ON ROUNDED PEBBLES.[1]

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DURING the field work of 1943, the writer observed in the bed of Salmon River, eastern Quebec, a number of reddish pebbles. Examined, these proved to be of brick; and all were well rounded (Fig. 1). It was evident that if the history of these pebbles could be traced, they might yield quantitative data on the conditions required for rounding.

Salmon River, a tributary of St. Francis River, runs north through the eastern part of the Scotstown quadrangle, longitude 71° to 71° 30′, north latitude 45° 30′ to 45° 45′, in the Eastern Townships of Quebec. Scotstown, a small manufacturing center, is situated on the river near the south boundary of the quadrangle. At Scotstown the river is 90 feet wide, and in low water has an average depth of 12 to 18 inches; in times

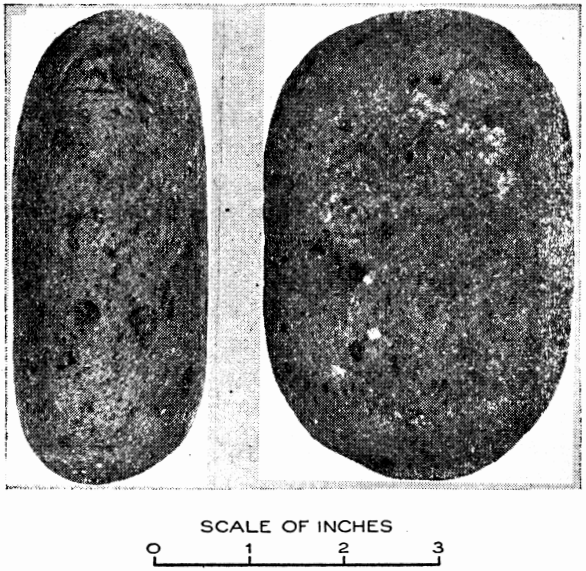

Fig. 1. Side and Front views of rounded brick pebble from bed of Salmon River, half a mile below Scotstown, Quebec.

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of flood the depth may attain 6 feet, or even more. Below the village the river is one long rapid for about two miles, with a fall approximately of 40 feet per mile. The pebbles were observed almost exactly half a mile below the bridge at the village.

The pebbles are fairly numerous, hence must have had some source of abundant supply. As the village houses, with one or two recent exceptions, are all of frame construction, except of course for the chimneys, this rules out the possibility of the fragments being tossed in the water by small boys.

Just above the present bridge is a boiler-house built of brick at some time prior to 1910; and at first sight it seemed as if the brick fragments under discussion had most probably fallen into the river during its construction. Further inquiry, however, ruled out this possibility also.

According to Mr. John Taylor, one of the oldest inhabitants, a short distance below the present bridge there was a concrete dam, above which a lumber company built a brick stack on the shore of the river, some 60 years ago. After some 15 years, the company ceased operations, and the stack was wrecked and allowed to fall on the bank; and the bricks were sold to persons needing them for building. Some 20 or 25 years ago, according to Taylor, there was a big flood, so high that the water flowed around the ends of the dam and cut deep channels. Taylor stated that 16-foot logs were carried through these channels, on end; but making all allowances for pardonable exaggeration, it is not difficult to believe that the ground was gullied to perhaps 7 or 8 feet. The flood appears to have carried away the remnants of the stack.

Taylor's story was corroborated by the manager of the Guelph Cask Veneer and Plywood Company. According to him, the flood occurred at some time after he returned from the Great War in 1919. It washed out a bridge maintained by that company at or near the dam; and the bridge was replaced the following year. Reference to the books of the company showed no mention of the expense of replacement in 1923 or later; as further investigation would have required digging out older books from the vault, the writer did not press it. Obviously, however, the bridge must have been replaced not later than 1922, so that the flood must have taken place in 1921 or one of the two previous years—22 to 24 years ago.

The concrete dam mentioned was maintained by the local electric light company till 1926 or 1927. At that time power was brought in from a distance, and the need for its production locally ceased. The dam was thereupon destroyed.

This dam would certainly have barred the passage of brick fragments as long as it existed, except during the big flood; and, as mentioned, the flood also seems to have carried into the river the remains of the old stack. If the inferences are correct, then thorough rounding of the fragments occurred in less than 25 years, in the course of a movement of slightly less than half a mile downstream.

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