

**REPLACING THE BROADWAY DRAWBRIDGE WITH A NEW SPAN.**

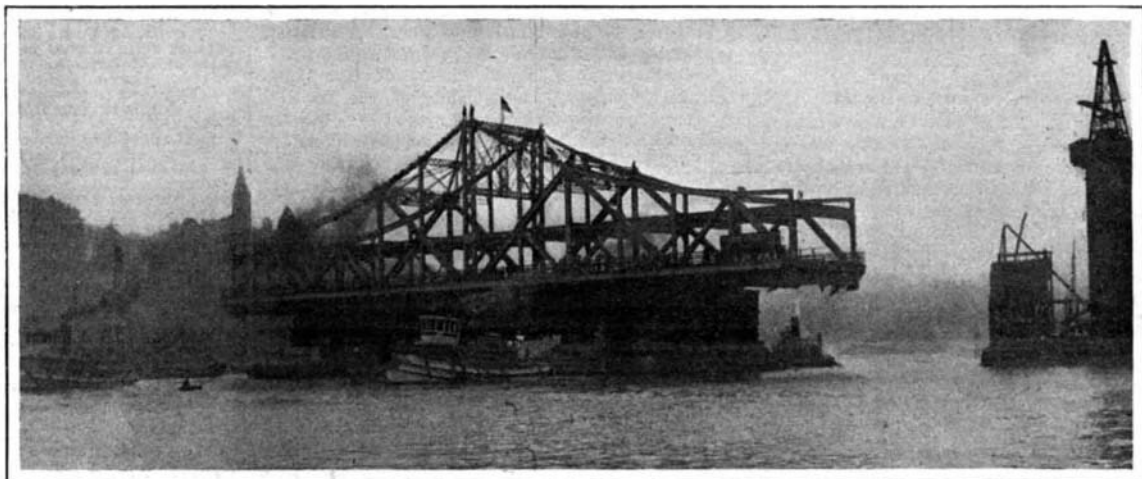
The recent transfer of the old Broadway drawbridge over the Harlem ship canal to its new quarters opposite University Heights, and the subsequent placing of the new Broadway span, affords a very interesting illustration of modern engineering methods. This exchange of bridges was made necessary to accommodate an extension of the Subway across the Harlem. The old bridge, although in excellent condition, was unable to carry the additional load of Subway traffic and the proposed trolley extension. At first it was suggested that the old draw be remodeled so that it could carry the increased loads, but it was found that the structure would have to be almost entirely rebuilt. However, a new bridge was to be constructed across the Harlem at 207th Street, to connect with Fordham Road, and it was proposed that the old span be used for this structure, and a new double-decker built for the Broadway crossing. Accordingly, the new span was built on piles at 215th Street and the Harlem River. A few weeks ago this work was done, and the piles at each side of the center were removed to make room for the pontoons on which the span was to be floated to its permanent position.

On Thursday, June 14, the old Broadway draw was lifted off its pivot and towed quietly down to the central pier of the Fordham bridge, where it was soon mounted in position. The bridge was carried on four pontoons, two at each side of the center. The pontoons were 110 feet long by 32 feet beam, with sides 9 feet high, and capable of lifting 600 tons each. The draw was partly opened, so that it could be floated away without being obstructed by the approaches. The pontoons were weighted with water and, from the decks of each pair, heavy lumber cribs were built up to the floor beams of the bridge. This was done at low tide, so that as the tide began to come in the span was slowly buoyed up by the pontoons, and to expedite matters the water was at the same time pumped out

No difficulty and but little delay was experienced in centering the span over its new bearing. Then water was pumped into the pontoons until they lowered the span gently into place. The entire task was accomplished in just an hour. The bridge was towed to its new quarters with steam up, and as soon as it was properly mounted and the pontoons removed, it was

and on the following morning the bridge was thrown open to public use.

The new span is 272 feet long and 39 feet wide from center to center of trusses, or 53 feet wide over all. Its total weight is 1,200 tons. The old span is necessarily of the same length and width, but its total weight, including the flooring, is only 1,100 tons. The



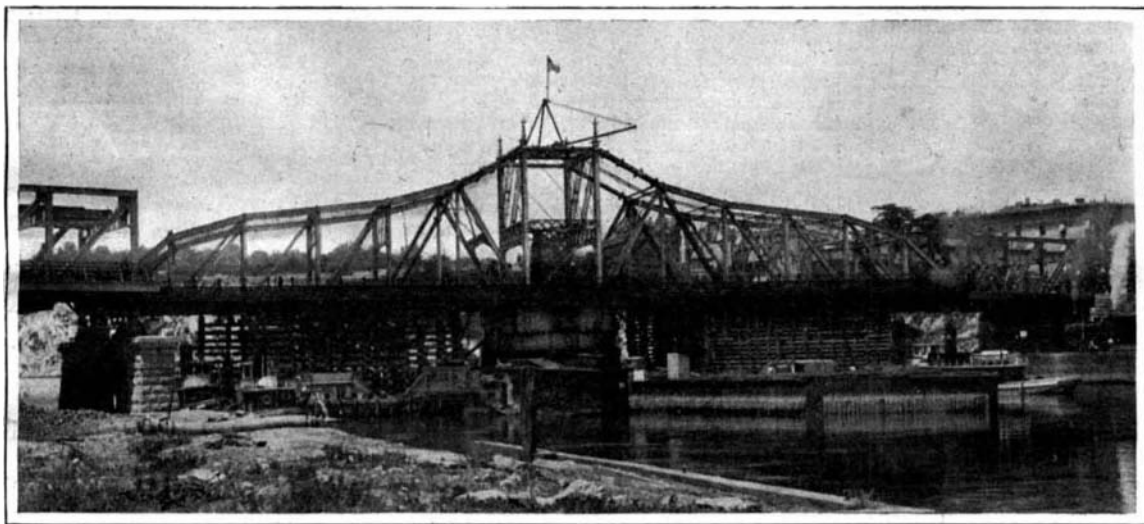
Towing the New Drawbridge up the Harlem River.

swung to the open position under its own steam. In this position it must lie at present until the approaches are completed.

The new Broadway span was ferried to its pier on the following Saturday. The methods adopted in the two cases were precisely similar. Such tension members as were liable to buckle under the reverse strains imposed were temporarily stiffened. The bridge was also diagonally mounted on the pontoons, so that it would pass freely between the approaches. The trip up the river required but thirty-five minutes. Only

new approaches of the Broadway bridge were built on cribwork beside the old structure. The cribs were mounted on tracks, so that when the approaches were completed the old spans were removed and the new ones moved into position with a minimum of delay. The Subway tracks are now being laid on the bridge, and should be ready for use in the course of a couple of weeks. It is probable that by the first of August Subway trains will be running as far as 231st Street.

Credit for the successful transfer of the bridges belongs to Mr. Terry, of the firm of Terry & Tench, who planned the undertaking and gave it his personal supervision.



Raising the Old Broadway Harlem Drawbridge.

of the pontoons. The bridge was, of course, built to rest on a central support; consequently, when it was lifted off the center pier, and supported on the cribwork near the ends, the strains in certain members of the frame were reversed. For instance, the tension members at the center of the bridge were placed under compression. To prevent these members from buckling, they were stiffened with wooden beams, as may be seen in the accompanying photographs of the bridge. The draw was towed down stream by four tugs, two in front and two behind, by which it was carefully guided to the new pier nearly a mile away.

one slight mishap occurred to mar the otherwise successful achievement. One of the pumps used for filling the pontoons failed to work, and as a consequence, when the span was lowered into place, one end refused to sink with the other, and the draw was tilted slightly. But this defect was soon overcome by boring a hole into the pontoon below the water line. Except for this trifling incident the entire undertaking passed off without a hitch. It was 5 o'clock in the afternoon when the span was hauled from the piles at 215th Street, and at 7:30 the bridge was open to pedestrian traffic. At 9 o'clock the work was entirely completed,

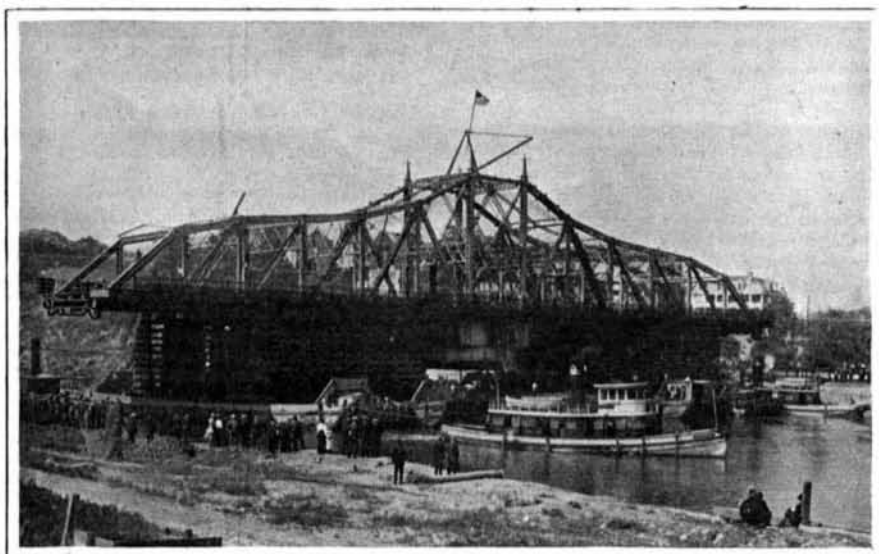
**Carnegie Institution Appropriations for Retiring College Instructors.**

The first selections from among retiring educators to receive disbursements from the Carnegie Foundation, organized last year by the well-known philanthropist to provide retirement pensions, or, as they are to be known, allowances for teachers in the universities, colleges, and technical schools of the United States, Canada, and Newfoundland, have recently been made by the directors of the institution. The total amount to be distributed among the fifty educators retiring at this time approximates \$70,000 a year. This sum does not very materially decrease the income from the \$10,000,000 in Steel Corporation bonds which Mr. Carnegie set aside for the purpose. The professors and teachers who will receive the benefit of this year's disbursement have been members of educational institutions scattered throughout the entire country. Among well-known men on the list are John Krom Rees, of Columbia; Henry M. Baird, of New York University; Hiram Corson, of Cornell; Charles A. Young and William A. Packard, of Princeton; Edward W. Morley, of Western Reserve; George Trumbull Ladd, of Yale; Henry P. Bowditch, of Harvard; Francis A. March, of Lafayette; Dr. E. R. Merrill, formerly president of Ripon College, Wisconsin, and P. H. Chandler, of Ripon.

The production of acetylene gas without water is now said to be possible, calcium carbide shaken with dry soda crystals being found to generate gas freely.



The New Drawbridge Span Located in Position.



Towing the Old Drawbridge down the Harlem River.