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UNION ARCH, WASHINGTON AQUEDUCT.

In its latest edition the American Cyclopædia states, under the head of masonry bridges, that there are comparatively few of any great size in the United States, and instances as perhaps the finest example the High Bridge of the Croton Aqueduct, over the Harlem River, with its eight arches of 80 feet span, and five others of 50 feet span. Probably the majority of well-informed Americans would accept the statement as correct, and few, even among engineers, would hear without some surprise, that by far the largest masonry arch in the world is in this country, and that it forms a part of one of the most important engineering achievements that have been accomplished during recent years—namely, the aqueduct by which the City of Washington is supplied with water.

Unfortunately for its own fame, this work was completed during the most exciting period of the civil war, when the security of the national capital against the assaults of the Confederate army was a matter of infinitely greater popular interest than any improvement of its water supply. Possibly, too, the inadvisability of calling the attention of the enemy to a work of such importance to the beleaguered city may have had something to do with the singular absence of information with regard to it in the popular prints of the time and in later publications. At any rate one will have to search a long time to find more than a casual mention of the

work, where one would expect to find the fullest description of it. The splendid masonry arch shown in the accompanying engraving carries the aqueduct over the Cabin John Creek, with a span of 220 feet. The height of the arch is 101 feet, and the width of the structure 20 feet. The arch forms an arc of a circle, having a radius of 134,285.2 feet. When the center scaffolding was removed, the arch (unlike all other works of the kind) did not settle, the keystone having been set in winter, and the center struck in summer.

Two other remarkable structures are included in or form a part of the Washington Aqueduct. From the distributing reservoir the water is conveyed in two thirty-inch pipes. There were two streams to be crossed, College Branch and Rock Creek. Instead of building bridges and laying the pipes on them, the pipes themselves were in each instance cast in the form of an arch and constitute the bridge. The Rock Creek bridge has a span of 200 feet, with two forty-eight-inch pipes; the College Branch bridge has a span of 120 feet, with two thirty-inch pipes. The arch over Rock Creek is so strong that it is used for a roadway, continuing Pennsylvania avenue to Georgetown.

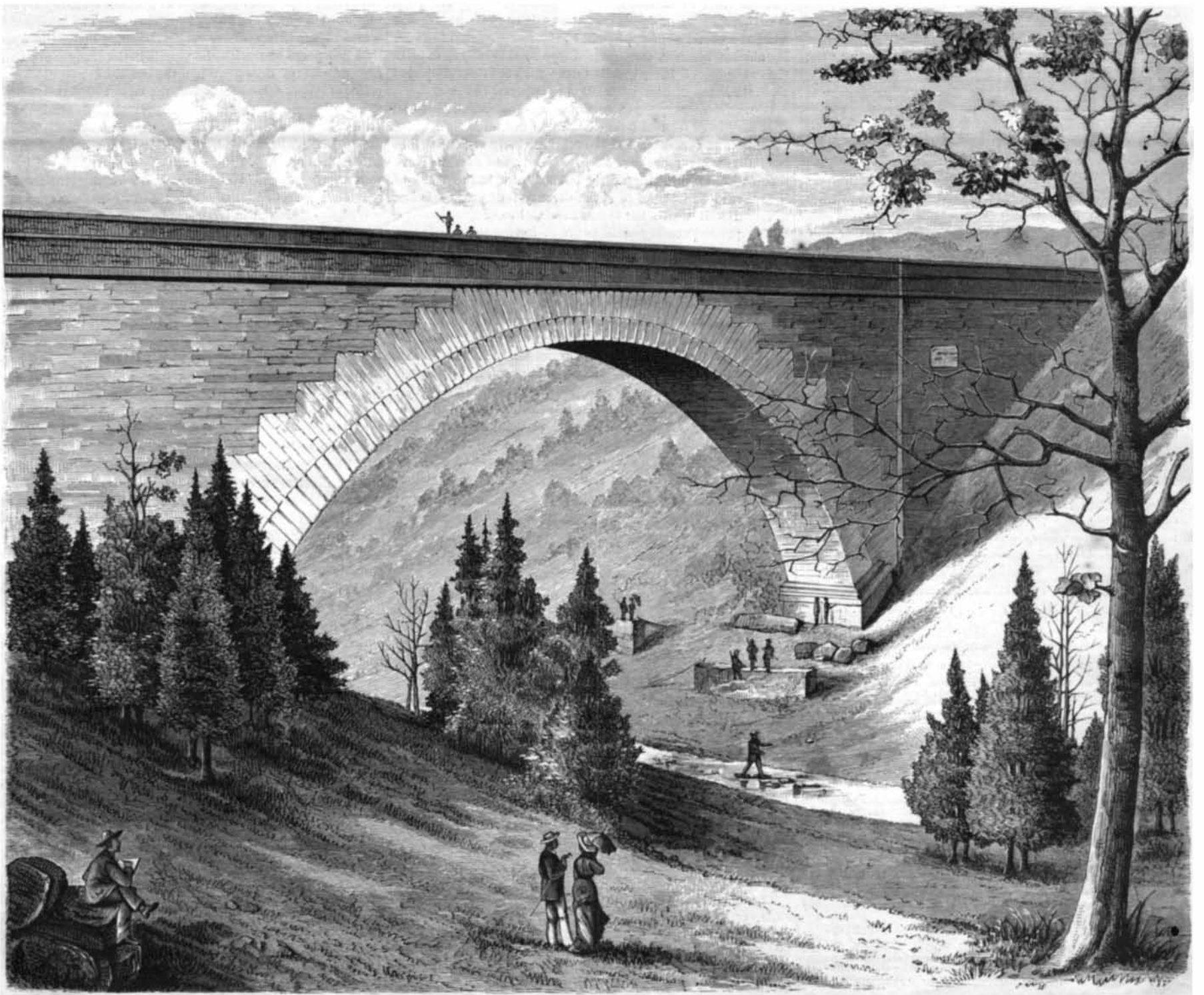
The other notable masonry arches of the world are the Chester arch across the river Dee, at Chester, England, with a span of 200 feet; the famous center arch of the new London Bridge over the Thames, with a span of 152 feet; Pont-y-Prydd, over the Taff, in Wales, 140 feet; the bridge across

the Seine, at Neuilly, France, with five spans each of 128 feet; the nine spans of Waterloo Bridge, London, each 120 feet; and the celebrated marble Rialto bridge in Venice, with a span of 98½ feet.

Washington Aqueduct was begun in 1853, and finished in 1863. The engineer in charge of the work was Gen. Montgomery C. Meigs.

The Japanese Fan as an Audiphone.

At a late meeting of the New York County Medical Society, Dr. Samuel Sexton read a paper on the use of the lacquered Japanese fan as an aid to hearing. The fan is constructed on the same principle as the audiphone, being composed of lacquered material that receives any ornamentation that may be desired. Its cost is from 25 cents to \$1, whereas, when first presented to the public, the audiphone was a high-priced article, ranging from \$5 to \$25. By using the model of the human skull Dr. Sexton showed how the sounds of the human voice were transmitted to the auditory nerve, and illustrated how the instrument assisted the defective sense of hearing. He had brought a couple of deaf-mute subjects, by means of whom he gave some illustrations of the advantage of the instrument which proved very satisfactory to the audience. The best distance for conversation was about three feet. When the distance was less the voice was too loud, and when greater it was indistinctly heard.



UNION ARCH, CABIN JOHN CREEK.