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It is thus seen that one of the difficulties of dealing with the problem, is the constantly varying velocity which any system of gearing to be operated by the tides must be subject to and which must be sometimes as great as from 1 to 3 ; since a rise at neaps of 6 ft. can only create directly a motion having a velocity equal to but one third of that due to a rise at springs, of 18 ft., in the same number of hours ; because of the varying attraction or power of attraction of the moon and sun and according as they are in conjunction, as during what are called the syzygies, when the moon and sun both pull the same way, or in opposition, as at full moon, when their pull or influence is exercised in opposite directions ; and a minimum when the moon is in quadrature, when the then influences of the two attracting bodies are counteracting each other.

Again, as there are, during the 24 hours, two rises and falls of the tides and as at high tide, there is a momentary lull before the tide begins to ebb and at low tide a similar interval of what is called " slack water " ; there must also be in the working of any machinery actuated directly by the tides, the same dead points or nearly complete stoppages, which would render such a power as that of the tides absolutely out of question even if it could be economically utilized for such services as electric tramways, electric lighting or other services which require to be continuous and which, even if the motion of the tides were continuous, could not either be of uniform intensity ; since, as already said, the varying velocities of motion must at certain moments of the day, more so during certain periods of the month and still more so during the varying seasons of the year, be subjected to constantly varying fluctuation.

We have all noticed during our Summer rambles along the beaches of the St-Lawrence, or of any other tidal river, the differences in level of the tide water, of those to which the tides attain. This may be seen sometimes in cities where the ebbing tide will leave its mark upon a pier or wharf or jetty, or on the rocks on the loreshore where there are any. These however are but flitting or momentary mementoes which die away or are obliterated by the sun's heat or an evaporating blast of wind ; while the marks left along the sea coast or the shore of an estuary, remain there during the whole period or duration of a series of losing tides ; that is when the tides are waning with the waning lunar attraction.



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