In order to record the many changes taking place upon the river, notes were taken every month and full surveys were made after all great changes. These notes were plotted upon the original map, in pencil, and tracings made and fyled away. By applying any one of these tracings upon the original map, the change is distinctly scen; in the same way, the tracing for any month can be compared with that for any other month, and the varions changes noted. All these different surveys, if plotted on the original map in a permanent manner, would form such confusion of lines and colours, that the result would be unintelligible.

The material found in the bed of the river where borings were made, generally consisted of sand, with layers and balls of elay, and some quicksaud; and subsequently in sinking the piers of the bridge, an opportunity was afforded for verifying, by sight, the information which had been obtained by boring. In most cases a deposit of boulders, small stones, and gravel was found immediately on top of bed rock.

In one ease, at a depth of 34 feet below the river bottom, the remains of brickwork, and also a bar of railroad V iron were found, proving that scour had taken place to that depth.

The fall in the water surface of the river was established by eareful levels taken at different stages. At stage of 86, in a distance of 4.70 miles, the fall was found to be 4.37 feet, or 0.93 feet per mile, at low water 0.80 feet per mile. During the running of the ice, and at time of highest water, no satisfactory levels could be obtained. The changes were so rapid between the level of 86 and 92, that it was found impossible to get accurate results.

The rate of current, as found by experiments with floats at different stages of the river, varied from $2\frac{1}{2}$ miles to $3\frac{3}{4}$ miles per hour, at stage of 92.

The calculated rate of eurrent at stage of 100.0 is $4\frac{1}{3}$ miles per hour.

At times of flood, in places, the current is greatly increased by gorges breaking loose; so much so that steamers sometimes find it difficult to stem the stream in getting around the bends.

The following table shows the sectional area, velocity and discharge at several stages of the river.

Stage of Sectional		Fall.		Velocity.		Discharge	
Water.	Area.	Per foot.	P. mile	F. p. sec.	М. р. Н.	per sec. cub. ft.	Remarks
78 80 86 92 100 Gorge.	Sq. feet, 5355 6205 13095 21975 { 33175 { 7,200	Feet. .0001515 .0001649 .0001761 .0001809 .0001860	Feet. 0.80 0.87 0.93 0.96 0.98	3.65 3.94 3.81 5.50 6.36 1.0 9.88	$2 \cdot 49 2 \cdot 69 2 \cdot 60 3 \cdot 75 4 \cdot 34 0 \cdot 68 6 \cdot 74$	$\left.\begin{array}{c}19545\\24448\\49892\\120863\\210993\\7200\end{array}\right\}$	By float. Calculation. By float. By float. Calculation.

TABLE OF DISCHARGE.