even ventured to determine numerically the amount of this compression, on the assumption of the homogeneous nature of the mass. It remained for the comparative measurements of degrees in the eighteenth and nineteenth centuries, at the equator, near the north pole, and in the temperate zones of both the southern and northern hemispheres, to determine exactly the mean amount of this compression, and by that means to ascertain the true figure of the Earth. The existence of this compression announces, as has already been observed in the "Picture of Nature,"* that which may be named the most ancient of all geognostic events—the condition of general fluidity of a planet, and its earlier and progressive solidification.

We began our description of the great epoch of Galileo, Kepler, Newton, and Leibnitz with the discoveries in the regions of space by means of the newly-invented telescope, and we now close it with the figure of the Earth, as it was then recognized from theoretical conclusions. "Newton was enabled to give an explanation of the system of the universe because he succeeded in discovering the force† from whose action the laws of Kepler necessarily result, and which most correspond with these phenomena, since these laws corresponded to and predicted them." The discovery of such a force, the existence of which Newton has developed in his immortal work, the *Principia* (which comprise the general sciences of nature), was almost simultaneous with the opening of the new paths to greater mathematical discoveries by means of the invention of the infinitesimal calculus. Intellectual labor shows itself in all its exalted grandeur where, instead of requiring external material means, it derives its light exclusively from the sources opened to pure abstraction by the mathematical development of thought. There dwells an irresistible charm, venerated by all antiquity, in the contemplation of mathematical truths—in the everlasting revelations of time and space, as they reveal

* *Cosmos*, vol. i., p. 163. The dispute regarding priority as to the knowledge of the Earth's compression, in reference to a memoir read by Huygens in 1669 before the Paris Academy, was first cleared up by Delambre in his *Hist. de l'Astr. Mod.*, t. i., p. lii., and t. ii., p. 558. Richer's return to Europe occurred indeed in 1673, but his work was not printed until 1679; and as Huygens left Paris in 1682, he did not write the *Additamentum* to the Memoir of 1669, the publication of which was very late, until he had already before his eyes the results of Richer's Pendulum Experiments, and of Newton's great work, ***Philosophiæ Naturalis Principia Mathematica.***

† Bessel, in *Schumacher's Jahrbuch für* 1843, s. 32.