

points embraced in that survey, which presents alternately difficult and easy ground for the construction of the canal. The pass at and above Harper's Ferry is more difficult than any below, and that at Galloway's Mill far more difficult than that at Harper's Ferry. The pass at Galloway's Mill, above Marsh Run, continues for two miles; it will be necessary, at that place, to construct the canal in 8 feet water, by the side of a perpendicular cliff of limestone rock, from 80 to 100 feet in height. The canal will occupy one-sixth of the bed of the river, and be constructed entirely in it. There are many other difficult passes, most of them more difficult than the Point of Rocks at the Catoctin Mountain, and which offer serious difficulties in the construction of the work.

In answer to the 5th interrogatory to Mr. Roberts, I will state, that the only advantage I conceive the canal can derive from the construction of the Rail-road by its side is, the check it may give to the wash from the hills; this advantage is less important than at first it appears to be, as this wash will be led by drains along the upper side of the Rail-road, and passed under it occasionally by small culverts. The situation of the canal, then, and the expense of back drains and means used to protect the canal from injury of this description, will be the same as if no Rail-road existed. The disadvantages of the canal, arising from the construction of the Rail-road by its side, are,

First. The greater hazard in placing the work further into the river, thereby exposing it to the danger of freshets in the river, and increasing the cost for repairs probably 5 per cent.

Secondly. Entirely cutting off the communication between the country and the canal in some places, and interrupting it at nearly all others; debarring the canal of the advantages it would enjoy, were it perfectly accessible at all points, thereby directly injuring its commerce.

Thirdly. Increasing the difficulty of cost of procuring materials for the repair or improvement of the canal probably 10 per cent.

In verification of the foregoing answers to the interrogatories propounded to me, I have hereto subscribed my name.

ALFRED CRUGER.

*Report of Alfred Cruger, Resident Engineer of the Chesapeake and Ohio Canal, on certain inquiries submitted by the representatives of the Stock owned by the States of Maryland and Virginia, to the President and Directors of the Chesapeake and Ohio Canal Company, and by them referred to the Resident Engineer.*

WASHINGTON, 15th June, 1832.

GENTLEMEN:

In answer to the interrogatories which are submitted to the Board of Directors by the proxies of the States of Maryland and Virginia, and to which my attention has been directed by the President of the Company, I hereby report:

That the present position of the locks, and their lifts, or elevations, remain the same as they were located in 1828, by myself, but differ from the location of Mr. Roberts, in his independent location. Around the difficult passes, the position of the Canal continues the same, within a few feet to the right or left, as by the location of 1828. Through the level ground, between the Points of Rocks, and above them, the line follows pretty nearly the route designated by Mr. Roberts, sometimes to the right, and again to the left, not so much on the river bank as the location of 1828. The quantity of excavation, &c. will be generally diminished by such changes, which were mainly the motives by which the Engineer was governed in this change.

In order to explain fully to the Board, all the considerations which influenced us in the location of the Canal, it will be necessary to enter more into detail. The instructions from the Engineer in Chief, in 1828, were, on the river bottoms, to occupy, as closely as possible, (consistent with the safety of the Canal) the river bank, for these reasons: to obviate the necessity of being compelled to construct bridges across the Canal, for the accommodation of

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