the true tide curve. This difficulty was not anticipated; as according to the best information that could be obtained, a deep water wharf was to be found there. As the materials for the erection of the gauge had to be brought from Nova Scotia, it was not possible to meet this difficulty at the time. The best method of doing so will be to connect a pipe with the inlet by which the water is admitted to the guage, and lay it out along the bottom into deep water where the wave motion ceases to be felt.

At Father Point the shore between high and low water consists entirely of hard shale rock, running in ridges or reefs parallel with the shore. At the outer side, the reef falls off abruptly to low water mark, and from it a hard clay bottom slopes gradually off into deeper water. There is no shelter, as there is a clear reach of 25 miles in all directions from W.N.W. round by N. to E.; and in north-easterly directions, from which the worst gales come, the reach is from 45 to 60 miles. In winter there is also heavy ice which drifts up and down with the tide, and forms an ice-sheet against the reef to a depth of 20 feet.

In these circumstances the best method to adopt was to sink a well at high water mark to the level of the lowest tides, and to excavate a trench across the reef to admit the tide to the well. The best site for the trench had been selected by the late Mr Carpmael; and he had also sunk the well to part of the depth required. The position chosen is immediately to the east of the lighthouse. The length of the trench from the well to low water is 270 feet.

The trench was excavated this season to the level throughout of low water at ordinary spring tides; and the tide was led to the well by means of piping laid along it. The excavation was done in three sections, the two inner ones being divided off by dams, and the water kept down by a steam-pump. The outer section could only be worked at the most favourable times at low water. The piping used is wooden; made of sound spruce and fir logs nearly 12 inches diameter, with a bore of 3 inches. As it is laid green, and is constantly under water it is more durable than iron, and second only to brass piping, which was considered too expensive to use. It is jointed with sail cloth saturated with white lead.

The trench is 9 to 10 feet deep for most of its [illegible] it would have been very expensive to have given it an additional depth of [illegible] ach extreme low water, chiefly on account of the amount of pumping requ[illegible]

The plan of syphoning between the levels of o[illegible] treme low water was therefore adopted. An air-tap and a special air-p[illegible] ided to allow any air which may enter the pipe to escape, and thus to keep i[illegible] tly filled with water. In the outer end of the trench, the sea surges in so heavily in rough weather that the water is much mixed with air; and to avoid any trouble from this cause, it was decided to lay an iron pipe out along the bottom for about 100 feet, extending from the end of the main pipe into water which has a depth of about 12 feet at lowest tides. The end of the main pipe is protected by a cement dam which makes the connection between the two pipes accessible; and it is always possible to renew the outer pipe if necessary.

A length of old boiler is placed vertically in the well to form an open shaft for the tide-pipes, in which heating is provided in the usual way to prevent freezing in winter. The boiler is three feet in diameter. and is lined with wood for additional warmth.

The completion of the excavation and pipe laying have been delayed by gales which have been exceptionally severe this autumn; but the tide-gauge will probably be in working order within a week or two of the present date.

At the Anticosti station the recording instrument has been replaced by one of improved scale; and an important alteration has also been made to secure better protection in rough wether. It is not infrequent in heavy gales for the waves to break entirely over the tide-house which containes the instrument.

On account of the importance of St. Paul Island as a tide station, it was thought better to make sufficient expenditure to establish it thoroughly, and to discontinue the observations at the neighbouring station on the Magdalen Islands; as it also had failed to work in January, and some expenditure would have been required there in any case. A complete outfit remains there which can be utilized for the equipment of a new station.