

It is true, that the real motions of the heavenly bodies are simpler than the apparent motions; and that we, who are in the habit of representing to our minds their real arrangement, become impatient of the seeming confusion and disorder of the ancient hypotheses. But this real arrangement never could have been detected by philosophers, if the apparent motions had not been strictly examined and successfully analyzed. How far the connection between the facts and the true theory is from being obvious or easily traced, any one may satisfy himself by endeavoring, from a general conception of the moon's real motions, to discover the rules which regulate the occurrences of eclipses; or even to explain to a learner, of what nature the apparent motions of the moon among the stars will be.

The unquestionable evidence of the merit and value of the Theory of Epicycles is to be found in this circumstance;—that it served to embody all the most exact knowledge then extant, to direct astronomers to the proper methods of making it more exact and complete, to point out new objects of attention and research; and that, after doing this at first, it was also able to take in, and preserve, all the new results of the active and persevering labors of a long series of Greek, Latin, Arabian, and modern European astronomers, till a new theory arose which could discharge this office. It may, perhaps, surprise some readers to be told, that the author of this next *great* step in astronomical theory, Copernicus, adopted the theory of epicycles; that is, he employed that which we have spoken of as its really valuable characteristic. “We¹⁴ must confess,” he says, “that the celestial motions are circular, or compounded of several circles, since their inequalities observe a fixed law and recur in value at certain intervals, which could not be, except that they were circular; for a circle alone can make that which has been, recur again.”

In this sense, therefore, the Hipparchian theory was a real and indestructible truth, which was not rejected, and replaced by different truths, but was adopted and incorporated into every succeeding astronomical theory; and which can never cease to be one of the most important and fundamental parts of our astronomical knowledge.

A moment's reflection will show that, in the events just spoken of, the introduction and establishment of the Theory of Epicycles, those characteristics were strictly exemplified, which we have asserted to be the conditions of every real advance in progressive science; namely,

¹⁴ Copernicus. *De Rev.* l. i. c. 4.