

Nicolaus Copernicus

Latinized form of Niclas Kopernik, the name of the founder of the heliocentric planetary theory; born at Torun (Thorn), 19 February, 1473, died at Frauenburg, 24 May, 1543.

Early life

Whether the family came originally from Silesia or from Poland, certain it is that his father Niclas, a merchant, emigrated from Krakow to Torun, and married the sister of Lucas Watzelrode, later Prince-Bishop of Ermland. Of the four children the oldest and youngest, Andreas and Nicolaus, adopted the clerical career, while the older girl became a Cistercian nun and Abbess of Culm, and the younger married. The whole family belonged to the Third Order St. Dominic. Nicolaus was hardly ten years old when his father died. His uncle, Lucas, however, took charge of the children and gave the boys a university training.

Nicolaus Nicolai de Thorunia was matriculated in Krakow in 1491, where he studied classics, mathematics, drawings, and perspective. Professor Blar, who represented astronomy, belonged to the school of Ptolemy. The bishop, himself a former student of Bologna, sent the boys to Italy. In 1497 Nicolaus was enrolled in the University of Bologna as of German nationality and a student in canon law. He also studied Greek and became a disciple of Novara, then professor of astronomy. To obtain for his nephews the necessary support, the bishop procured their election as canons by the chapter of Frauenburg (1497-1498).

In the spring of 1500 the brothers went from Bologna to Rome for the jubilee. According to George Joachim, surnamed "Rheticus" (because a native of Feldkirch, in ancient Rhaetia) and his friend Achilles Gasser, Copernicus gave astronomical lectures in the Eternal City, and it was there that he awoke to his vocation of founding a new astronomy. The brothers obtained from the chapter of Frauenburg a two years' leave of absence to continue their studies. From 1501 to 1503 Nicolaus was in Padua and Ferrara studying medicine and jurisprudence. In Ferrara he took his degree of Doctor of Canon Law but no document is found of his graduating in medicine. His proficiency in that profession was, however, later evinced by his renown as a physician at the episcopal court of Heilsberg, where his uncle resided.

After his university studies Copernicus practised medicine for six years (1506-1512) at Heilsberg, being sought by bishops and princes, but especially by the poor, whom he served gratis. There is no document to show that Copernicus ever received higher orders. His medical practice, which was only private, would not speak against him being a priest, and the fact that in 1537 King Sigismund of Poland put his name on the list of four candidates for the vacant episcopal seat of Ermland, makes it probable that, at least in later life, he had entered the priesthood. After the death of his uncle, in 1512, Copernicus went to Frauenburg for the election of the new bishop, and remained there until 1516, when he was nominated administrator of the diocesan castle of Allenstein. His term of four years being over, he returned to the chapter in Frauenburg. Three years later the bishop died, and Copernicus became administrator of the diocese. While the quiet life at Heilsberg had left him enough leisure to publish a Latin translation of the Greek letters of Theophylactus (1509), his public offices gradually drew him into the study of finance. In 1522 he wrote a memorandum on monetary reforms, which five years later grew into a Latin treatise. It was so highly thought of that the King of Poland substantially accepted it (1528), and Copernicus was nominated deputy counsellor on the financial regulations of Prussia (1522-29).

Copernicus as astronomer

These various offices, however, could not distract the genius of Copernicus from the main thought of his life. The towers of Heilsberg, of Allenstein, and of Frauenburg became so many observatories, and his great work "on the Revolutions of the Celestial Bodies" bears testimony to his unremitting observations of sun, moon, and planets. His reputation was such that as early as 1514 the Lateran Council, convoked by Leo X, asked through Bishop Paul of Fossombrone, for his opinion on the reform of the ecclesiastical calendar. His answer was, that the length of the year and of the months and the motions of the sun and moon were not yet sufficiently known to attempt a reform. The incident, however, spurred him on as he himself writes to Paul III, to make more accurate observations; and these actually served, seventy years later, as a basis for the working out of the Gregorian calendar.

Twenty-five years after his university career, he had finished his great work, at least in his own mind, but hesitated a long time, whether to publish it or to imitate the Pythagoreans, who transmitted the mysteries of their philosophy only orally to their own disciples for fear of exposing them to the contempt of the multitude. His friends who had become interested in the new theory prevailed on him to write at least an abstract for them, manuscript copies of which have been discovered in Vienna (1873) and Stockholm (1878). In this commentary Copernicus stated his theory in the form of seven axioms, reserving the mathematical part for the Principal work. This was in 1531, or twelve years before his death. From this on the doctrine of the heliocentric system began to spread. In 1533 Albert Widmanstadt lectured before Pope Clement VII on the Copernican solar system. His reward consisted in a Greek codex which is preserved in the State library of Munich. Three years later Copernicus was urged by Cardinal Schonberg, then Archbishop of Capua, in a letter, dated at Rome, 1 November, 1536, to publish his discovery, or at least to have a copy made at the cardinal's expense. But all the urging of friends was in vain, until a younger man was providentially sent to his side.

It was George Joachim Rheticus who quitted his chair of mathematics in Wittenberg in order to spend two years at the feet of the new master (1539-41). Hardly ten weeks after his arrival in Frauenburg he sent a "First Narration" of the new solar system to his scientific friend Schöner in Nuremberg, in the form of a letter of sixty-six pages, which was soon after printed in Danzig (1540) and Basle (1541). Rheticus next obtained for publication the manuscript of a preliminary chapter of the great work on plane and spherical trigonometry. Finally Copernicus, feeling the weight of his sixty-eight years, yielded, as he writes to Paul III, to the entreaties of Cardinal Schonberg, of Bishop Giese of Culm, and of other learned men to surrender his manuscripts for publication. Bishop Giese charged Rheticus, as the ablest disciple of the great master, with the task of editing the work. The intention of the latter was to take the manuscript to Wittenberg and have it published at the university but owing to the hostility prevailing there against the Copernican system, only the chapter on trigonometry was printed (1542). The two copies of the "First Narration" and of the treatise on trigonometry, which Rheticus presented to his friend Dr. Gasser, then practising medicine in Feldkirch, may be seen in the Vatican Library (Palat. IV, 585) Rheticus then turned to Schöner in Nuremberg, who, together with Osiander, accepted the charge and engaged the printing-house of Petreius in the same city. In the meanwhile Rheticus tried to resume his chair in Wittenberg, but on account of his Copernican views had to resign (1542) and turned to Leipzig (1543). He was thus prevented from giving his personal attention to the edition, nor was the author himself able to superintend it. Copernicus became paralyzed on the right side and weakened in memory and mind many days before his death. The first copy of the "Six Books on the Revolutions of the Celestial Orbits" was handed to him the very day he died. Fortunately for him, he could not see what Osiander had done. This reformer, knowing the attitude of Luther and Melancthon against the heliocentric system, introduced the word "Hypothesis" on the title page, and without adding his own name, replaced the preface of Copernicus by another strongly contrasting in spirit with that of

Copernicus. The preface of Osiander warns the reader not to expect anything certain from astronomy, nor to accept its hypothesis as true, *ne stultior ab hac disciplinâ discedat, quam accesserit*. The dedication to Pope Paul III was, however, retained, and the text of the work remained intact, as was ascertained later when access was had to the original manuscript, now in the family library of the Counts Nostitz in Prague.

Opposition was first raised against the Copernican system by Protestant theologians for Biblical reasons and strange to say it has continued, at least sporadically, to our own days. A list of many of their Pamphlets is enumerated by Beckmann. On the Catholic side opposition only commenced seventy-three years later, when it was occasioned by Galileo. On 5 March, 1616, the work of Copernicus was forbidden by the Congregation of the Index "until corrected", and in 1620 these corrections were indicated. Nine sentences, by which the heliocentric system was represented as certain, had to be either omitted or changed. This done, the reading of the book was allowed. In 1758 the book of Copernicus disappeared from the revised Index of Benedict XIV. New editions were issued in Basle (1566) by Rheticus; in Amsterdam (1617) by Müller of Göttingen, in Warsaw (1854) an edition de luxe with Polish translation and the real preface of Copernicus; and the latest (5th) in Torun (1873) by the Copernicus Society, on the four hundredth anniversary of the author's birthday, with all the corrections of the text, made by Copernicus, given as foot-notes. A monument by Thorwaldsen was erected to Copernicus in Warsaw (1830), and another by Tieck at Torun (1853). Rheticus, Clavius, and others called Copernicus the second Ptolemy, and his book the second "Almagest." His genius appears in the fact that he grasped the truth centuries before it could be proved. If he had precursors they are to be compared to those of Columbus. What is most significant in the character of Copernicus is this, that while he did not shrink from demolishing a scientific system consecrated by a thousand years' universal acceptance, he set his face against the reformers of religion. For supplementary information see the article GALILEO.