

THE AQUEDUCT ACROSS THE MONOCACY RIVER, NEAR
FREDERICK, MARYLAND

BY

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PREFACE

Because this structure was but a part of a huge project the main work overshadowed it so that there are no records preserved regarding the minute details of the construction. However in gathering the information presented the following were consulted freely:

"History of Western Maryland", by John Thomas Scharf (1843-1898). "The History of Frederick County", by Merriman. Both of these works contain a detailed history of the section represented and much of the detailed history of the canal is given.

"The Great American Canals", by Archer Butler Hulbert. This work contains the general history of the great canals of the country giving a very good account of that of the Chesapeake and Ohio Canal. Professor Hulbert is considered an authority on the history of transportation, having taught history at Marietta College, Clarke University, Colorado College, University of Chicago, Columbia University, and others.

An attempt was made to obtain records from the present office of the company, but because of the lack of organization none of them had been preserved. However some information was gotten from the reports of the company to its stockholders, which are preserved in the Library of Congress.

Credit must also be given Samuel Lebowitz, a member of this fraternity and a graduate in the class of 1926, for information gotten from his thesis "The Chesapeake and Ohio Canal".

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This aqueduct is a portion of the system of the Chesapeake and Ohio Canal which runs from Georgetown in the District of Columbia to Cumberland, Maryland by way of the Potomac Valley.
^{canals}
Therefore a resume of the history will be given first.

There is, where Thirty-second Street crosses it in the District of Columbia, a monument which tells that it was begun at the Georgetown end July 4, 1828, and was completed to Cumberland October 10, 1850. The Potomac Improvement Company, chartered in 1784 through the efforts of George Washington, opened navigation between tidewater and Cumberland by cutting short canal around Great and Little Falls and by blasting channels through the rocks at Seneca and Harpers Ferry. The company did not pay, and in 1819 on applying to the Virginia Board of Public Works for relief that board directed its chief engineer, Thomas Moore, to make a survey to determine the cost and feasibility of a canal from tidewater to the Allegany Mountains. Moore's report was made in 1820 and his estimate of the cost was \$1,114,000. The Potomac Improvement Co. was bankrupt in 1821. Sentiment in Virginia, Maryland, and Pennsylvania favored the canal through the Potomac Valley and there was a convention held on the matter at Washington in 1823. Virginia and Maryland incorporated the canal in 1824 and the United States approved the incorporation. President Monroe signed the Canal Bill March 3 1825 and a board of engineers was appointed. They named the corporation The Chesapeake and Ohio Canal Company. The first spade of dirt was turned by President Adams July 4, 1828 near Little

Falls. Construction continued from that time with many interruptions. The original cost estimate was found to be much too low and many difficulties were encountered in raising the funds necessary to complete the project. It was finally completed at a cost of over eleven million dollars. It was officially opened October 10, 1850.

The canal operated from the time of opening until 1924 with only various short periods of interruption. The engineers, in their alingment, forgot the fury of the Potomac River in the spring of the year so that at many points along the course these spring floods have caused much damage. The last was in the spring of 1924 and the damage caused was sufficient to cause the suspension of operations for a number of months. The damage was repaired and the canal made ready for traffic, but operations were never resumed.

From the reports of the company one learns that the distance from Cumberland to the Rock Creek Basin is one hundred and eighty five and five eight miles with a total lift of five hundred and eighty seven feet. The width of the canal varies from fifty four to sixty feet with an average depth of six feet. There are seventy four locks with an average lift of eight feet and the water in the canal is drawn from seven dams. There are also a total of eleven aqueducts and one tunnel which is five eights of a mile in length.

The aqueduct which is the subject of this thesis is the largest of the eleven on the main line of the canal. The only larger one of the system is one 1600 feet long which carries the

canal across the river from the Rock Creek Basin to Rosslyn from where it continues to Alexandria. The Monocacy Aqueduct was constructed during the years 1830 and 1831 but due to the absence of records the exact dates could not be established. It crosses the Monocacy River at its junction with the Potomac, and is thirty eight miles west of Washington by way of the towpath. It may be reached by taking the road from Rockville to Poolesville and continuing on until the river is reached.

It is of masonry construction and is four hundred and thirty eight feet from one main abutment to the other, and the masonry of the winged walls and abutments extends ninety six feet further. There are seven arches and the six intervening piers and the abutments rest on the solid rock of the river bed which was cleaned of sediment in order to make a firm foundation for the structure. The rock at this point is a red sandstone and fortunately lies close to the surface in this district which made a firm foundation easily obtainable. The arches of the structure each have a span of fifty four feet and a rise of nine feet. The piers have a thickness of ten feet and are about thirty five feet long at the base giving plentiful support to the structure. The canal across the aqueduct is nineteen feet wide and has a depth of six feet. There is of course a towpath on either side and that with the coping gives the structure a width of thirty feet.

The entire structure is of rubble masonry with the exception of the arch, the coping, the inside of the parapet, and the water table, which are of cut stone. The stone used is the brown-

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stone which was very popular in masonry construction at that time. It was quarried at Washington Junction which is about ten miles west of the site of the structure. The marvel of the construction may be better realized when one considers that all the rock had to be removed from the quarry by hand, hauled to the place of construction by horse and wagon, and cut and placed in the wall by hand. There was no machinery of any kind used in the construction.

For the purpose of the better government of the corps of engineers the course of the canal was divided into three districts and these districts subdivided into Residencies. The First District extended from Georgetown to Point of Rocks and was divided into three Residencies. The Chief Engineer at the time of the construction of this aqueduct was Judge Benjamin Wright with whom were N. S. Roberts and Erastus Martineau as assistants. These three men were known officially as the Board of Engineers and it was their duty to design all the structures connected with the canal and therefore this aqueduct is their design. The aqueduct is in the Third Residency and the Engineer in Charge of this Residency was Erastus Herd with Charles E. Fish as assistant. It was these men who had the direct supervision of the construction of the structure. Mr. Fish, because of the excellent service rendered to the company, was later appointed Chief Engineer.

Although the above named men had the supervision of construction an inspection of the company records shows that the really responsible person was the Inspector of Stone and Masonry. Upon him rested the responsibility for the construction of all masonry

work and therefore the construction of this aqueduct was under his supervision. Judging from the work of Inspectors today he evidently had a hard job of it as the different projects were sub-let to private contractors and much of the labor was that of slaves. The following is an extract from the company specifications known as, "Rules Adapted by the President and Directors of The Chesapeake and Ohio Canal for the Government of the Corps of Engineers", and outlines his duties:

"The Inspector of Stone and Masonry will be charged with the inspection, discovery, and approval of all quarries of stone opened for the supply of materials to the canal, and all masses of limestone and banks of sand, suited to the construction of any of its work. The inspection and approval or rejection of all stone, lime (both common and hydraulic) and sand, in every stage of their preparation for use on the canal, according to the terms of the contract made by the President and Directors, the President of the company, the Board of Engineers, and the Engineer of the particular division on which any such stone, lime, or sand is to be employed."

"He shall, after the stone has been conveyed to the place where it is to be used and prepared to enter the wall, a second time inspect it before it is placed in the wall. At this time, he shall designate the facing stone of the locks and aqueducts each by an appropriate mark and he shall, from time to time inspect it and the cement, both common and hydraulic as the stone is laid in the wall."

Thus we see from the above extract that although the Board of Engineers may be given credit for the excellent design of the structure, the Inspector of Stone and Masonry deserves the credit for the construction and permanence of the structure. Unfortunately his name could not be found in the existing records.

The selection of the cement was not left to the Inspector of Stone and Masonry however, but the most prominent engineers of

(of) the time were consulted in this selection. Many inquiries were made about the cement used upon other work of a similar character much of which was in progress at this time in the United States. After careful examination and chemical and practical tests the cement obtained near Shepherdstown in Maryland was adopted, and the wisdom of this selection is greatly shown by its condition at present.

The masonry of this aqueduct seems to be of almost indestructable character. In the spring of 1877 a flood on the Potomac River so wrecked the canal that it took two years to repair it, but this aqueduct was unharmed by it. Again in 1897 and 1924 spring floods caused much damage to the canal, but again this aqueduct withstood them.

A comparison may be made between this aqueduct and the one which carried the canal across Seneca Creek, about ten miles nearer Washington. The Seneca aqueduct is in very bad condition. The stone has disintegrated in some places and much of the mortar has been weathered from the joints causing much leakage so that at present the aqueduct is almost useless. The Monocacy aqueduct, in comparison, is in just as good a condition as when the canal was at its peak of operation.

The remarkable strength of the Monocacy aqueduct was shown during the Civil War. The Confederates, in an effort to cut this very important artery of communication and prevent supplies reaching the west, made repeated attempts to destroy this aqueduct. Although they made repeated attempts to destroy it they were foiled

by the remarkable strength of the structure.

As was said before the canal has not been used since 1924 and during the past ten years has ~~been~~ left go to ruin so that at present it is useless. Also since the advent of the railroad it would no longer be able to haul at a profit. So today with the other structures of the canal this aqueduct stands as a monument to a past means of travel that was one of the best and largest of its time.

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{ Photographs?
Sketches?

will add during next
year. A.S.