

Reinhold, Erasmus | Encyclopedia.com

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(*b.* Saalfeld, Germany, 22 October 1511; *d.* Saalfeld, 19 February 1553)

astronomy.

Reinhold was, after Copernicus, the leading mathematical astronomer of the sixteenth century; and in computational ability he surpassed Copernicus himself. Nothing is known of his childhood: his father, Johann, was for a long time secretary to the last abbot of Saalfeld. He enrolled at the University of Wittenberg, and his name is inscribed in the dean's book for the winter term of 1530–1531. In May 1536 [Philip Melanchthon](#) appointed him professor of *mathema-tum superiorum* (astronomy) at the same time that Rheticus was named professor of lower mathematics. Reinhold was twice elected dean at Wittenberg: in the college of arts in the winter semester of 1540–1541 and in the college of philosophy in the summer semester of 1549. In the winter of 1549–1550 he became rector.

On 22 January 1537 he married Margareta Boner, daughter of a highly placed burgher in Saalfeld; she died in childbirth on 7 October 1548. In 1550 he remarried but he again lost his wife in childbirth, in 1552. He fled from Wittenberg in 1552 in an attempt to escape the plague, but he died the following year in Saalfeld. His brother Johann, who had become professor of mathematics of Greifswald, died there in 1553. Erasmus was survived by two daughters, Margareta and Katharina, and by a son, Erasmus, who became a physician and issued a series of annual prognostications in the 1570's.

Cheap printed university textbooks first became popular in the 1540's, particularly at Wittenberg; and Reinhold published a widely reprinted commentary on Peurbach's *Theoricae novae planetarum* (1542) and one on the first book of Ptolemy's *Almagest* (1549). When Rheticus returned to Wittenberg in September 1541 from his visit to Copernicus, Reinhold was one of the first to examine the new astronomy; and in the preface to his commentary on Peurbach he wrote: "I know of a modern scientist who is exceptionally skillful. He has raised a lively expectancy in everybody. One hopes that he will restore astronomy" and later, "I hope that this astronomer, whose genius all posterity will rightly admire, will at long last come to us from Prussia...."

Reinhold's copy of Copernicus' *De revolutionibus* is painstakingly annotated; it is virtually impossible to detect an error in the printed text not already marked by Reinhold. The pattern of annotations suggests that he was primarily interested in the model-building aspects of the work, especially in the way Copernicus had used combinations of circles to eliminate the Ptolemaic equant, and that he considered the heliocentric arrangement simply as a mathematical hypothesis of secondary interest.

Although Copernicus' book includes tables as well as demonstrations, these were clumsy to use for calculations; and Reinhold therefore set out on "this huge and disagreeable task" (as Kepler called it) to cast them in a handier form. Already in January 1544 Reinhold wrote to his patron, Duke Albrecht of Prussia, about his intentions, but the actual work continued over many years and was interrupted by war in 1546–1547, when the university was closed. The resulting *Prutenic Tables*, named after both Copernicus and his patron, were finally printed in Tübingen in 1551; they rapidly became the most widely adopted astronomical tables. Reinhold systematically made small changes in the planetary parameters in order to have them conform more accurately with the observations recorded by Copernicus; he was apparently oblivious to the fact that this was an exercise in futility because of serious errors in the Copernican planetary positions. As for the arrangements of circles and epicycles, Reinhold slavishly followed *De revolutionibus*, but the introduction to the tables, while praising Copernicus, was silent about the heliocentric cosmology.

The working manuscript in which Reinhold explored the effects of changing parameters on both the Ptolemaic and Copernican models still exists in Berlin. In 1957 A. Birkenmajer pointed out two short phrases which suggest that Reinhold had considered a proto Tychoian arrangement of the planets, but this model was certainly not developed, and it is absent from other similar points in the manuscript. From hints in his printed works as well as in this manuscript we can at best conclude that Reinhold did not ascribe physical reality to any particular planetary system.

Although [Tycho Brahe](#) never met Reinhold, the latter's approach to Copernicus had a direct influence on the great Danish astronomer. Tycho came to Wittenberg on several occasions, and in 1575 he visited Reinhold's son in Saalfeld; there he copied many of the annotations from Reinhold's copy of *De revolutionibus* into his own. Reinhold's notes emphasized Copernicus' occasional uses of alternative arrangements of planetary circles, and it was in this framework that Tycho explored the various schemes that led to his own geocentric system.

The success of Reinhold's *Prutenic Tables* enhanced Copernicus' reputation, but his personal silence on the heliocentric world view fostered a pattern in astronomical lecturing at German universities that persisted for at least a generation after his own untimely death.

Kaspar Peucer, his successor at Wittenberg, wrote:

Of Erasmus Reinhold, my teacher, to whom I owe my eternal gratitude—a man well-versed not only in mathematics but in universal philosophy, and very careful besides—brilliant testimonies to this care exist and therefore his studies were correct and deserving the highest praise. He conceived of the greatest things, which he surely would have attacked and completed if a longer life had been granted him. Among others, he often promised us new hypotheses of motions, having grown weary of the Peurbachians' Unfortunately the other works that he was contemplating were impeded by the elaboration of the *Prutenic Tables*, which do exist, by their confirmation, which was somewhat weak, and by his premature death, which tore from us the fruits of his work that would have been handed down to posterity from his careful and unflinching study.

BIBLIOGRAPHY

I. Original Works. Reinhold's astronomical writings are a short treatise on spherical astronomy, *Themata, quae continent methodicam tractationem de horizontum rationali ac sensibili deque mutatione horizontum et meridianorum* (Wittenberg, 1541, 1544, 1545, 1550, 1553, 1558, 1561, 1578; the latter six eds. being appended to Sacrobosco's *Libellus de sphaera*); the commentary on Peurbach, *Theoricae novae planetarum ab Erasmo Reinholdo Saluiceni pluribus Jiguris auctae et illustratae scholiis* (Wittenberg, 1542; revised ed. 1553; Paris, 1553, 1555; Wittenberg, 1556; Paris, 1558; Venice, 1562; Wittenberg, 1580, 1601, 1604, 1653); *Calendarium novum continens motum solis rerum ex novis tabulis supputatum proprie ad annum XLII% in Martin Luther, Enchiridion piarum precationem* (Wittenberg, 1543); *Oratio de Joanne Regiomontano* (Wittenberg, 1549); and a commentary on Ptolemy, *Mathematicae constructionis liber primus, gr. et lat. Editus* (Wittenberg, 1549, 1556; Paris, 1556[?], 1558, 1560, 1564, 1569)—the last ed. appeared under the variant title *Regulae artis mathematicae*.

See also *Ephemerides duorum annorum 50 et 51 supputatae ex novis tabulis astronomicis* (Tübingen, 1550); *Prutenicae tabulae coelestium motuum* (Tübingen, 1551, 1562), M. Maestlin, ed. (Tübingen, 1571); C. Strubius, ed. (Wittenberg, 1585); J. Sturm, ed. (Rostock, 1598), pt. 1; and *Primus liber tabularum directionum* (Tübingen, 1554; Wittenberg, 1584, 1606), with the Wittenberg eds. reprinted in Regiomontanus' *Tabulae directionum*.

There exist also the *Oratio in promotione magistrorum recitata a M. Erasmo Reinhold, Saluicensi Decano* (Wittenberg, 1541), Uppsala Univ. Library, Obr 49:505; *Oratio de sophistica habita a magistro Erasmo Reinhold Saluicensi* (Wittenberg, 1541); *Oratio de Caspicio Crucigero* (Wittenberg, 1549); and various official pronouncements in *Scriptorum publice propositorum a professoribus in Academia Witebergensi ab anno 1540 usque ad annum 1553* (Wittenberg, 1560), but in general these do not touch on astronomy.

An anonymous work sometimes attributed to Reinhold is *Hypotyposes orbium coelestium, quas appellant theoricas planetarium congruentes cum tabulis is Alphonsinis et Copernici, seu etiam tabulis Prutenicis* (Strassburg, 1568), reissued with a variant title as *Absolutissimae orbium coelestium hypotyposes, quas planetarium theoricas vacant* (Cologne, 1573); much of this material must have come originally from Reinhold, but it is actually the work of his student Kaspar Peucer, who published it as *Hypotyposes astro-nomicae, seu theoriae planctarum* (Wittenberg, 1571).

Extracts from twenty-five informative letters to and from Reinhold are found in Johannes Voigt, *Briefwechsel der berühmtesten Gelehrten des Zeitalters der Reformation mit Herzog Albrecht von Preussen* (Königsberg, 1841), 514–546. The letters are preserved in the Herzogliche Briefarchiv (HBA, A4) in the Staatliches Archivlager Göttingen: Staatsarchiv Königsberg (Archivbestände Preussischer Kulturbesitz). Two additional letters, to Johannes Crato, are in M246, nos. 399–400, Wrocław University Library.

Extant manuscripts include the "Commentarius in Opus Revolution Copernici" (cited in the text), Latin 2° 391 in the Deutsche Staatsbibliothek, Berlin, ff. 1–63 and 187–259; a 204-leaf commentary on Euclid, Latin 4° 32 in the same library; and Reinhold's annotated *De revolutionibus* in the Crawford Collection of the Royal Observatory in Edinburgh.

II. Secondary Literature. The principal evaluation of Reinhold's influence is Owen Gingerich, "The Role of Erasmus Reinhold and the Prutenic Tables in the Dissemination of Copernican Theory," in J. Dobrzycki, ed., *Colloquia Copernicana II* (Wrocław, 1973), 43–62, 123–125. Aspects of his manuscript commentary on Copernicus are treated in Aleksander Birkenmajer, "Le commentaire inédit d'Erasmus Reinhold sur le *De Revolutionibus* de Nicolas Copernic," in *La science au seizième siècle* (Paris, 1960), 171–177; reprinted in Birkenmajer's *Études d'histoire des sciences en Pologne* (Wrocław, 1972), 761–766; and Janice Henderson, "On the Distances Between Sun, Moon, and Earth According to Ptolemy, Copernicus and Reinhold" (Ph.D. diss., Yale Univ., 1973).

For the impact of Reinhold's philosophy at Wittenberg, see Robert Westman, "The Melanchthon Circle, Rheticus and the Wittenberg Interpretation of the Copernican Theory," in *his*, in press 1975, and Owen Gingerich, "From Copernicus to Kepler: Heliocentrism as Model and as Reality," in *Proceedings of the American Philosophical Society*, 117 (1973), 513–522. See

also Pierre Duhem, *To Save the Phenomena* (Chicago, 1969), 70–74, trans. by E. Doland and C. Maschler. Biographical details are found in Ernst Koch, “Magister Erasmus Reinhold aus Saalfeld,” pp. 3–16 in *Saalfelder Weihnachtsbuchlein* (Saalfeld, 1908), a rare pamphlet found in the Zinner Collection, Malcolm Love Library, California State University, [San Diego](#); and in *Fortsetzung und Ergänzungen zu C. G. Jöchers allge-meinen Gelehrten-Lexikon* (Bremen, 1819), 6, cols. 1722–1723.

Owen Gingerich