

earlier an important part of his theory had been made known by the publication of a letter of one of his most zealous pupils and adherents, Joachim Rhæticus to Johann Schoner, professor at Nuremberg. It was not, however, the propagation of the Copernican doctrines, the renewed opinion of the existence of one central sun, and of the diurnal and annual movement of the earth, which somewhat more than half a century after its first promulgation led to the brilliant astronomical discoveries that characterize the commencement of the seventeenth century; for these discoveries were the result of the accidental invention of the telescope, and were the means of at once perfecting and extending the doctrine of Copernicus. Confirmed and extended by the results of physical astronomy (by the discovery of the satellite-system of Jupiter and the phases of Venus), the fundamental views of Copernicus have indicated to theoretical astronomy paths which could not fail to lead to sure results, and to the solution of problems which of necessity demanded, and led to a greater degree of perfection in the analytic calculus. While George Peurbach and Regiomontanus (Johann Müller, of Königsberg, in Franconia) exercised a beneficial influence on Copernicus and his pupils Rhæticus, Reinhold, and Möstlin, these, in their turn, influenced in a like manner, although at longer intervals of time, the works of Kepler, Galileo, and Newton. These are the ideal links which connect the sixteenth and seventeenth centuries; and we can not delineate the extended astronomical views of the latter of these epochs without taking into consideration the incitements yielded to it by the former.

An erroneous opinion unfortunately prevails, even in the present day,* that Copernicus, from timidity and from apprehension of priestly persecution, advanced his views regarding the planetary movement of the earth, and the position of the sun in the center of the planetary system, as mere hypotheses, which fulfilled the object of submitting the orbits of the heavenly bodies more conveniently to calculation, "but which need

than 1507. Herr Voigt doubts whether the aqueduct and hydraulic works at Frauenburg, generally ascribed to Copernicus, were really executed in accordance with his designs. He finds that, so late as 1571, a contract was concluded between the Chapter and the "skillful master Valentine Lendel, manager of the water-works at Breslau," to bring the water to Frauenburg, from the mill-ponds to the houses of the canons. Nothing is said of any previous water-works, and those which exist at present can not have been commenced until twenty-eight years after the death of Copernicus.

* Delambre, *Histoire De l'Astronomie Moderne*, t. i., p. 140.