

cover ; seemingly pointing to the earth being in the middle period of its existence, of which the three stages are : "youth with increasing, middle age with uniform, and old age with decreasing velocity of rotation." We know that there are retarding, as we know that there are accelerating, influences acting on the diurnal motion, and with the want of evidence of change it is not improbable that these influences sensibly destroy each other.

As far as the limits of accuracy that the different methods admit of, which have been used to determine the figure of the earth, there appears to be a coincidence between the vertical and the normal to the mean curvature ; the irregularities in this mean curvature, although not conclusively pointing to any systematic departures from the true spheroid, allow of the assumption that there might be a small difference between the two, resulting in a correspondingly small tendency amongst the particles of matter in a direction which I shall try to prove, if it exists, must be equatorwards. It does not seem possible that a fluid mass, the rotational velocity of which is increasing, whilst the transference of its particles towards the equator is being effected, whilst radiation and consequent solidification—resulting in a lessening ability amongst the particles to respond to the translating force—are simultaneously proceeding, could by any possibility result in an over-developed planet. In any case we know that the solid of equilibrium for the molten earth is one having diameters of 230'231, whereas the present diameters are 299'300, conclusive evidence that we are not over-developed if the argument against the supposition of a decreased value for the diurnal motion holds good.

It would be possible to reason out a poleward tendency in the waters of the earth, if we could assume that

they occupied a spheroid of less corresponding diameters than those of the mean earth ; but this is not a tenable argument, because we know that the land above sea-level is much less in volume than the depressions below it ; this, together with the fact that the waters of the earth are of less specific gravity than the mean earth, obliges us to conclude that the surface of the water-spheroid is at a greater distance from the centre of the earth than the mean surface of the same from the same ; therefore, whatever the amount of the tendency on this account, its *direction* must be equatorwards.

It is not possible to produce evidence of the direction of the actual movements in the waters of the earth, because of the impossibility of distinguishing between the effects of local and what might be distinguished by the term of "physical" disturbances. The evidence at the present, obtained from observations extending over a hundred years, proves that the waters of the earth are leaving the arctic circle at a rate of about four feet a century ; and although this is not advanced as proof that there is a physical tendency equatorwards, it is meant to point out that there is no present evidence for the direction of the assumed tendency.

In conclusion, I do not see that there is a single argument to support this supposed poleward tendency, unless the assumed existence of a "vast polar ocean" in the arctic regions can be accounted such ; for if there is a so situated "ocean," is it not equally certain that there is a vast Antarctic "continent ?" Even granting the existence of vast polar oceans in both situations, we might as reasonably infer an equatorial tendency from the presence there of the vast bodies of water that we know of, with this difference, however, that in one case we are arguing from a known existence,