

Dr. Wm. H. Dall, U. S. C. S., attributes their presence to the inflow of warm fresh water, discharged by the large number of rivers flowing northward, and emptying in the vicinity of the polar basin. Atmospheric pressure, revealed by recent barometric tests, affords data for another plausible theory.

Dr. A. Geike has brought out discoveries in geology which merit consideration in the study of this subject. Earth is an oblate spheroid flattened $26 \frac{953}{1000}$ miles at the poles; but recent geodetic measurements show it to be an unsymmetrical form, whose equatorial circumference is an ellipse instead of a circle. Its greatest equatorial diameter at sea-level, where the vertices touch the surface in longitude $14^{\circ} 22'$ E. and $165^{\circ} 37'$ W., is nearly two miles longer than at right angles to it. How far inequalities of earth's form may disturb the equilibrium of its surface waters, and attract them by force of gravitation or some other power yet undemonstrated, is an inquiry pertinent to this subject.

Arcs of meridians have been measured, to determine with great accuracy the actual length of each separate degree of latitude from the Equator to the North Pole. These measurements show that the measured length of a degree increases with the latitude, and that a degree at the pole, where earth's surface is flattened one 300th part of its diameter, is now 3,662 feet, (0.694 of a mile) longer than at the increasing curvature of the protuberant Equator. Earth's form being now unsymmetrical, tends to keep its surface waters in a state of unrest. Many forces are continually laboring by different methods, to attain for these, a state nearer to equilibrium, thereby giving impulse to oceanic currents.

Mathew F. Maury, by an original system of classification, adopted in the U. S. wind and current charts, did much to attract a critical exploration of maritime currents. There may be a partial truth in all the many theories advanced. The voyages of the British ships *Lightning*, *Porcupine* and *Challenger*, United States' ships *Dolphin*, *Tuscarora*, *Fish Hawk*, and Swedish steamer *Vega*, have given us reliable data for scientific study; but a carefully preserved record of