COMPLETE, FROM THE LATIN · NUREMBERG, 1543

# On the Revolutions

## *of the Heavenly Spheres*

NICOLAUS COPERNICUS



THE BOOK THAT PUT THE SUN AT THE CENTER

BLUSABOOKS

BOOKS OF WISDOM

# On the Revolutions of the Heavenly Spheres

*Six Books · Nuremberg, 1543*

Nicolaus Copernicus — the book that turned the world inside out: the sun at the center, the earth in motion. With the anonymous preface that tried to hide it. Complete in modern English from the Latin, with the original diagrams, tables, star catalogue and notes

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Modern English text, notes, foreword and commentary © 2026 SIA "Blusa Entertainment".

Source: Nicolaus Copernicus, *De revolutionibus orbium coelestium, libri VI*, Nuremberg, Johannes Petreius, 1543 (first edition; public domain). Rendered into modern English from the Latin, from images of the pages of the edition. The title page, diagrams and table pages are from the same edition; the colour illustrations are modern.

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# FOREWORD

**The book that turned the world inside out.** Until this book, almost every educated person in Europe knew that the earth stood motionless at the center of the world, while the moon, the sun, the planets and the sphere of the fixed stars turned around it. Aristotle taught it, Ptolemy calculated with it, and the university textbooks repeated it. In 1543 a thick Latin folio appeared in Nuremberg under the title «De revolutionibus orbium coelestium» — «On the Revolutions of the Heavenly Orbs», in six books. Its author, Nicolaus Copernicus, a canon of the cathedral chapter of Warmia, claimed the opposite: the sun stands at the center of the world, and the earth is one of the planets — it turns on its axis and goes around the sun once a year. Here the book is given complete, translated from the first edition of 1543 — all six books, with the diagrams, the numerical tables and the star catalogue, and with the anonymous preface that tried to hide what the book meant.

**Copernicus.** Nicolaus Copernicus was born on 19 February 1473 in Toruń. From 1491 he studied at the University of Kraków, then in Italy: in Bologna he studied canon law (1496–1500) and lodged with the astronomer Domenico Maria Novara, in Padua he studied medicine, and in 1503 he took his doctorate in canon law at Ferrara. For the rest of his life he was a canon of the chapter of Warmia at the cathedral of Frauenburg (today Frombork) on the Baltic coast. He also worked as a physician and an administrator and wrote on coinage. Astronomy was the work of his spare hours — and the work of his life.

**A first sketch, and Rheticus.** Around 1510–1514 Copernicus wrote a short treatise later known as the «Commentariolus», the «Little Commentary». Everything essential was already there: the earth moves, the sun is at the center. He circulated this manuscript only among friends; it was never printed. The great

book took him decades, and in his dedication he admits that he had kept it hidden «into a fourth period of nine years». In 1539 a young professor of mathematics from Wittenberg, Georg Joachim Rheticus, arrived in Frauenburg. He stayed with Copernicus for a long time, published at Gdańsk in 1540 the first printed account of the new theory, the «Narratio prima» («First Account»), and at last persuaded the old canon to let the manuscript go to the printer.



*Rheticus hands over the manuscript at the printing house in Nuremberg (illustration)*

**Printing in Nuremberg, and the anonymous preface.** The book was printed by Johannes Petreius in Nuremberg. Rheticus began to see it through the press, and the Lutheran theologian Andreas Osiander finished the work. Osiander placed at the front of the book an unsigned preface of his own, «To the Reader, Concerning the Hypotheses of This Work». It says that the book's hypotheses need not be true, «not even probable» — it is enough if they yield calculations that agree with the observations. Many readers took this to be Copernicus's own view. Copernicus's friend, Bishop Tiedemann Giese, protested, but Osiander's authorship was made public only by Johannes Kepler in his «New Astronomy»

of 1609. Copernicus himself, in his dedication to Pope Paul III, speaks in a very different voice: he wants to find the true structure of the world, «the form of the world and the fixed symmetry of its parts». The book also prints the letter of 1536 in which Cardinal Nikolaus Schönberg begs Copernicus to make his discovery known.

**The book on the deathbed.** Copernicus died in Frauenburg on 24 May 1543. According to tradition, which rests on a letter of Giese's, he saw the first printed copy on the day of his death. Whether it really happened so we cannot be sure, but the story is beautiful and fits the book's fate too well to be forgotten.



*According to tradition, Copernicus received the first printed copy on the day of his death (illustration)*

**What the book contains.** In Book One Copernicus sets out the new structure of the world; here, too, is the famous diagram with the sun at the center and seven concentric circles around it (Book One, Chapter 10). The second half of Book One is trigonometry, with a table of chords. Book Two is spherical astronomy and the star catalogue — more than a thousand stars, essentially Ptolemy's catalogue, but with longitudes counted from the first star of Aries.

Book Three deals with the precession of the equinoxes and the solar year, Book Four with the moon, and Books Five and Six with the motions of the planets in longitude and in latitude. Most of the book consists of proofs and calculations, because Copernicus wanted to give astronomers not only an idea but a working tool: tables from which the positions of the planets can be computed for any time. Erasmus Reinhold's «Prutenic Tables» (1551) were based on his figures, and they were used in the calendar reform of 1582.

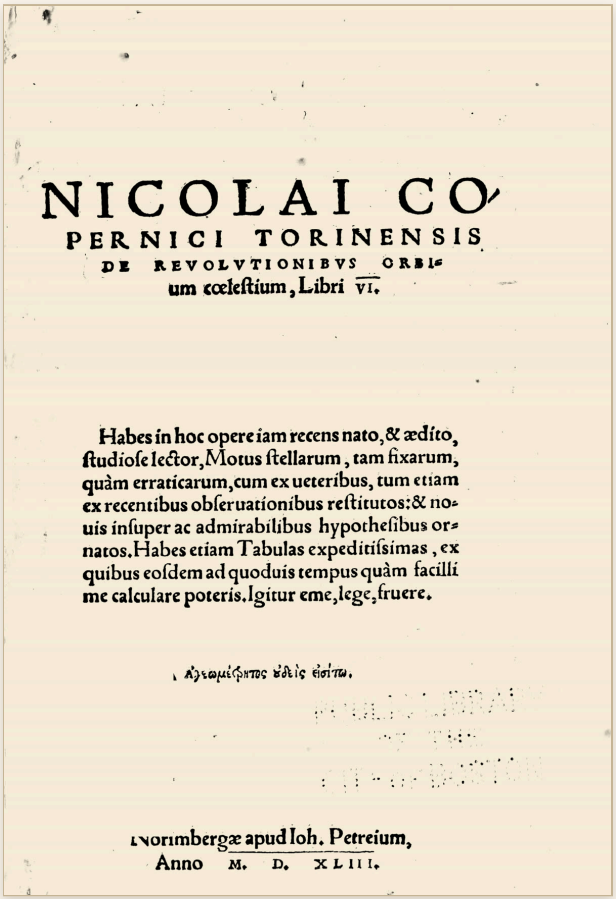
**How the book was received.** At first the book made little noise — it was read mainly by astronomers, and many used its tables without believing that the earth moves. The real struggle began two generations later, when Kepler and Galileo took the side of Copernicus. On 5 March 1616 a decree of the Congregation of the Index placed Copernicus's book on the Index of Forbidden Books «donec corrigatur» — «until corrected». The corrections were published in 1620: a small number of changes that turned statements about the earth's motion into hypotheses; the figures and tables remained. On the Index itself see our No. 80, «The Index of Forbidden Books», and on Galileo's fate No. 78, Galileo's «Dialogue». The general ban on heliocentric books was dropped in the Index of 1758, and by the edition of 1835 Copernicus's book was no longer listed.

**Where Copernicus was right, and where he was not.** Copernicus rightly put the sun at the center and the earth among the planets, and from this he could, for the first time, calculate the relative distances of the planets. But he still believed that heavenly motions must be uniform and circular, so his book still has eccentrics and epicycles — fewer, and arranged differently from Ptolemy's. In 1609 Kepler showed that the orbits of the planets are ellipses with the sun at one focus; in 1610 Galileo saw the phases of Venus through his telescope. The annual parallax of the stars — whose absence was held against Copernicus, and which he explained by the immense distance of the stars — was first measured by Friedrich Wilhelm Bessel only in 1838.

**How to read this edition.** The text has been translated sentence by sentence from images of the pages of the 1543 edition into modern English. The

terms of the age — orbs, spheres, eccentrics, epicycles — are kept as they are; explanations are in the notes at the foot of the page. All the diagrams come from the 1543 edition itself. The numerical tables have not been retyped: they appear as images of the original pages, each with a translated title and column headings below it. The star catalogue has been transcribed and translated. The errata page of 1543, which stands at the front of the original, is given here as an appendix at the end. At the end of the book there is a commentary, book by book: «In plain words», «What Copernicus shows» and «What we know today». The colour illustrations are modern.

# TITLE PAGE



NICOLAI CO
PERNICI TORINENSIS
DE REVOLVTIONIBVS ORBI-
um cœleſtium, Libri VI.

Habes in hoc opere iam recens nato, & ædito, ſtudioſe lector, Motus ſtellarum, tam fixarum, quàm erraticarum, cum ex ueteribus, tum etiam ex recentibus obſeruationibus reſtitutos: & nouis inſuper ac admirabilibus hypotheſibus ornatos. Habes etiam Tabulas expeditiſsimas, ex quibus eoſdem ad quoduis tempus quàm facilli me calculare poteris. Igitur eme, lege, fruere.

Ἀγεωμέτρητος μηδεὶς εἰσίτω.

Norimbergæ apud Ioh. Petreium,
Anno M. D. XLIII.

*Title page of the 1543 edition with the device of the printer Johannes Petreius*

Nicolaus Copernicus of Toruń, On the Revolutions of the Heavenly Orbs, in Six Books

In this work, newly born and published, studious reader, you have the motions of the stars, both fixed and wandering, restored from ancient as well as from recent observations, and furnished besides with new and admirable hypotheses. You also have most convenient tables, from which you will be able to calculate those motions for any time whatever with the greatest ease. So buy, read, enjoy.

*Let no one ignorant of geometry enter.*[1]

Nuremberg, by Johannes Petreius, in the year 1543.

1 In Greek, "Ἀγεωμέτρητος οὐδεὶς εἰσίτω". According to an old tradition, this inscription stood over the door of Plato's Academy in Athens.

# TO THE READER, CONCERNING THE HYPOTHESES OF THIS WORK

I have no doubt that certain learned men, now that the report of the novelty of this work's hypotheses has spread abroad (namely, that it makes the Earth movable and the Sun immovable in the middle of the universe), have taken grave offence, and think that the liberal arts, long since rightly established, ought not to be thrown into confusion.[1] But if they are willing to weigh the matter carefully, they will find that the author of this work has committed nothing that deserves blame. For it is the proper task of the astronomer to gather, by diligent and skilful observation, the history of the heavenly motions. Then, since he cannot by any means arrive at the true causes, he must devise and invent causes for them, or hypotheses, of whatever kind, so that, once these are assumed, those same motions can be correctly calculated from the principles of geometry, for the future as well as for the past. This craftsman has accomplished both tasks excellently. For it is not necessary that these hypotheses be true, nor even probable; this one thing suffices, that they yield a calculation agreeing with the observations. Unless perhaps someone is so ignorant of geometry and optics as to regard the epicycle of Venus as probable, or to believe it is the reason why she sometimes runs ahead of the Sun and sometimes follows it by forty parts and more. For who does not see that, if this is assumed, it necessarily follows that the diameter of the star at perigee must appear more than four times as large, and its body more than sixteen times as large, as at apogee, which nevertheless the experience of every age contradicts?[2]

1 This unsigned preface was inserted by the Lutheran theologian Andreas Osiander (1498–1552), who oversaw the printing; Copernicus did not write it. Kepler publicly revealed its author in 1609.

2 Osiander was mistaken here: Venus really does vary greatly in apparent size, though this is hard to see with the naked eye. In 1610 Galileo saw the phases and changing size of Venus through the telescope; see our No. 78, Galileo's "Dialogue".

There are also other things in this discipline no less absurd, which there is no need to examine at present. For it is clear enough that this art is simply and completely ignorant of the causes of the apparently unequal motions. And if it invents any by imagining them, as it certainly invents a great many, it does not invent them in order to persuade anyone that things are so, but only so that they may set up the calculation correctly. But since different hypotheses sometimes offer themselves for one and the same motion (as eccentricity and an epicycle do for the motion of the Sun), the astronomer will above all seize on the one that is easiest to grasp. The philosopher will perhaps rather demand likelihood; yet neither of them will grasp or hand on anything certain, unless it has been revealed to him by God. Let us therefore allow these new hypotheses also to become known alongside the old ones, which are in no way more probable, especially since they are at once admirable and easy, and bring with them an immense treasure of very learned observations. And let no one expect anything certain from astronomy as far as hypotheses are concerned, since it cannot furnish anything of the kind; otherwise, taking for true what was devised for another purpose, he may leave this discipline a greater fool than when he came to it. Farewell.

# CARDINAL SCHÖNBERG'S LETTER

*Nikolaus Schönberg, Cardinal of Capua, Sends Greetings to Nicolaus Copernicus*

Some years ago, when reports of your excellence reached me, of which everyone spoke with one voice, I began to hold you in high regard and also to congratulate our people, among whom you flourished with such great renown.[1] For I had learned that you not only had an outstanding mastery of the discoveries of the ancient mathematicians, but had also established a new theory of the World. In it you teach that the Earth moves; that the Sun occupies the lowest, and therefore the central, place in the world; that the eighth heaven remains forever motionless and fixed; that the Moon, together with the elements enclosed within its sphere, placed between the heavens of Mars and Venus, revolves around the Sun in a yearly course.[2] And that you have written commentaries on this whole system of astronomy, and have worked out the motions of the wandering stars by calculation and gathered them into tables, to everyone's very great admiration. Therefore, most learned man, unless I am troubling you, I beg you again and again, most earnestly, to make this discovery of yours known to scholars, and to send me as soon as possible your night-long labours on the sphere of the world, together with the tables and whatever else you have that bears on the same subject. I have instructed Theodoric of Reden[3] to have everything copied there at my expense and sent on to me. If you grant me my wish in this matter, you will see that you have been dealing with a man who is zealous for your name and eager to do justice to such great excellence. Farewell. Rome, on the Kalends of November, in the year 1536.

1 Nikolaus von Schönberg (1472–1537), a Dominican, Archbishop of Capua and cardinal from 1535; he wrote this letter a year before his death.

2 The eighth heaven is the sphere of the fixed stars. "The Moon with its elements" means the Earth together with the Moon's orb: everything below the Moon revolves around the Sun with it.

3 Dietrich von Rheden (Theodoricus a Reden), a canon of the Warmia chapter and a colleague of Copernicus at Frombork; he was then living in Rome.

# DEDICATION TO POPE PAUL III

*To the Most Holy Lord, Pope Paul III: Nicolaus Copernicus's Preface to the Books of the Revolutions*

I can well imagine, Most Holy Father, that as soon as certain people learn that in these books of mine, which I have written on the revolutions of the spheres of the world, I attribute certain motions to the globe of the Earth, they will at once clamour that I must be hissed off the stage together with such an opinion.[1] For I am not so pleased with my own work that I do not weigh what others will judge of it. And although I know that the thoughts of a philosopher are far removed from the judgement of the crowd, because his endeavour is to seek out the truth in all things, so far as God has permitted this to human reason, I nevertheless think that opinions wholly foreign to what is right should be avoided. So when I considered within myself how absurd an ἀκρόαμα, a doctrine, those would think it who know that the judgement of many centuries has confirmed the opinion that the Earth is placed motionless in the middle of the heaven as its centre, if I were to assert, on the contrary, that the Earth moves, I hesitated for a long time whether to bring out into the light my commentaries written to demonstrate its motion, or whether it would be better to follow the example of the Pythagoreans and certain others, who used to hand down the mysteries of philosophy not in writing but from hand to hand, and only to relatives and friends, as the letter of Lysis to Hipparchus testifies.[2] And it seems to me that they did so not, as some suppose, out of some jealousy about sharing their doctrines, but so that the most beautiful

1 Paul III (Alessandro Farnese, 1468–1549), pope from 1534; he approved the Jesuit order and convened the Council of Trent.

2 Lysis was a Pythagorean philosopher (5th–4th century BC); a letter ascribed to him rebukes a certain Hipparchus for revealing Pythagoras's teaching to outsiders. This Hipparchus is not the famous astronomer.