# Peurbach (or Peuerbach), Georg | Encyclopedia.com



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(*b*. Peuerbach, Austria, 30 May 1423; d. Vienna, Austria, 8 April 1461)

*astronomy, mathematics*.

Georg Peurbach, the son of Ulrich, was born in Upper Austria, about forty kilometers west of Linz. Nothing is known of his early life. He matriculated for the baccalaureate at the University of Vienna in 1446 as Georgius Aunpekh de Pewrbach and received the bachelor's degree in the Arts Faculty on 2 January 1448. Two years later he probably became a licentriate, and on 28 February 1453 he received the master's degree and was enrolled in the Arts Faculty. The last notable astronomer at Vienna, John of Gmunden, had died in 1442, prior to Peurbach's arrival, so it is not clear with whom he studied-if, indeed, he did formally study astronomy at the university. It is possible that he had access to astronomical books and instruments collected by John of Gmunden.

At some time during the period 1448–1453 Peurbach traveled through Germany, France, and Italy. Regiomontanus, in a lecture on the progress and utility of the mathematical sciences delivered at Padua in 1464 (printed with the treatises of al-Farghānī and al-Battānī [Nuremburg, 1537]), says that many in his audience must have heard Peurbach lectured on astronomy in that city. Peurbach also lecture in Ferrara and is said to have been offered positions at Bologna and Padua. It is also said that in Ferrara he made the acquaintance of Giovanni Bianchini, the most noted Italian astronomer of the period, who attempted to persuade him to accept a position at an Italian university. He may have met Nicholas Cusa in Rome at this time and certainly came to known him in later years, since Cusa sent an inscribed copy of his *De quadratura circuli* to Peurbach, who proceeded to point out its errors to Regiomontanus. At any rate, Peurbach seems already to have acquired an international reputation at the time of his Italian sojourn, although, as far as is known, he had written nothing.

After his return to Vienna, Peurbach engaged during the period 1453–1456 in a correspondence (published by Albin Czerny) with Johann Nihil of Bohemia, the court astrologer to Emperor Frederick III in Wiener Neustadt. Ten letters, only two from Peurbach, survive as a result of their inclusion in a collection of specimen letters appended to a treatise on letter writing. On Nihil's advice, Peurbach accepted the position, at a salary of 24 pounds, of court astrologer to king Ladislaus V of Hungary, the young nephew of Frederick. At some later time, perhaps after the death of Ladislaus in 1457, Peurbach became court astrologer to the emperor, since Regiomontanus refers to him as *astronomus caesaris* in the dedication of the *Epitome of the Almagest* and cites his service to Frederick in the lecture given at Padua.

While Peurbach's court appointments were made for his abilities in astronomy and astrology, his responsibilities at the university, to judge by the admittedly scanty evidence, were concerned mostly with humanistic studies. In 1454 and 1460 he lectured on the *Aeneid,* in 1456 on Juvenal, in 1457 possibly on the *Rhetorica ad Herennium,* and in 1458 possibly on Horace. In 1458 he also participated in a disputation, *De arte oratoria sive poetica,* which survives, (Munich, Clm 19806, fols. 193–199), as does a treatise from 1458 on letter writing (Clm 18802, fols. 86–97) attributed to Peurbach (written under a pseudonym). A number of undistinguished Latin poems by Peurbach are also Known (Vienna, Vin 352, fols. 67a–69b).

Peurbach's student and associate Johannes Müller von Königsberg, known as Regiomontanus, matriculated in the arts faculty at Vienna on 14 April 1450 at the age of thirteen, and received his bachelor's degree on 16 January 1452. His collaboration with Peurbach, to whom he later referred as "my teacher," probably began after Peurbach received his master's degree. Peurbach's own works seem to date from 1454 and later, and a number of them were copied by Regiomontanus in a notebook (Vin 5203) that he kept at Vienna during 1454–1462. The notebook begins with Peurbach's *Theoricae novae planetarum,* completed 30 August 1454, and contains a number of Peurbach's shorter works written during the 1450's. Peurbach says in a latter of 1456 to Nihil (Czerny, 302) that he and Regiomontanus are both calculating ephemerides from Bianchini's tables, checking discrepancies in their calculations by recomputing with the Alphonsine Tables. Both observed Halley's Comet in June 1456; Peurbach mentioned it in a letter to Nihil (Czerny, 298–299) and wrote an astronomical and astrological report on the comet that was not discovered and published until the twentieth century. In June 1457 Peurbach observed another comet; and on 3 September he and Regiomontanus observed a lunar eclipse, finding the observed time of mideclipse to be eight minutes earlier than predicted by the Alphonsine Tables. Evidently Peurbach had not yet completed his own *Eclipse Tables*. In 1460 they observed lunar eclipses on 3 July and 27/28 December, this time comparing the observations with Peurbach's tables, which probably were completed in 1459. These eclipse observations were first published by Johann Schöner (Nuremberg, 1544). Peurbach carried out observations leading to the determination of the latitude 48;22° (correct, 48;13°) for Vienna; and Peurbach and Regiomontanus together found, through some series of observations, an obliquity of the ecliptic of 23;28°.

On 5 May 1460 Johannes Bessarion, archbishop of Nicaea and a cardinal since 1439, arrived in Vienna as legate of Pius II. His mission was to intervene in the continuing dispute between Frederick III and his brother Albert VI of Styria and to seek aid in a planned crusade against the Turks for the recapture of Constantinople. In Vienna he met both Peurbach and Regiomontanus. Bessarion was a figure of considerable importance in the transmission of Greek learning to Italy, and his interests were sufficiently diverse to include the exact sciences. He collected a large number of very fine Greek manuscripts that he later left to the city of Venice, where they form the core of the manuscript collection of the Biblioteca Marciana. One of his plans evidently involved a new translation of the *Almagest* from the Greek to replace Gerard of Cremona's version from the Arabic and to improve upon the inferior translation from the Greek made by George of Trebizond in 1451. He also desired an abridgment of the *Almagest* to use as a textbook. Although Peurbach was unfamiliar with Greek, according to Regiomontanus he knew the Almagest almost by heart *(quem ille quasi ad litteram memorie tenebat)* and so took on the task of preparing the abridgment. Further plans were made for Peurbach and Regiomontanus to accompany Bessarion to Italy and there work with him, using Bessarion's Greek manuscripts as the basis of the new translation. Peurbach, however, had completed only the first six books of the abridgment when he died, not yet thirty-eight years old. On his deathbed he made Regiomontanus promise to complete the work, which the latter did in Italy during the next year or two. This account is given by Regiomontanus in his preface to the *Epitome of the Almagest*. The completed work was dedicated to Bessarion by Regiomontanus, probably in 1463, in a very careful and beautifully executed copy (Venice, lat. 328, fols, 1–117).

Peurbach's early death was a serious loss to the progress of astronomy, if for no other reason than that the collaboration with his even more capable and industrious pupil Regiomontanus promised a greater quantity of valuable work than either could accomplish separately. Of their contemporaries, only Bianchini, who was considerably their senior, possessed a comparable proficiency and originality. The equally early death of Regiomontanus in 1476 left the technical development of mathematical astronomy deprived of substantial improvement until the generation of Tycho Brahe.

No systematic effort has been made to collect or enumerate Peurbach's works and the manuscripts containing them, so any catalog is necessarily tentative, in that it probably includes some spurious works and omits some genuine writings that have not yet been located or properly identified. A list was given by Georg Tannstetter Collimitius in the catalog of distinguished mathematicians associated with the University of Vienna that he wrote as an introduction to his 1514 edition of Peurbach's *Tabulae eclipsium* and Regiomontanus' *Tabula primi mobilis*. Tannstetter's list, which was based upon manuscripts collected near the end of the fifteenth century by his teacher Andreas Stiborius Boius (Andreas Stöberl), appears to be generally—and possibly completely—reliable.The works discussed below are listed by Tannstetter, supplemented by some later discoveries. Where manuscripts or printed editions of a given work are known, some, but not all, are listed here. A more extensive list of manuscripts can be found in E. Zinner's *Verzeichnis* (nos 7691–7761), and some additional manuscripts and printed editions can be found in the text and notes of Zinner's *Regiomontanus*.

*Theoricae novae Planetarum* is an elementary but thorough textbook of planetary theory written by Peurbach to replace the old, and exceedingly careless, so-called *Theorica planetarum Gerardi, a*standard text written probably in the second half of the thirteenth century. The original version of the *Theoricae novae,* completed in 1454 (e.g. Vin 5203, fols. 2a–24a), contained sections on the sun, moon, superior planets, Venus, Mercury, characteristic phenomena and eclipses, theory of latitude, and the motion of the eighth sphere according to the Alphonsine Tables. Peurbach later enlarged the work (e.g. Florence, Magl. XI, 144. fols, la–15b) by adding a section on Thābit ibn Qurra's theory of trepidation. Regiomontanus brought out the first printed edition (Nuremberg, ca, 1474).Zinner reports no fewer than fifty-six editions through the middle of the seventeenth century; therr are also a substantial number of manuscript copies, mostly from the late fifteenth century. A number of printings from the 1480's and 1490's in small quartos (e.g. 1482, 1485, 1488, 1490, 1491), also containing Sacrobosco's *De sphaera* and Regiomontanus' *Disputationes contra Cremonensia in planetarum theoricas deliramenta,* seem to represent the standard school edition and common text, which is generally sound. The colored figures in these editions are copied from Regiomontanus' printing, while contemporary manuscripts contain figures of greater diversity and complexity. The diagrams are of considerable importance. Since parts of Peurbach's text would be unintelligible without them.

The *Theoricae novae* contains very careful and detailed descriptions of solid sphere representations of Ptolemaic planetary models that Peurbach based either upon Ibn al-Haytham's description of identical models in his *On the Configuration of the world* (translated into Latin in the late thirteenth century) or upon some later intermediary work. Peurbach's book was of great importance because his models remained the canonical physical description of the structure of the heavens until Tycho disproved the existence of solid spheres. Even Copernicus was to a large extent still under their influence, and the original motivation for his planetary theory was apparently to correct a number of physical impossibilities in Peurbach,s models relating to nonuniform rotation of solid spheres.

Since the *Theoricae novae* was intended as an elementary work, much of it is devoted to definitions of technical terms; along with the *Epitome* it helped to establish the technical terminology of astronomy through the early seventeenth century. As the standard textbook of planetary theory, it was the subject of numerous commentaries (see Zinner, *Verzeichnis,* nos. 7700–7714). There were printed commentaries by Albert of Brudzewo (1495), Joannes Baptista [or Franciscus] Capuan (1495, 1499, 1503, 1508, 1513, 1518), Erasmus Reinhold (1542, 1553), Oswald Schreckenfuchs (1556), Pedro Nuñez Salaciense (1566, 1573), and others. The most interesting are those by Reinhold and Nunez. The *Theoricae novae* was translated into French. Italian, and Hebrew; there are no modern editions or translations.

Possibly related to the *Theoricae novae* is a short work (Vin 5203, fols. 88a–92a) called *Speculum planetarum,* on the making of manuscript equatoria with revolving disks of paper.

Recognized throughout the sixteenth century as a monument of industry, the *Tabulae eclipsium,* completed probably in 1459, is Peurbach's most impressive work and was still used (although critically) by Tycho near the end of the sixteenth century. There are a substantial number of manuscript copies (especially Venice, lat. 342, and Nureberg, Cent. V 57, fols. 10a–19b and 108a–153b, both copied by Regiomontanus), and the work was printed very beautifully in a version edited by Tannstetter (Vienna, 1514). The tables are based entirely on the Alphonsine Tables, in that the underlying parameters are exclusively Alphonsine; but Peurbach expanded and rearranged the tables needed for every step in eclipse computation, saving the calculator much time and relieving him of a number of tedious procedures. The tables in the printed version run to fully 100 pages; and earlier manuscripts, which tend to squeeze more on a page, have over ninety pages of closely written digits. Most remarkable, and evidently most laborious to compute, are the forty-eight-page double-entry tables (solar and lunar anomaly) of time between mean and true conjunction or opposition and the twelve-page triple-entry tables (solar longitude, lunar anomaly, time from noon) of the difference of lunar and solar parallax in longitude and latitude for the sixth and seventh climates (latitudes about 45°-49°) that are used to find the time and location of apparent conjunction in solar eclipses.

The tables exist in two forms. Originally they were computed for the meridian of Vienna, and this, with some minor alterations in the instructions, was the version later printed; but a number of manuscripts (such as Vin 5291, fols. 100a–163a) contain a version with the epoch positions shifted 0:30 hours (error for 0:22 hours) to the east to adapt the tables to the meridian of Grosswardein (now Oradea, Hungary), In this version they were dedicated to Johann Vitez, the bishop of Grosswardein, and were known as the *Tabulae Waradienses*.

The instructions for the use of the tables are very clear and are notable for giving two fully worked examples; the solar eclipse of (civil) 18 July 1460 and the lunar eclipse of (civil) 28 December 1460. The latter was observed by Peurbach and Regiomontanus. Comparison of the observation with computation from Peurbach's tables for (astronomical) 27 December is as follows;

| | Observation | Computation |
|---|---|---|
| Beginning of eclipse | $11;42^h$ | $11;32^h$ |
| Beginning of delay (totality) | $12;47^h$ | $12;42^h$ |
| End of delay (totality) | $13;55^h$ | $13;58^h$ |

The agreement is good but, as expected, is no better than the comparison with the Alphonsine Tables made using the lunar eclipse of 3 September 1457.

According to Regiomontanus, Peurbach was responsible for the first six books of *Epitoma Al-magesti Ptolemaei* (also known by slight variants of this title), the most important and most advanced Renaissance textbook on astronomy, while books VII-XIII were completed by Regiomontanus after Peurbach's death. But this account of the division of labor and credit probably requires some modification. The introduction and first six propositions of book I, giving the general arrangement of the universe, are in part translated and in part parapharased from the Greek *Almagest* and must be the work of Regiomontanus, possibly with assistance from Bessarion. Further, this section of the work is not in Venice, lat. 329, a manuscript preserving a version of the text with numerous marginal corrections, largely of Greek forms of proper nouns, that are probably in the hand of Bessarian . Venice, lat . 329, is earlier than any other surviving manuscript and contains a preliminary and incomplete version of the text. With one important exception, all other manuscripts descend from a later, complete version. The exception is Venice, lat. 328, which contains a fürther revision of the text prepared by Regiomontanus for Bessarion, to whom it is dedicated in a note in Regiomontanus' hand. This is in all likelihood the best manuscript of the *Epitome,* although some comparison with others is still necessary to establish the text correctly. The first printing (Venice,1496) is very careless; later printings were at Basel (1543) and Nuremberg (1550).

Aside from the introductory section, books I through VI are closely based upon the so-called Almagesti minoris libri VI, a doubtless unfinished textbook, apparently of the late thirteenth century, that supplements Ptolemy with information and procedures drawn from al-Battānī, Thābit ibn Qurra, Jābir ibn Aflah, az-Zarqāl, and the Toledan Tables. The Almagestum minor divides Ptolemy's sometimes lengthy chapters into individual propositions showing the proof of a geometrical theorem, the derivation of a parameter, or the carrying out of a procedure, and there are occasional digressions adding the work of post-Ptolemaic writers . The *Epitome* adopts exactly this arrangement and sometimes follows the *Almagestum minor* nearly word for word, including all of its supplements to Ptolemy. Evidently Peurbach based the Epitome upon the earlier work ; and, with all due respect to Regiomontanus' account of his teacher's contribution, one may legitimately ask to what extent the present state of the first six books is really the result of Regiomontanus' revision of what Peurbach may have left as little more than a close parapharase of the *Almagestum minor*.

With the exception of the introductory propositions in book l, the underlying text of the *Epitome* is that of Gerard of Cremona's translation of the Almagest .Although the work contains a number of evidently conjectural emendations by Regiomontanus, they seem to have been made without consultation of the Greek text, except possibly for the correction of proper nouns from their Arabic-Latin forms to their Greek forms entered in Venice, lat . 329. These corrections did not extend through the entire work, and hence in all manuscripts except 328 the corrections are only partial ; only in 328 are they complete.

However the credit be divided between Peurbach and Regiomontanus, the *Epitome* served as the fundamental treatise on Ptolemaic astronomy until the time of Kepler and Galileo, and remains the best exposition of the subject next to the *Almagest* itself. Although it runs to about half the length of the *Almagest, the Epitome* is nevertheless a model of clarity and includes everything essential to a working understanding of mathematical astronomy and even manages to clarify sections in which Ptolemy omits steps or is somewhat obscure . It has not been superseded even by the excellent modern commentaries on the *Almagest,* and the mathematical astronomy of the sixteenth century is in places unintelligible without it . The Epitome is the true discovery of ancient mathematical astronomy in the Renaissance because it gave astronomers an understanding of Ptolemy that they had not previously been able to achieve . Copernicus used it constantly, sometimes in preference to the *Almagest;* and its influence can be seen throughout *De revolutionibus*.

None of Peurbach's other works compares in importance with the three previously described. A provisional list of the remaining works is given below.

*ludicium super cometa qui anno Domini 1456*[10] *per totum Jere mensem lunii apparuit* (St. Pölten Alumnatsbibliothek XIXa, fols. 143a–149b, published in 1960 by Lhotsky and Ferrari d'Oc-chieppo) is a report on the appearance of Halley's Comet in 1456. It contains observations of its position, an examination of its physical cause and nature, an estimation of its distance and size, and a judgment of its astrological import . Peurbach concludes that the comet must be at least a thousand German miles above the earth, eighty German miles in length (including the tail), and four German miles in thickness. Its significance includes drought, pestilence, and war, especially for Greece, Dalmatia, Italy, and Spain, where the comet reached the zenith, and certain trouble for individuals whose nativities have Taurus in the ascendant.

*Compositio tabulae altitudinis solis ad omnes* horas consists of tables of solar altitude for latitude 48°and thus is applicable to Vienna .It is in Vin 5203, fols. 54a–58a, and other manuscripts.

*Instrumentum pro veris coniunctionibus solis et lunae* is a description of an instrument for the rapid determination of the position of true conjunction. It is in Vin 5203, fols. 67a–69a, and other manuscripts.

*Canones astrolabii* is probably the work in Vin 4782, fols. 225a–270b, and Vin 5176, fols. 156a–162b.

*Compositio quadrantis astrolabii* is in Vin 5176, fols. 43b–47a, and other manuscripts.

*Canones gnomonis* (also known as *Quadratum geoinetricum*) survives in a manuscript in Vin 5292, fols. 86b–93b; the work was printed at Nuremberg in 1516 and was included in J. Schöner's collection (Nuremberg, 1544). Like the *Eclipse Tables,* it was dedicated to Johann Vitez. It consists of a description of an instrument made up of an open square with two graduated sides and a pointer and sight attached to turn on the vertex opposite the graduated sides. The instrument is used for measuring altitudes of heavenly bodies or objects on the earth and, by taking measurements from different positions, for determining the distance of inaccessible objects on the earth . Instructions and tables were provided for each application. Tannstetter mentions *Plura de quadrantibus,* which could refer to this or to other treatises.

There are a number of writings concerned with sundials and time measurement (Zinner, Verzeichnis, nos. 7725–7728a). *lnstrumentunm universale ad inveniendas horas quocunque climate* is in Vin 5203, fols. 80b–86a, and other manuscripts. Georg Tannstetter lists *Extensio organi Ptolemaei pro usu horarium germanicarum ad omnia climata cum demonstratione* and *Modus describendi horas ab occasu in pariete*. The first could be the work in . Vin 5203, and the second seems to concern sundials mounted vertically on walls. Tannstetter also mentions a *Compositio novae virgae visoriae cumlineis et tabula nova and a Compositio compasticum regula ad omnia climata* that could have described portable sundials with attached compasses. Other apparently lost works listed by Tannstetter are *Collectio tabularum primi mobilis et quarundam nova compositio cum singulari usu,* which could have been an extensive collection of tables for spherical astronomy on the order of Regiomontanus' *Tabulae directionum,* and a *Tabula nova proportionis parallelorum ad gradus aequinoctialis cum compositione eiusdem,* probably a table giving the fraction of a degree of the equation for a degree of longitude on parallel circles at intervals of one degree of latitude.

Next to the planetary equation tables in book XI of his copy of the Altnagest (Nuremberg, Cent. V 25, fol. 80a), Regiomontanus mentions that Peur-bach had made more accurate equations. Tannstetter lists *Tabulae aequationum motuum planetarum novae, nondum perfectae et ultimum completae,* which he says Johannes Angelus (Engel) (d. 1512) attempted to complete. One may guess that these, like the solar and lunar equation tables in the *Eclipse Tables,* were recomputations of the planetary equations at 0;10° intervals using Al-phonsine parameters. Such an expansion simplifies interpolation and thus speeds the computation of positions. Tannstetter mentions a *Tabula nova stellarum, fixarum,* which could be the Ptolemaic or Alphonsine star catalog corrected for precession to Peurbach's time. There is an *Almanach perpetuum cum canonibus reduxit ad nostra tempora* that appears to be an almanac at intervals of five or ten days running through an integral number of longitudinal and synodic cycles for each planet, as in the almanacs of az-Zargāl, Abraham Zacuto, and others. Tannstetter also says that Peurbach calculated ephemerides for many years and made *sphaeras solidas* (celestial globes) and many other instruments. A Computus by Peurbach is listed by Zinner (*Verzeichnis, nos*. 7750–7757).

Peurbach wrote a short work on the compution of sines and chords, *Tractatus super propositiones Ptolemaei de sinubus et chordis* (Vin 5203, fols. 124a–128a); the work was twice printed (Nuremberg, 1541; Basel, 1561) along with *Regiomontanus'*

*Compositio tabularum sinuum rectorum* and sine tables. He first explains the computation using *kardagas* (arcs of 15°) according, he says, to the method of az-Zarqāl, and then, at somewhat greater length, sets out Ptolemy's derivation from the first book of the *Almagest*. Tannstetter lists a *Nova tabula sinus de decem minutis in decem per multas millenarias partes cum usu, guae plurintum rerum novarum in astronomia occasio fuit;* and such a table of sines at intervals of 0 :10° with a *sinus totus* (unit radius) of 600,000 parts survives in Vin 5291, fols. 165a–173b, and Vin 5277, fols. 288a–289b, but without an explanation of its use. A lesser but evidently popular mathematical work was Peurbach's *Algorisnnts or Elernenta arithmetices or Introductoriumin arithmeticam,* a brief elementary textbook on practical computation with integers and fractions that was printed several times in the late fifteenth and early sixteenth centuries (for instance, Hain* 13598–601, 1513, 1534).

# BIBLIOGRAPHY

Georg Tannstetter Collimitius's list of Peurbach's works in his *Viri mathematici quos inclytum Viennensis gymnasium ordine celebres habuit is printed in Tabulae eclipsium magistri Georgii Peurbachii. Tabula priori mobilis Johannis de Monteregio* (Vienna, 1514) . The observations of Peurbach and Regiomontanus were first published in*Scripti clarissimi mathematica M. loannis Regiomontani…*., J.Schöner, ed . (Nuremberg, 1544). The fundamental biography of Peurbach is P. Gassendi. "Georgii Peurbachii et loannis Mulleri Regiomontani vita," which appears in Gassendi's *Tychonis Brahei, equitis dani, astronomorum Corsphaei vita…accessit Nicolai Copcrnici, Georgii Peurbachi et loannis Regiomontani astronomorum celebrium vita,* 2nd ed. (The Hague, 1655), 335–373, repr. in Gassendi–s Opera. V (Lyons. 1658), 517–534. The next study of value is F. K . F. A . von Khautz, *Versuch einer Geschichte der österreiclrisclten Gelehrten* (Frankfurt-Leipzig, 1755) . 33–57 . J. B . J. Delambre .Histoire de l'astronomie du moyen âge (Paris, 1819), 262-288, considers principally the precession theory of the Theoricae novae and other selected topics, using the commentaries of Capuan, Reinhold, and Nuñez Salaciense. G. H. Schubart, *Peuerbach und Regiomontanus* (Erlangen, 1828); J. Fiedler, *Peuerbach und Regiomontanus* (Leobschütz, Poland, 1870); and J. Aschbach, *Geschichte der Wiener Universitat im ersten Jahrhundert ihres Bestehens,* I (Vienna, 1865), 479–493, do not add significantly to earliere sources. Peurbach's correspondence with Nihil is published in A. Czerny, "Aus dem Briefwechsel des grossen Astronomen Georg von Peuerbach," in *Archiv für österreichische Geschichte,***72** (1888), 281–304.

A distinct advance in research on Peurbach is K. Grossmann, "Die Fruhzeit des Humanismus in Wien biszu Celtis Berufung 1497," in *Jahrbuch für Landeskunde von Niederösterreich,* n.s. **22** (1929), 150–325, esp. 235–254. Grossmann examined numerous MSS, and his study is especially valuable on Peurbach's humanistic activities. The most extensive catalog of MSS containing writings by Peurbach is E. Zinner, *Verzeichnis der astronomischen Handschriften des deutschen Kulturgebietes* (Munich, 1925), 241–243. The most thorough and up-to-date biographical and bibliographical study is E. Zinner, *Leben und Wirken des Joh, Müller von Königsberg genannt Regiomontanus,* 2nd ed. (Osnabrück, 1968). Peurbach is treated separately on 26–49, the notes at the end contain much information on MSS and early printings, and there is a thorough bibliography. Peurbach is considered briefly in most of the standard histories of astronomy and mathematics.

Then are no modern eds. or translations of any of Peurbach's major works. The text of the section of the *Theoricae novae* concerning Mercury is given, along with an analysis of the model, in W. Hartner, "The Mercury Horoscope of Marcantonio Michiel of Venice: A study in the History of Renaissance Astrology and Astronomy," in *Vistas in Astronomy,* I (1955), 84–138, repr, in Hartner's *Oriens-Occidens* (Hildesheim, 1968), 440-495, esp. 483–491. Peurbach's report on the commets of 1456 and 1457 is published with extensive analysis in A. Lhotsky and K. Ferrari d'Occhieppo, "Zwei Gutachten von Georgs von Peuerbach über Kometen (1456 and 1457), "in *Mitteilungen des Instituts fur österreichische Geschictsforschung,* 4th ser., **68** (1960), 266–290; and K. Ferrari d'Occhieppo, "Weitere Dokumente zu Peuerbachs Gutachten über den Kometen von 1456 nebst Bemerkungen über den Chronikbericht zum Sommerkometen 1457," in *Sitzungsberichte der Österreichischen Akademie der Wissenschaften,* Mathnaturw, Kl., Abt, 2 **169** (1961), 149–169.

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