

1892. Annual Report of the Department of Marine for 1892; Appendix No. 4, on the Meteorological Service. Report by Mr. C. Carpmæl, addressed to the honourable the Minister of Marine and Fisheries, Ottawa. Under the heading TIDAL SERVICE:—

SIR,—I have the honour to submit herewith the report on the Tidal Service from December 31, 1891, to June 30, 1892.

The working up of the observations already taken was proceeded with.

Three additional tide gauges have been ordered from Mr. J. White, of Glasgow. One of these it is proposed to place at Lévis dry dock. The others I would suggest should be used in the Gulf of St. Lawrence, one probably on the Magdalen Islands and the other on St. Paul's Island.

The tide-house and box for placing at Southwest Point, Anticosti, were constructed at Quebec.

The work at Father Point was found much more difficult than was anticipated. Owing to the character of the rock, blasting has but little effect, and it was found that it would cost more than double what had been estimated. Accordingly the work was suspended to see whether some cheaper method of construction could not be found. The great difficulty to be guarded against in this case is the danger of the observations being interfered with by frost.

At St. John the difficulty with respect to the site was not settled as expected, and accordingly nothing could be done until after the close of the fiscal year. I may add that since the close of the fiscal year the work has been pushed forward, although, owing to a storm having destroyed the erection for carrying the gauge at Southwest Point, Anticosti, the only one of the three gauges, already received from the makers, which will be in operation during the coming winter, will be that at St. John, N.B. Full particulars of the work performed this summer will be given in my next report.

1893. Annual Report of the Department of Marine for 1893. Appendix No. 3.

The report of Mr. Carpmæl in this appendix, is dated Toronto, September 28, 1893, and the following extracts will explain the work done under his supervision, up to that date:—

I have the honour to report that early in July I secured the services of Capt. B. Douglas, R.N.R., to assist in the work of erecting gauges and in other work connected with the service.

Capt. Douglas joined me at Quebec on July 16, and we proceeded by the government s.s. *Alert*, and arrived at Southwest Point, Anticosti, on July 26.

After together examining the site which I had selected in the previous year, we agreed that it was the most eligible that could be chosen, that it was capable of being made safe with certain appliances, and the expenditure would be less than at any other site.

The column and other materials for the erection of the gauge were landed, and with the assistance of two carpenters and some labourers, the gauge was placed and was in working order by the 12th of August.

On the 7th it blew hard from the northwest, a speed of 32 miles, and a very heavy sea rolling in, afforded a good test of the stability of the structure. But it stood well; the vibration of the column was slight.

Those who had experience of such work as well as those resident on the spot agreed that the structure as placed was secure, but as will be seen later, these anticipations were not verified.

Leaving Southwest Point on the 12th August, we proceeded to St. John, N.B. We selected a site in the northeast corner of the warehouse on Reed's Point wharf, in preference to one I had inspected outside the warehouse, and where the gauge recently erected now stands, but at that time the harbour master considered it was not eligible, owing to its being exposed to danger of injury from ships' lines and hawsers.

We then proceeded to Grindstone, Magdalen Islands, where we arrived on August 23. During our stay an excellent site for a tide gauge was selected at the east end of the breakwater built by one of the leading merchants, Mr. Leslie. A plan and speci-