PLANT AND STRUCTURES.

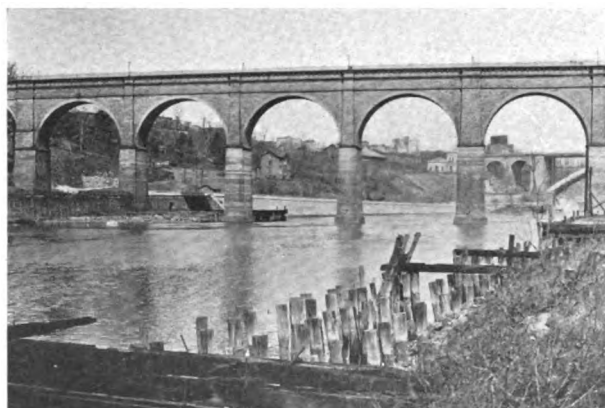
aqueducts bringing water into New York City, three aqueducts and a pipe line. It was easier and safer to patrol two aqueducts than it was four; and if any devil had tried to destroy any part of any one of those aqueducts, the principal damage would have been done by the rush of water, not by the bomb; and for that reason, and that reason only, on February 3, 1917, the old aqueduct was closed down by my orders. The Kensico pipe line, which was also running at that time, brings Catskill water from the Kensico Reservoir. On the following day, the 4th of February, that was closed down, and for the same reason. That meant that we had two lines that could carry water to New York City and which would not be seriously damaged by bombs placed in the culverts, or at any other vulnerable points, because the damage would not be done by the rush of water, but would be done locally by the explosive."

According to Mr. Smith, in case the bridge was removed, it would be necessary at the very least to connect the old aqueduct on the Bronx and on the Manhattan sides of the river in order to crowd the water that comes through the old aqueduct through the new

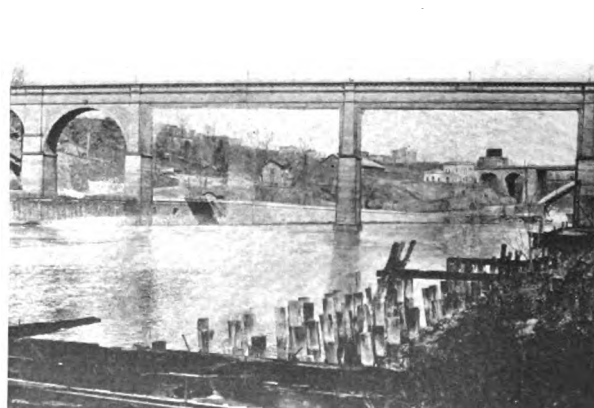
aqueduct tunnel. To do that, in carrying 225,000,000 gallons of water from the new aqueduct, and 60,000,000 from the old aqueduct, there would be a loss of between two and three feet of head at the 155th Street gatehouse, which it is stated would be a very serious loss, considering the difficulty now in delivering the old Croton service at sufficient elevation in a considerable part of the territory in which that water is used. If the bridge were removed, it was estimated by Mr. Smith that this new connection, on account of the alterations necessary, would cost about \$800,000.

THE suggestion for the removal of certain obstructing river piers of High Bridge dates back to 1911. The matter first came up in a letter to the City of New York from the Corps of Engineers, U. S. Army, in which attention was called to plans that had been received from time to time by the Secretary of War and by the United States Engineers' office for the First District, concerning the obstruction to navigation caused by the river piers of this bridge.

Some two years later, a number of property

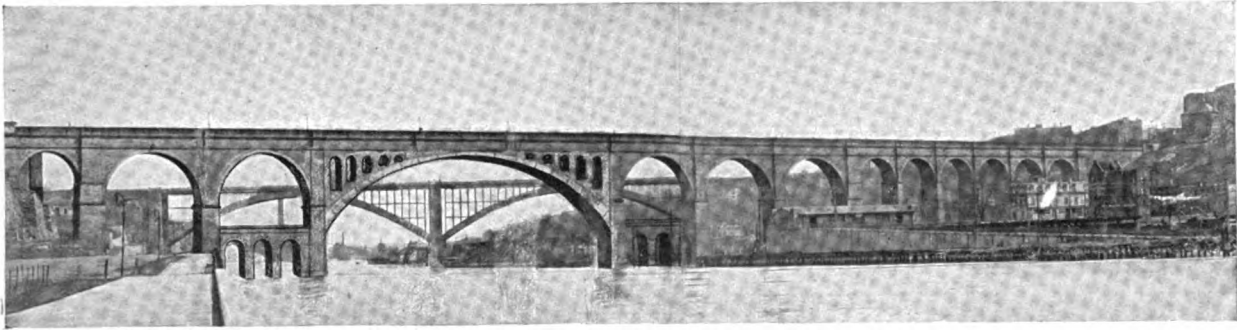


A CLOSE UP SHOWING THE RIVER PIERS WHICH THE WAR DEPARTMENT CLAIMS FORM AN UNREASONABLE OBSTRUCTION TO NAVIGATION.



ACCORDING TO THIS SCHEME OF RECONSTRUCTION, WHICH LITERALLY CARRIES OUT THE ORDER OF THE WAR DEPARTMENT, STEEL GIRDERS WOULD SPAN THE WIDENED OPENINGS. ECONOMICAL, BUT UGLY.

THE AMERICAN ARCHITECT



ANOTHER SUGGESTED METHOD OF RECONSTRUCTING HIGH BRIDGE

owners and business men along the Harlem River in the Borough of the Bronx, made complaint of the obstruction along the Harlem River, and it seemed necessary then to present a report to the city authorities. Such a report was presented in 1915. While the bridge crosses a navigable stream, this report pointed out that it is an aqueduct rather than a bridge. It incidentally carries a footway. It is not a highway bridge in the ordinary sense of the word. It is one of the most notable structures in or about the City of New York, and its removal or the serious mutilation of its appearance would be a public misfortune, and should only be considered in case it was shown that it forms a serious obstruction to navigation, which could not be removed or mitigated except by taking out one or more of the piers. The removal of the bridge was not considered at that time.

Apparently the War Department did not press the matter for some time and it was not until the early part of 1920 that the matter was brought to a head by the following notice being served on the New York City authorities:

The Secretary of War having good reason to believe that the bridge over the Harlem River, New York City, known as "High Bridge," is an unreasonable obstruction to the free navigation of said river, on account of insufficient clearance between piers, it is proposed to require the following changes to be made in the bridge within one year from the date of service of order by the War Department, to wit: Two alternate piers to be removed, and a vertical clearance of at least 100 feet above mean low water to be provided in each of the proposed widened spans.

This required action. Although but a short period remains before the expiration of the time stated in the order, no work of reconstruction has been started. Public hearings have been held and various suggestions have been made.

THE suggestion which advocated the entire removal of the bridge has brought forth a storm of protest. This suggestion was made by the Commissioner of Plant and Structures in a communication to the Board of Estimate and Apportionment.

Since this communication states the case for the removal of High Bridge, the retention of which, with suitable alterations, the American Institute of Consulting Engineers, the New York Chapter of the American Institute of Architects, the American Society of Civil Engineers and the American Institute of Fine Arts have gone on record as favoring, it is here published in full.

To the Honorable

The Board of Estimate and Apportionment
of the City of New York:

"In the matter of improving the navigation facilities on the Harlem River, in the vicinity of High Bridge, the various plans for treatment of High Bridge submitted to the Board of Estimate and Apportionment have been given full consideration, and it appears to me that the proper action to be taken by the Board of Estimate and Apportionment is the removal of this bridge.

"This Department assumed this position at the hearing of the New York Harbor Line Board on March 30, 1920, when it was proposed by that Board to remove two alternate piers. Following the suggestion of the Harbor Line Board, plans were prepared by this Department providing for the removal of two alternate piers and the construction of two spans of steel and concrete. An arch effect was to



A MODIFICATION OF THE DESIGN OF THE DEPARTMENT OF PLANT AND STRUCTURES WHEREBY THE HORIZONTAL LINES OF THE STEEL GIRDERS ARE "CAMOUFLAGED" TO GIVE THE IMPRESSION OF A MASONRY ARCH.

THE AMERICAN ARCHITECT

be obtained by the use of these materials. The aqueduct line on the bridge was to be maintained, and the cost of the work was estimated at \$630,000.

"On June 11, 1920, the Board of Estimate and Apportionment referred two communications in reference to High Bridge reconstruction to this Department for report, as follows:

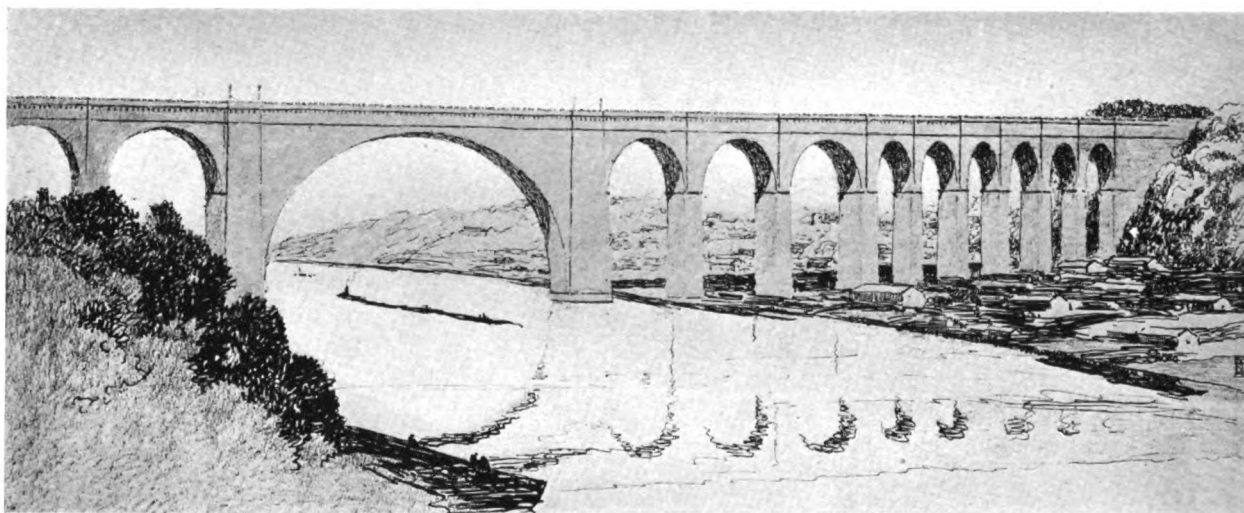
Communication dated June 2, 1920, from Mr. Wm. J. Wilgus, submitting on behalf of a Committee of the American Institute of Consulting Engineers and the New York Chapter of the American Institute of Architects, arguments in favor of retaining High Bridge, and that necessary alterations be so made as not to mar the beauty of the structure.

loading on this pier, have elements of uncertainty that might entail failure.

"In the removal of two alternate piers no piles are to be driven and the loads on the various piers are decreased.

"There are no record drawings extant showing how this pile foundation for Pier 12 was constructed, and in my judgment in the reconstruction of this pier we would have to rely a great deal on what we would find after making excavation in a cofferdam.

"The camouflaging referred to by Mr. Wilgus in connection with the removal of alternate piers should receive little consideration as the term can be applied to many of the city's important structures where steel and masonry are used in conjunction; as for ex-



DESIGN SUGGESTED BY THE NEW YORK CHAPTER, A. I. A., AND THE AMERICAN INSTITUTE OF CONSULTING ENGINEERS

This shows the best treatment of any of the schemes so far suggested.

Communication dated June 3, 1920, from Charles Paff & Co., Architects and Engineers, submitting for consideration designs for the improvement of the water spans at High Bridge.

"The plans submitted in these communications provide for the removal of two adjacent piers and the building of one masonry arch. No estimate was submitted by Charles Paff & Co. The estimate submitted by Mr. Wilgus called for the expenditure of \$830,000.

"The Engineers of this Department have examined in detail the estimates as furnished by Mr. Wilgus and find that the cost would be about 50 per cent. in excess of his estimate of \$830,000 or \$1,250,000.

"The driving of additional piles at Pier 12 and the attaching of new masonry to the present pier masonry, which will mean additional and eccentric

ample, the Municipal Building is a steel structure covered with granite and not a granite building.

"Your board has before it three propositions:

1. Removal of High Bridge—cost \$500,000.
 2. Removal of two alternate piers—\$630,000.
 3. Removal of two contiguous piers—\$830,000.
- (Wilgus), which the Department's Engineers believe will cost at least 50 per cent. more or \$1,250,000.

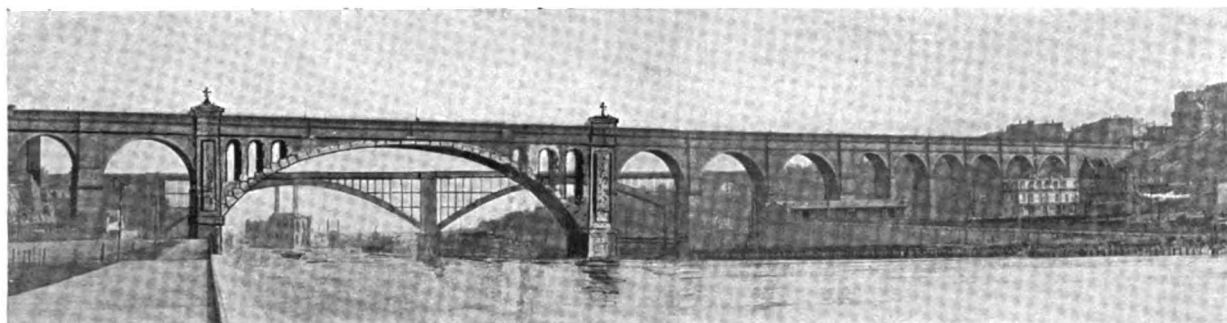
"High Bridge, if reconstructed, will provide channels with vertical clearance of 101 feet at mean high water.

"Washington Bridge to the north of this structure has a clearance of 135 feet at mean high water.

"All the East River bridges have similar clearances, while the Hell Gate Bridge has a clearance of 140 feet at mean high water.

"Thus the clearance at High Bridge, if recon-

THE AMERICAN ARCHITECT



ACCORDING TO THE PLAN SUGGESTED BY THE ABOVE DRAWING FOUR PIERS WOULD BE REMOVED AND THE RIVER SPANNED BY A SINGLE MASONRY ARCH

structed, *will always be the limiting height for vessels navigating around Manhattan Island.*

"No one can say that the Harlem River with the improvements contemplated will not be used by ocean going vessels. Note the class of vessels now operating in Newtown Creek which is only 250 feet wide—Harlem River 400 to 440 feet channel.

"The question of continuing High Bridge as an aqueduct is one that might have some weight if the city did not have the Catskill supply in addition to the new Croton Aqueduct supply which is carried to Manhattan by a tunnel under the Harlem River.

"The High Bridge conduit which connects the old Croton aqueduct with Manhattan has not been used in many years, and I would suggest that if this old aqueduct is to be used in the future, it should be for the purpose of increasing the water supply in the Borough of the Bronx, which to-day has a larger population than the old City of New York had when the old Croton aqueduct was opened.

"The old City of New York in 1850 had a population of 515,547 and the population of the Borough of the Bronx in 1920—730,016.

"If it be decided to remove the bridge entirely the stone can be stored along the Harlem River Speedway until required for use in the building of the bulkhead wall along the Harlem River at and near the location of High Bridge. The Bulkhead walls of the Speedway will require reconstruction in the near future.

"The contemplated improvement of the Harlem River is a matter that affects the whole City of New York. This improvement would mean the bulkheading and the dredging of the River to provide facility not only for the present traffic but for the future that will ensue after these improvements will have been made.

"It will mean much in the cost of handling food products, supplies and materials.

"The proposed work of straightening the Harlem Ship Canal at Spuyten Duyvil and the dredging at the Harlem Kills connecting the River direct with

Long Island Sound, as a matter of business policy, should mean the removal of this Bridge. The Engineers of this Department have fully considered this entire question and I believe that the only proper action to be taken by your Honorable Board is the entire removal of this bridge."

Yours very truly,
(Signed) GROVER R. WHALEN,
Commissioner.

THE future of the Harlem River is a matter of pure speculation. It is entirely within the realms of possibility that ocean going vessels may some day ply its waters. Still one can hardly view the present High Bridge and contemplate its removal without a tinge of regret. Surely this is an age of Commercialism if such things must be. A far more satisfactory solution, to the minds of all lovers of art, would be the reconstruction of the bridge according to the design already referred to. This, however, does not comply with the order of the War Department in that it would cause the removal of two adjacent and not two alternate piers. To obtain such approval, the design would have to be submitted to the War Department by the City of New York. The entire subject will be discussed by the Board of Estimate and Apportionment at its meeting on January 21, 1921.

From the standpoint of historic interest, sentiment and the preservation of structures of artistic merit as well as for utilitarian reasons, the bridge should be retained, with only such alterations as will remove its objectional features without marring its beauty. As a further argument in favor of its retention with suitable alterations, it is pointed out that it is the only bridge across the Harlem River between Washington Bridge (181st St.) on the north and Central Bridge (155th St.) at the south. In reconstructing the bridge it could be altered to function as a highway bridge by being provided with an effective roadway approximately 20 ft. wide with a sidewalk on either side supported by brackets, and an effective connection made with the street system on the Manhattan side.