

the common theory; and he proposes a new theory of the moon, for the very reason which did at last overturn the doctrine of epicycles, namely, that the ratio of their distances from the earth at different times was inconsistent with the circular hypothesis.⁶

It is obvious, that, along with his mathematical clearness of view, and his astronomical knowledge, Copernicus must have had great intellectual boldness and vigor, to conceive and fully develop a theory so different as his was from all received doctrines. His pupil and expositor, Rheticus, says to Schener, "I beg you to have this opinion concerning that learned man, my Preceptor; that he was an ardent admirer and follower of Ptolemy; but when he was compelled by phenomena and demonstration, he thought he did well to aim at the same mark at which Ptolemy had aimed, though with a bow and shafts of a very different material from his. We must recollect what Ptolemy says, *Δεῖ δ' ἐλευθέρον εἶναι τῇ γνώμῃ τὸν μέλλοντα φιλοσοφεῖν*. 'He who is to follow philosophy must be a freeman in mind.' " Rheticus then goes on to defend his master from the charge of disrespect to the ancients: "That temper," he says, "is alien from the disposition of every good man, and most especially from the spirit of philosophy, and from no one more utterly than from my Preceptor. He was very far from rashly rejecting the opinions of ancient philosophers, except for weighty reasons and irresistible facts, through any love of novelty. His years, his gravity of character, his excellent learning, his magnanimity and nobleness of spirit, are very far from having any liability to such a temper, which belongs either to youth, or to ardent and light minds, or to those *τῶν μέγα φρονούντων ἐπὶ θεωρίᾳ μικρῇ*, 'who think much of themselves and know little,' as Aristotle says." Undoubtedly this deference for the great men of the past, joined with the talent of seizing the spirit of their methods when the letter of their theories is no longer tenable, is the true mental constitution of discoverers.

Besides the intellectual energy which was requisite in order to construct a system of doctrines so novel as those of Copernicus, some courage was necessary to the publication of such opinions; certain, as they were, to be met, to a great extent, by rejection and dispute, and perhaps by charges of heresy and mischievous tendency. This last danger, however, must not be judged so great as we might infer from the angry controversies and acts of authority which occurred in Gali-

⁶ *De Rev.* iv. c. 2.