as they are so thin and light; but unfortunately, in sea water they rust through in a few months time, which has necessitated the frequent redetermination of the datum plane of reference. The divisions and figures on these tapes are marked by a process of etching, as the metal is too thin to engrave; and if any non-corrosive metal were substituted for steel, such as aluminium or nickel, the figures could net well be etched upon it. The attempt to protect the steel by lacquer or copper-plating has been only partially successful. A trial is now being made with a ribband of German silver, with a small punched hole at each foot, which is marked by a stamped number.

All of the stations are especially arranged for heating in winter to prevent the tide pipes from freezing. The heating is supplied by 'coal oil lamps or small oil stores; and during the past year improvements have been made in the forms of lamps and burners used, with a view to greater efficiency and safety, as the lamps have to be kept burning throughout the night.

At stations where it is necessary to have a continuous barometric record, a barograph is provided. In some cases the records at present taken by the Meteorological Service, are sufficient for tidal purposes.

In the recording instrument now in use, the driving clock forms a part of the whole, and cannot be detached. Hence if anything goes wrong with the elock, the whole instrument has to be removed and forwarded to some city for repair. This has been the chief source of interruption to the record at the more isolated stations; especially at those with which there is no communication throughout the winter months. From extensive inquiry it appears that all the various patterns of instruments for recording the tide are made on this principle; and to avoid the inconvenience referred to, it will be necessary to design a new form of instrument in which the clock can be readily detached. When the clock has to be sent away for cleaning or repairs, it can then be replaced by another in a few minutes, without interruption to the record. At present, all the recording instruments are working satisfactorily, and they should continue to do so until this change in design can be made for the stations where it is required.

At some of the more exposed stations, much trouble has been given by the movement of the waves in rough weather, which is often so considerable as to record itself on the tidal diagram; and the tidal curve itself is thus complicated with wave motion. The inlet pipes which admit the water to the vertical tide pipes, were originally provided with finely perforated roses or strainers with a view to preventing this; but they have not served this purpose successfully. The further method was therefore tried, at St. Paul Island, of laying a long intake-pipe out along the bottom into deeper water, where the wave motion would naturally be less This intake consists of a two-inch iron pipe with joints of rubber hose for felt. flexibility in laying, and a special fitting by which to connect it under water with the lower end of the tide pipe. It is laid entirely below low water, and ends in a depth of 18 feet; and yet it appears to have comparatively little effect in reducing the amount of the wave motion on the tidal diagram. Possibly in the severe storms of winter, it may be relatively of greater advantage. Even at Father Point, where the intake-pipe consists of 260 feet of three-inch pipe, continued by 140 feet of twoinch pipe, ending at a depth of 12 feet at low water, the wave motion is still perceptible on the tidal diagram in very rough weather. If such a pipe could be carried out into water of sufficient depth, it would no doubt secure the desired result; but there is usually a limit to the depth which it is practicable to reach. At Fortean Bay, where the tide gauge for the Strait of Belle Isle is situated, the bay itself freezes over, which keeps the water surface quiet during the winter gales, and thus obviates the greater part of the difficulty. The effect of the wave motion which still remains on the tidal diagram itself, it is necessary to eliminate by tracing a mean line to represent the actual tide curve.

The tide gauge at Father Point, which was incomplete at the date of last year's report, was not finished until late in the season, on account of the delays met with; but on the 17th of last December it was finally in working order. The difficulties were increased by the unusual severity of the gales in the fall, which destroyed repeatedly the temporary rocky foreshore. The inthe winter was setting in much of the work would remain incomplete until 1

The intake-pipe serv the tide well, which is sit low water; and between This method was adopte below water, which woul method has proved entir pipe in the tide trench c inches, and these were lai were carefully jointed with were also connected with escape, in order to keep t the action of the siphon. trench in rough weather, precaution was taken to p pipe was laid out along th extending into 12 feet dep the intake-pipe is allowed

This spring, an ice st rocky foreshore. This ca easily relaid; and the end cement dam across the ou

An additional tide gaplaced at the north wha Fisheries. This site has t Dock Yard, where the old the tide tables for 'Halifa: observations into direct re be ascertained whether tl influence on the tide in Hz open Atlantic coast in the open Atlantic to a site that any suc

During the past year at St. Paul Island, whi unprecedenced gale of the violence, and along the adj which were thought to be Paul Island was built in a cribwork, set between the at both ends. The cribstorm, but the tide-house, away and the recording im set to the makers in Glass the repairs this season the slands at 23 feet above trengthened, which should

The tide gauge at Grit the materials used in the e Magdalen Islands proved t difficult for days together vertainty, especially at the disturbing effect of the win small a range, but it also enters the Gulf of St. Law

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