

mean currents in the two circuits, as measured by a galvanometer or voltameter, might be the same.]

II. "On the Diurnal Tides of Port Leopold, North Somerset."

By the REV. SAMUEL HAUGHTON, M.A., F.R.S., Fellow of Trinity College, Dublin. Received November 7, 1861.

(Abstract.)

The present is the first of a series of communications on the tides of the Arctic Seas which the author hopes to lay before the Royal Society. The MS. materials at his disposal embrace both the Atlantic and Pacific Arctic Tides, for which he was indebted to the Hydrographer, Captain Washington, R.N., to Captain Collinson, R.N., Captain Sir F. Leopold M'Clintock, R.N., and Captain Rochfort Maguire, R.N.

The present paper discusses fully the diurnal tide of Port Leopold, which is most remarkable from the proportion which it bears to the semidiurnal tide, a proportion which is unusually large. From the discussion of this tide, the author is enabled to announce with confidence several results or laws which he had previously obtained and published from the discussion of the small diurnal tides of the coasts of Ireland.

These results are given in detail in the paper itself. In the concluding portion of the paper, the author calculates, from received dynamical theories, the depth of the Atlantic Canal, from the proportion of the Solar to the Lunar coefficient, from the Diurnal Solitidal and Lunitidal Intervals, and from the Age and Acceleration of the Luni-diurnal Tide.

He hopes to forward shortly the discussion of the Semidiurnal and Parallaxic Tides of the same locality.