http://www.geology.19thcenturyscience.org/books/1872-Figuier-BeforeFlood/README.htm



would be impossible, even approximately, to fix the duration), the star, originally gaseous, would attain a liquid state. It would then be considerably diminished in volume.

The laws of mechanics teach us that liquid bodies, when in a state of rotation, assume a spherical form; it is one of the laws of their being, emanating from the Creator, and is due to the force of attraction. Thus the Earth takes the spheroidal form, belonging to it, in common with the greater number of the celestial bodies.

The Earth is subject to two distinct movements; namely, a movement of translation round the sun, and a movement of rotation on its own axis—the latter a uniform movement, which produces the regular alternations of days and nights. Mechanics have also established the fact, which is confirmed by experiment, that a fluid mass in motion produces (as the result of the variation of the centrifugal force on its different diameters), a swelling towards the equatorial diameter of the sphere, and a flattening at the poles or extremities of its axis. It is in consequence of this law, that the Earth, when it was in a liquid state, became swollen at the equator, and depressed at its two poles; and that it has passed from its primitive spherical form to the spheroidal—that is, has become flattened at each of its polar extremities, and has assumed its present shape of an oblate spheroid.

This bulging at the equator and flattening towards the poles afford the most direct proofs, that can be adduced, of the original liquid state of our planet. A solid and non-elastic sphere—a stone ball, for example—might turn for ages upon its axis, and its form would sustain no change; but a fluid ball, or one of a pasty consistence, would swell out towards the middle, and, in the same proportion, become flattened at the extremities of its axis. It was upon this principle, namely, by admitting the primitive fluidity of the globe, that Newton announced *à priori* the bulging of the globe at the equator and its flattening at the poles; and he even calculated the amount of this depression. The actual measurement, both of this expansion and flattening, by Maupertuis, Clairaut, Camus, and Lemonnier, in 1736, proved how exact the calculations of the great geometrican were. Those gentlemen, together with the Abbé Outhier, were sent into Lapland by the Academy of Sciences; the Swedish astronomer, Celsius, accompanied them, and furnished them with the best instruments for measuring and surveying. At the same time the Academy sent Bouguer and Condamine to the equatorial regions of South America. The measurements taken in both these regions established the existence of the equatorial expansion and the polar depression, as Newton had estimated it to be in his calculations.