

and of sufficient height to check the flow of the stream for a short distance back, and, when the rivers were low, to produce nearly still water. [MODE OF GAUGING.]—The flow of the water over the dam, concentrated when low into the notch was observed daily during a period of nearly two months and the minimum of these observations may be safely taken as the minimum flow of the respective streams this season. The accompanying paper, marked W. will exhibit the details of all the measurements made in the valley of the Patuxent and the formula by which the actual flow was deduced. In the table which follows here the results merely are given of those which pertain properly to the Brookville route. The document W. exhibits as well the measurements made in the Patuxent in connection with the upper Seneca route. The measurements in the Patuxent Valley were made throughout by one person, but a distance of upwards of 10 miles intervened between the highest and lowest dams, the assistant necessarily remained one night in the neighborhood of the lowest dam on the river, and the next near the highest, the measurements of the extreme dams were therefore made on the morning of one day and the evening of the next, alternatively. This explanation will in a great measure account for the discrepancies which appear in the results. A fall of rain is rapidly visible on these streams and as rapidly obliterated, one hour therefore of difference in time may make a considerable difference in the measurements; if the one dam up the stream has been examined immediately after the fall and when the water has reached its maximum, and another some distance lower 4 or 5 hours afterwards the relative proportions of water warrantable from their positions, will not be satisfied. It may further be remarked that these dams were constructed with a view only to the measurement of the minimum flow of the streams. To ascertain this correctly the observations were continued daily during the two driest months: when the water was high however, as was several times the case in consequence of falls of rain above, the gauging will not give the flow so correctly as when low. At such times the current was moving with considerable rapidity throughout the space, which under other circumstances exhibited still water: the water was likewise higher than the notch and the ascertained space above the top of the proper notch was calculated with reference to the upper or entire width of the stream, as another notch. The measurements at such times will always give results considerably below the truth. Where the stream is low such discrepancies will not be observed the amount then corresponds pretty nearly. With reference, first, to the accompanying document W. the Patuxent dams will be found numbered in the summary which closes that document.

No. 1 and 2 were formed in view of the upper route surveyed by Mr. Trimble and since re-examined this season and already described in another part of this report. No. 3 was intended merely as a check on No. 1 and 2. Nos. 4 and 5 were erected with reference to the lower or Brookville route. No. 6 as a check