

afterwards removed to the Dry Dock at Esquimalt, in May, 1897; where it has been in continuous operation to date.

Duplicate copies of these records were furnished to this Survey in the form of blue prints; but the whole set was lost in the fire in the departmental buildings in February, 1897. A second set from the Department of Public Works was fortunately obtained before the whole of the original record was destroyed in the extensive fire at New Westminster, in August, 1898. This emphasises the risk run, in allowing a record of such value to stand over for so long, before it is submitted to analysis. It is therefore reassuring to report that there are now three years of this record from which tidal constants have been determined; which thus places the results from this portion of it, in a position of equal security with the movements of the sun and moon themselves.

The length of record on which these tide tables are now based, is as follows:—

Victoria, on one full year, from April 1, 1895, to April 30, 1896.

Sand Heads, Fraser river, on two years, from May 1, 1895, to May 31, 1896; and from October 1, 1896, to October 28, 1897.

These tables will be of much service to our west coast, because of the complication of the tides there, which results from the large diurnal inequality. Heretofore, the best approximations available were those given in the tide tables of the United States Coast Survey; where the tides in the Strait of Georgia are referred to Port Townsend at the mouth of Puget Sound, and the tides at Victoria are deduced from Galveston on the Gulf of Mexico.

The tides at Victoria apparently, cannot be referred to the United States tidal station at Port Townsend, and the results obtained for the Strait of Georgia have been far from satisfactory; which in all probability is due to an alteration in the character or type of the tide after it enters the Strait of Fuca. This change is made clear now that the tidal constants have been obtained, as a comparison of the leading harmonic components given below will show. The progress of the tide is in the order of the columns. While there is a general increase in the values, in correspondence with the increase in the range of the tide itself, the proportions between the diurnal and semi-diurnal components are profoundly modified.

Symbol.	Tidal Component.	VICTORIA. (Strait of Fuca.)	PORT TOWNSEND. (Puget Sound.)	SAND HEADS. (Strait of Georgia.)
M ₂	Lunar semi-diurnal	1.23 feet.	2.22 feet.	2.81 feet.
S ₂	Solar semi-diurnal	0.33 "	0.55 "	0.68 "
K ₂	Luni-solar semi-diurnal	0.08 "	0.16 "	0.22 "
K ₁	Luni-solar diurnal	2.05 "	2.51 "	2.70 "
O	Lunar diurnal	1.24 "	1.45 "	1.48 "
P	Solar diurnal	0.62 "	0.80 "	0.80 "

In following the onward progress of the tide, it is thus necessary to take the Victoria tide as the type for the Strait of Fuca, while Port Townsend is probably typical of the Puget Sound region. The tide is then further modified in its passage through a network of narrow channels, in reaching the Strait of Georgia. In these circumstances, constant differences in time do not hold, as they usually do when a tide progresses evenly along a channel or strait. The only way to meet the difficulty is to secure tidal data for the Strait of Georgia itself, as has now been done.

With the tide tables now issued, tidal differences are given which enable the time of the tide to be found approximately for Esquimalt, Vancouver, New Westminster and Nanaimo. An explanation is given in the tide tables themselves, of the data on which these differences are based.