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and it is heavily ballasted and faced with iron plating. The opportunity was also taken to test and adjust the diploidoscope, and to set the barograph correctly by means of a simultaneous comparison on a favourable day, transmitted by cable from the Meteorological observatory at Sydney, Cape Breton.

At South-west Point, Anticosti, the cribwork which protects the tide gauge in front, was in a precarious condition when visited in the summer of 1897. Consequently in December of that year, a severe gale shifted the iron casing which incloses the tide pipes; and the gauge was out of order until the end of January, when the ice took in the bay, and kept the sea quiet. It has been found that the difference in the time of the tide between Anticosti and Quebec is fairly constant; and as a record on a good scale has been obtained there already, during three years, it was decided to forego the expense of thorough repairs, and merely to continue the observations as long as the gauge will work. As the shifting of the casing threw it out of the vertical, the tide pipes were removed, and the whole casing, three feet in diameter, has been used as a tide well. It has fortunately continued to work in this condition throughout last summer, and up to the present date; which has secured this additional record.

At Father Point the tide gauge works by siphoning at the low tides; and to complete the connection, an intake pipe extends seawards along the bottom for about two hundred feet. This pipe was carried away by the ice in the spring, and again by an unusually heavy gale on October 15th. It was forunately possible to replace it before winter set in; which should secure the record of the lowest of the tides during the winter season.

At Halifax the only interruption occurred through the breaking of the hair-spring in the clock of the gauge, and the delay in obtaining another to replace it. This hair-spring was of palladium, as steel springs rust so badly as to interfere with the rate of the clocks. It is probable, however, that steel hair-springs when gilt, or the alloy used for non-magnetic hair-springs, will prove the best on the whole, because less liable to break. Where the new type of gauge is used with the interchangeable clock cylinder, the danger of interruption from such accidents is avoided.

The tide gauge at the Levis Dry Dock, in Quebec harbour, is the only one which stands upon masonry; and being in a sheltered harbour, it has given scarcely any trouble. Some interruption had occurred from the tide floats sticking in the tide pipes, since the confined space in which these pipes had to be placed, reduced their diameter to three inches. Brass tide pipes $3\frac{1}{2}$ inches inside diameter, have been substituted for the iron ones, and specially designed copper floats of $2\frac{1}{2}$ inches diameter were made to correspond. As these pipes will keep clean, this size of float will have sufficient play; and it is ballasted with an outside lead weight which will keep it truly vertical and prevent it from jamming in the pipe. The float has also 50 per cent greater area than the old one, which was only two inches in diameter, and even then was liable to stick in the pipe when it became rusted.

Pacific Coast Record.—In addition to the seven principal tidal stations on our eastern coasts, there are also two tidal stations on the Pacific, which are under the supervision of the Department of Public Works; one at Sand Heads, at the mouth of the Fraser River in the Gulf of Georgia; and the other at Victoria, afterwards removed to the neighbouring harbour of Esquimalt. The record obtained at these stations, extends in all from February, 1895 to date; a period of over three years. A copy of the record has been furnished to this Department in the form of a set of blue prints, reproduced from the originals. In the fire of February, 1897, which destroyed the attics of the Marine Department, in which the Tidal Survey office then was, these copies were lost; as the first attention had to be given to the original tidal records on our eastern coasts, which were all saved, with the accompanying comparisons for datum level, barograph records, and meteorological abstracts.

The copies were afterwards replaced through the kindness of the Chief Engineer of Public Works. The Superintendent of the United States Coast and Geodetic Survey, hearing of the existence of these records through the reports of the Tidal Survey, made request for the loan of them in April, 1897; as they are the only points at which tidal observations have been secured, between the Pacific coast of the United States and Alaska. This request was complied with; and subsequently, in March, 1898, the copies were lent to the Meteorological observatory at Toronto, for examination in the investi-