

force which modern philosophy has established, is in the direction of the radius, and nearly perpendicular to the body's path. Kepler was right no further than in his suspicion of a connection between the cause of motion and the distance from the centre; not only was his knowledge imperfect in all particulars, but his most general conception of the mode of action of a cause of motion was erroneous.

With these general convictions and these physical notions in his mind, Kepler endeavored to detect numerical and geometrical relations among the parts of the solar system. After extraordinary labor, perseverance, and ingenuity, he was eminently successful in discovering such relations; but the glory and merit of interpreting them according to their physical meaning, was reserved for his greater successor, Newton.

CHAPTER IV.

INDUCTIVE EPOCH OF KEPLER.

Sect. 1.—Intellectual Character of Kepler.

SEVERAL persons,¹ especially in recent times, who have taken a view of the discoveries of Kepler, appear to have been surprised and somewhat discontented that conjectures, apparently so fanciful and arbitrary as his, should have led to important discoveries. They seem to have been alarmed at the *Moral* that their readers might draw, from the tale of a Quest of Knowledge, in which the Hero, though fantastical and self-willed, and violating in his conduct, as they conceived, all right rule and sound philosophy, is rewarded with the most signal triumphs. Perhaps one or two reflections may in some measure reconcile us to this result.

¹ Laplace, *Précis de l'Hist. d'Ast.* p. 94. "Il est affligeant pour l'esprit humain de voir ce grand homme, même dans ses derniers ouvrages, se complaire avec délices dans ses chimériques spéculations, et les regarder comme l'âme et la vie de l'astronomie."

Hist. of Ast., L. U. K., p. 53. "This success [of Kepler] may well inspire with dismay those who are accustomed to consider experiment and rigorous induction as the only means to interrogate nature with success."

Life of Kepler, L. U. K., p. 14, "Bad philosophy." P. 15, "Kepler's miraculous good fortune in seizing truths across the wildest and most absurd theories." P. 54, "The danger of attempting to follow his method in the pursuit of truth."