

and which I would respectfully advise should be completely done at the earliest practicable period, as the annual exposure of the dams to the Summer's sun must, of necessity, cause *the rot* to destroy them with great rapidity.

Under present circumstances, the leaks in each of these dams seem to be just about sufficient to pass under a head of 15 feet, the entire summer flow of the Potomac during a dry season, leaving 5 feet of the crest of each work exposed for some weeks in almost every year. This indicates dam No. 6 to be the tightest of the three, as the river is considerably smaller at its site than it is at the locations of the others.

The heavy ice freshet of February, 1840, made a large breach in dam No. 4, which has been successfully repaired during the Summer and Autumn, by the superintendent of the 3d division; who also replaced a large portion of the downstream sheathing (which had been injured) with 6 inch plank, which will be a decided improvement, as the old 3 inch sheathing was entirely too light to withstand the tremendous re-action of drift which the figure of the dam causes to take place during freshets with extraordinary violence, both here and at dam No. 5. Indeed, it remains to be seen whether even the 6 inch sheathing will prove entirely successful in resisting those assaults which a radical defect in the figure of the overfall profile necessarily produces.

It was to have been expected that the maintenance of dams of sufficient dimensions and extent to bridle a river so formidable during freshets, and rapid in its downward course from the mountains, would be expensive: it will not therefore be a disappointment to know that the day is not far distant when both dams No. 4 and 5 will need extensive repairs; and this period has been not a little hastened by the Summer exposure before alluded to. Whenever these large repairs are made, which ought to be taken in hand in time, I would recommend that the profile of those works should be altered, so that the overfall may be nearly perpendicular, which will destroy the re-action that now takes place during floods.

The experience of the few last years indicates, in a decided manner, that the traffic of the country bordering upon the Potomac, or what may be called the "*way trade*," will be able to pay all the expenses of the company and keep the canal in repair. This is a very satisfactory prospect, as it will leave the tolls upon the *thorough trade* from Cumberland, to enter the