

strength of both flood and ebb was closely proportional to the rise or fall of the corresponding tide at St. John. This indicates a method with a rational or physical basis by which the velocity of the current, at different times and places, can be correctly compared. It was found best to adopt a range of 24 feet at St. John as the standard with which to bring the strength of the current into relation. When the range of the tide is greater or less than this amount, the currents will be proportionately stronger or weaker.

Variation in the range of the tide.—As this variation is a direct indication of the relative strength of the current at different times, we give in the table below the comparative amounts both at St. John and at the head of the Bay of Fundy.

The figures for St. John are from tides registered during the season of 1904 on the tide gauge there. The springs and neaps selected are in the months of August and September, when the perigee and apogee coincided with the full and change of the moon; and the intermediate neaps were closely at the moon's mean distance. The range given is the mean for two consecutive high waters and low waters, as the diurnal inequality is thus eliminated. The figures for Cumberland Basin are from day tides only, taken in 1870 by the Engineers of the proposed Baie Verte canal. The months selected are October and November, when the above coincidence occurred in that year.

Description of Tide.	St. John, N. B.		Cumberland Basin.	
	Range in feet.	Difference.	Range in feet.	Difference.
At Perigee. Range at Spring Tides	27.10	6.75	48.20	12.65
At Apogee. Range at Spring Tides	20.35		35.55	
Spring range. Mean of the above	23.72	6.20	41.87	12.12
Neap range, at Moon's mean distance	17.43		29.75	

At both the above localities, the difference in the range of the tides at perigee and apogee, is greater than the difference in the range at ordinary spring and neap tides. This shows the dominating influence of the moon's distance in this region; and the variation in the strength of the current is found to follow the same law.

The range of 24 feet at St. John, taken as the standard of comparison, is thus the mean spring range; or the range at spring tides when the moon is at its mean distance. This is as good a value as could be adopted, with which to correlate the actual velocities of the current as observed.

Method of reduction exemplified.—To explain this method more clearly, it may be illustrated by the following table. This shows some of the most equal and unequal currents met with. At Station J, off Brier island, the currents were the strongest found anywhere during the season, as the observations there were taken at the spring tides which coincided with the moon's perigee. There is a diurnal inequality in the current, in evident correspondence with the inequality in the tide itself; and for this, allowance is also made by the method employed.