deepening beds, that they produce generally only the smoothed variety, which does not require constancy of position. Nearly all streams produce this simplest form. Scour effects on bowlders are sometimes found even in small streams, where their courses are permanently choked with great bowlders through which the stream trickles constantly. But so far as known to the writer, the Mattawa valley is the first case where the existence of a great ancient river now extinct has been inferred from such evidence.

Besides the scoured bowlders on the terrace at Mattawa there is but one other place higher up the Mattawa valley where these peculiar stones were made in large numbers in rapids of the ancient river. At Des Epines rapids, eight and one-quarter miles above Mattawa, scoured bowlders are developed in great profusion and perfection of form at heights entirely above the reach of the modern river. At this place bowlders with deep basins or potholes in them were found on the north side over forty feet above the water.

On a comparison of the results of observations on the several bowldery rapids of the ancient river, a very clear explanation of the plentiful occurrence of scoured bowlders in some rapids and their scarcity or absence in others was found. Wherever a stream of sufficient volume to transport gravel in considerable quantities descended from the adjacent high drift-covered country and poured its contribution into the ancient outlet at or just above a rapid, scoured bowlders are numerous. But where the water that passed over the bowlders issued directly from a lake, and hence without any such supply of gravel, scoured bowlders are few or absent altogether. Boom creek entered the ancient outlet on the south side about a mile above Mattawa and furnished an abundant supply of gravel for the current to roll along over the bowlders of the Mattawa terrace. That Boom creek did in fact supply a large amount of gravel is attested by the present existence of a very considerable delta of sand and gravel 50 to 60 feet above the modern Mattawa river where the creek enters the old channel. The influence of the ancient outlet current is shown by the fact that these sediments have been carried down that side of the channel quite extensively and spread over part of the bowldery terrace. At Des Epines rapids the gravel supply came from the Amable du Fond river, which enters on the south side less than half a mile above. This stream is nearly as large as the Mattawa itself and it cuts extensive gravel beds a short distance above its mouth.

On the other hand, in the bowldery rapids at the head of Lost river (foot of Turtle lake) no basined bowlders and few even of the less pronounced forms of scour were found. They