At Charlottetown, the barometer fell steadily from 30.270 on October 9 at 21 o'clock; the lowest observed being 28.893 on the 11th at 21 o'clock; Standard time. On the 11th there was a violent rain storm from 18 to 20.30 o'clock.

October 9. Wind north-east and east all day .-. Rainy.

" 10. Wind east, falling to c lm. Raining.

"11. Wind south-east, east, and south-west. Rain heavy at times.
"12. Wind north-east or calm. Weather clearing.

At Summerside, the weather observations were as follows :---

October 9. Wind north-east, with rain ; all day.

10. Wind "

"

"

" 11. Wind east and north-east all day. Rainy.

12. Wind north, changing to north west in the afternoon.

At the time of the exceptional high water on December 5, 1900, the wind was also north-east, amounting to a moderate gale. At Pictou the barometer reached its lowest, 29 23, on the 5th at 14 o'clock. The wind record was as follows:—

December	4.	Wind	west to north-west.	Force II to VI, Beaufort scale.		
	5.	"	north-east all day.		VII to VI.	"
"	6.	"	north-west all day.	"	III to I,	"

## CURRENT IN NORTHUMBERLAND STRAIT.

Observations of the turn of the current were taken in 1901 on the north side of. Pictou island, from June 20 till September 15; a total of 164 observations being secured. These were compared with the simultaneous tidal records at Pictou, which has proved the best port of reference for Northumberland strait; and with the tide at St. Paul island, the principal tidal station for this region.

In these comparisons between the time of the turn of the current in the strait and the time of the tide, it was found that the vari tion in the difference of time was somewhat greater with Pictou than with St. Paul island. It will therefore be better eventually to refer the current directly to the tide at St. Paul island; as the tide tables for Pictou are deduced from that station, and the ultimate reference is to St. Paul island in either case. This will be the best mode of procedure when sufficiently extended observations have been secured to enable a current table to be computed for this strait; but for our present purpose, to indicate the laws which govern the current, we may make the reference to Pictou, the nearer station.

The variation in the difference of time between the turn of the current and the tide is large; as the turn may take place as much as two hours before high water or after low water. The greater part of the variation follows the change in the moon's declination; as this has been found from the first to be the ruling element in this region. This is very confusing to the mariner, as the turn of the current in relation to the tide is out of accord with the moon's phases, and has thus no fixed relation to the spring and neap tides. The greatest apparent irregularity is when the moon's declination is at its maximum; and this occurs sometimes at the spring tides and sometimes at the neaps. The ordinary navigator takes refuge in the conclusion that the currents are chiefly influenced by the wind.

In the case of a tide which is ruled by declination, the chief variation is of the nature of a diurnal inequality. To arrive at correct conclusions, it is therefore important to have observations both day and night. The shore observations which were the only ones that could be taken in the circumstances, could only be obtained in the day time; but to make up for this, a careful analysis of the results was made, on which were will endeavour to base, as concisely as possible, a statement of the laws governing the current in this strait. These laws are well established by the observations; but the amounts of the time-intervals between current and tide are subject to revision, as the length of these observations was not sufficient to eliminate irregularities due to weather conditions. RELAT

() found interv F

moon declin

currer an up water

the of

of the above the ti

nearly

the s

which

is wit

the m

and s

form

18

1h.

strait