

Among all the opinions of the ancients, those which appeared to exercise the greatest influence on the direction and gradual development of the ideas of Copernicus are expressed, according to Gassendi, in a passage in the encyclopædic work of Martianus Mineus Capella, written in a half-barbarous language, and in the *System of the World* of Apollonius of Perga. According to the opinions described by Martianus Mineus of Madaura, and which have been very confidently ascribed, sometimes to the Egyptians, and sometimes to the Chaldeans,\*

\* See the profound treatment of this subject in Martin, *Etudes sur Timée*, t. ii., p. 111, *Cosmographie des Egyptiens*, and p. 129-133) *Antécédents du Système de Copernic*. The assertion of this learned philologist, that the original system of Pythagoras differed from that of Philolaus, and that it regarded the earth as fixed in the center of the universe, does not appear to me to be entirely conclusive (t. ii., p. 103 and 107). I would here explain myself more fully respecting the remarkable statement of Gassendi regarding the similarity of the systems of Tycho Brahe and Apollonius of Perga, to which I have referred in the text. We find the following passage in Gassendi's biographies: "Magnam imprimis rationem habuit Copernicus duarum opinionum affinium, quarum unam Martiano Capellæ, alteram Apollonio Pergæ attribuit. Apollonius solem delegit, circa quem, ut centrum, non modo Mercurius et Venus, verum etiam Mars, Jupiter, Saturnus suas obirent periodos, dum Sol interim, uti et Luna, circa Terram, ut circa centrum, quod foret Affixarum mundique centrum, moverentur; quæ deinceps quoque opinio Tychois propemodum fuit. Rationem autem magnam harum opinionum Copernicus habuit, quod utraque eximie Mercurii ac Veneris circuitiones repræsentaret, eximieque causam retrogradationum, directionum, stationum in iis apparentium exprimeret et posterior (Pergæi) quoque in tribus Planetis superioribus præstaret." (Gassendi, *Tychois Brahe Vita*, p. 296.) My friend the astronomer Galle, to whom I applied for information, agrees with me in thinking that nothing could justify Gassendi's decided statement. "In the passages," he writes to me, "to which you refer in Ptolemy's *Almagest* (in the commencement of book xii.), and in the works of Copernicus (lib. v., cap. 3, p. 141, a.; cap. 35, p. 179, a. and b.; cap. 36, p. 181, b.), the only questions considered are the retrogressions and stationary conditions of the planets, in which Apollonius's assumption of their revolution round the sun is indeed referred to (and Copernicus himself mentions expressly the assumption of the earth's standing still), but it can not be determined when he became acquainted with what he supposes to have been derived from Apollonius. We can only, therefore, conjecture that he assumed, on some later authority, that Apollonius of Perga had constructed a system similar to that of Tycho, although I do not find, even in Copernicus, any clear exposition of such a system, or any reference to ancient passages in which it may be spoken of. If lib. xii. of the *Almagest* should be the only source from whence the complete Tycho's view is ascribed to Apollonius, we may consider that Gassendi has gone too far in his suppositions, and that the case is precisely the same as that of the phases of Mercury and Venus, of which Copernicus spoke (lib. i., cap. 10, p. 7, b., and 8, a.), without decidedly applying them to his system. Apollonius may, perhaps, in a similar manner, have treat