De opere Dei creationis seu de mundo hypotheses orthodoxae quantumvis paradoxae: continentes summa summarum artium principia, physices, chymiae, medicinae, astronomiae, astrologiae, metaphysices; nec non praecipua fundamenta philosophiae et veteris et novae

[On God's Work of Creation, or On the World: Hypotheses Orthodox, However Paradoxical]

(1597)

by Helisaeus Roeslin (Röslin, 1545–1616)

Translation by Scott Weisman



Ars Astronomica
2026

”De opere Dei creationis seu de mundo hypotheses orthodoxae quantumvis paradoxae: continentes summa summarum artium principia, physices, chymiae, medicinae, astronomiae, astrologiae, metaphysices; nec non praecipua fundamenta philosophiae et veteris et novae,” published in 1597, is in the public domain. All translations, original additions, including illustrations, commentaries, and summaries, are copyright.

The source text was obtained from Universitäts- und Landesbibliothek Sachsen-Anhalt, Halle Saale and is available at https://opendata2.uni-halle.de/handle/1516514412012/3381.

Translation © 2026 Scott Weisman. All rights reserved.

Licensed under CC BY-NC-ND 4.0. Share with attribution; non-commercial; no derivatives.



Published by Ars Astronomica

Translator Version 2

Upright reason dictates that the recipients of the good, of whatever type and level of beneficence it may be, must show gratitude and blessing to the beneficent person in every way possible, commensurate with the value of the beneficence. And one who has benefited all the people of the world — for example, one who invented a new instrument for the good of the world, or a good book — it is fitting for every discerning person, out of the obligation of love of fellow beings, to at least purchase it, so that the man will profit and his heart will be encouraged thereby to invent yet more good instruments in the world. And similarly, all other wise-hearted people will likewise strive and exert themselves to invent good things and instruments needed for the repair of the world and its perfection.

And therefore, whoever says: ”What do I need this new instrument for?” — he does not act well towards the world. For if not for the man who invented it, where would you be? And what would your city do? And more than this, if the man did not exert himself, what would the world do?

— R. Pinchas Eliyahu Hurwitz, *Sefer HaBris HaShalem* (1797)

If you find this translation useful, consider supporting Ars Astronomica.

ArsAstronomica@protonmail.com

A note on the work

De opere Dei creationis sets out, in a series of numbered theses, a complete account of the created world: its principles, the elements, the heavens, and the place of medicine, alchemy, astronomy and astrology within one philosophy. Its author, an Alsatian physician and astrologer, closes with an appendix comparing the rival systems of the world — those of Ptolemy, Copernicus, Nicolaus Raimarus Ursus and Tycho Brahe — and adds a geo-heliocentric system of his own, each shown in a full-page diagram. Published in 1597, at the height of the priority quarrel between Tycho and Ursus, the book became part of that dispute.

A note on the translation process

This translation was produced with the translation-pipeline. See the linked repository for details on the process.

This edition has been checked at citation grade. Every part of the translation was first compared, clause by clause, against a line-by-line transcription of its own page, and each divergence was settled before the work moved on. Then, on a stratified sample, the layer a citing reader depends on — figures, numbers, names, and every letter the transcription left undecided — was read again, point by point, from the original page by readers given no sight of either the transcription or the translation. Every disagreement in that layer, including whether a passage is present at all, was settled against the page before publication, and none was left open.

What that does and does not mean. The independent re-reading is a claim about those points in a sample, not about every line: it did not re-read whole pages, and a point it did not reach is neither confirmed nor denied. The clause-by-clause comparison covered the whole translation, but it checks the English against a transcription, not against a second reader. Where the page itself will not settle a reading, this edition withdraws rather than guesses: a bracketed pair marks a genuine ambiguity the original cannot decide, and a question mark a character that could not be read. Those marks are deliberate refusals, and they are worth more than the confident readings they replace.

A note on the references. A scriptural or bibliographic reference given in brackets or parentheses is, in most cases, an **editorial identification of an allusion rather than a citation printed in the source**. Books of this kind quote and weave scripture constantly without naming it, and the identification is supplied here as a convenience to the reader. Where the source does print a reference of its own, it is given as printed. **An identified allusion is not evidence that the author cited that passage** — look at the original before resting an argument on one.

This text is the product of a highly refined automated translation process. It has undergone only cursory human review and should not be treated as an authoritative or scholarly rendering. It is offered solely as a reference and reading aid — a way to make an otherwise inaccessible work approachable — and any passage of real consequence should be checked against the original source.

Acknowledgements

Translated with the assistance of Claude. The translator thanks the Anthropic team for making this work possible.

Notation and abbreviations

A few conventions have been applied uniformly throughout this translation, so that one quantity is always written one way. They change how a value is *written*, never what it is; where the printed source and this translation differ in notation, the source's own form is recorded in the editorial apparatus.

Numerals are Arabic, even where the source sets Roman ones. Roman numerals are kept only in headings, running headers and signatures, which are transcribed as printed.

Dates are given as year, month, day — *1572 November 11*. Dates are Julian, as the source gives them, and have not been converted to the Gregorian calendar.

The signs of the zodiac. Longitude is reckoned eastward from the first point of Aries.

	Latin	English	longitude
♈	Aries	the Ram	0°–30°
♉	Taurus	the Bull	30°–60°
♊	Gemini	the Twins	60°–90°
♋	Cancer	the Crab	90°–120°
♌	Leo	the Lion	120°–150°
♍	Virgo	the Virgin	150°–180°
♎	Libra	the Scales	180°–210°
♏	Scorpius	the Scorpion	210°–240°
♐	Sagittarius	the Archer	240°–270°
♑	Capricornus	the Goat	270°–300°
♒	Aquarius	the Water-bearer	300°–330°
♓	Pisces	the Fishes	330°–360°

The Sun, Moon and planets.

	Latin	English
☉	Sol	the Sun
☽	Luna	the Moon
☿	Mercurius	Mercury
♀	Venus	Venus
♂	Mars	Mars
♃	Iuppiter	Jupiter
♄	Saturnus	Saturn

Abbreviations used in table headings: **RA** right ascension.

Where a table in the source spreads one quantity across separate columns for degrees, minutes and seconds, those columns have been joined into a single column and the value written whole. Where a value runs to thirds and beyond, the columns are kept, since there the columns are the notation.

ON GOD'S WORK OF CREATION, OR ON THE WORLD.
Hypotheses
ORTHODOX, HOWEVER PARADOXICAL: containing the highest principles of the highest arts — physics, chemistry, medicine, astronomy, astrology and metaphysics — and also the chief foundations of philosophy, both old and new.
BY
HELISAEUS RÖSLIN, PHYSICIAN
and town physician of Hagenau in Alsace.
FRANKFURT,
at the house of the heirs of Andreas Wechel: Claude de Marne and Johann Aubry.
1597.

SIGNACVLVM MVNDI PITHAGORICVM.

The Pythagorean Seal of the World.

Diagram. A full-page woodcut. At the top, a small circle; below it, and touching it, a large circle in which a six-pointed star is drawn, made of an upward triangle (apex at the top, inside the small circle's lower part) and a downward triangle. The base of the upward triangle forms the top edge of a rectangle beneath the large circle; inside that rectangle is a second, inner rectangle, and the whole stands on a moulded pedestal with a band of leaf ornament. The points of the star carry small numbered circles or half-circles. A Roman numeral with a bar over it introduces each of five bands of lettering: I in the ring of the small circle, II to IIII in the outer ring of the large circle, and V in the frame of the rectangle.

- Small upper circle, outer ring: "Ī·MVNDVS ARCHETYPVS" — I. The archetypal world.
- Inside the small circle: "DEVS", "IEHOVA" — God, Jehovah; and, split either side of the apex circle, "Bo nū / Infi nitū" — the infinite good.
- Small circle at the apex of the upward triangle: "I." — the figure 1 or the letter I (the sort does not distinguish them).
- Down the axis of the upward triangle, below the apex: "Mercur:" — Mercury.
- Outer ring of the large circle, upper left: "II̅ ANGELICVS" — II. Angelic.
- Outer ring of the large circle, upper right: "III̅ ÆTHEREVS" — III. Ethereal.
- Outer ring of the large circle, right side below the right point of the star: "IIII̅·ELE:"; left side below the left point of the star, reading upward: "MENTA:".
- Inner ring of the large circle, upper left: "Bonum" — good; lower left: "RIS:" (fragment).

- Inner ring of the large circle, upper right: "Fini"; lower right: "[?]um" (fragment; the first sort is t, l or I).
- Upward triangle, upper part: "COELVM" — Heaven; at left along the side "Angeli" — angels; at right "Stellæ" — stars.
- Small circle at the upper-left point of the star: "6"; at the upper-right point: "4".
- Small circle at the centre of the star, on the line joining 6 and 4: "HO / MO" — Man.
- Downward triangle: "AER" — Air (centre); "Meteor" — meteors (upper left, oblique); "Aues." — birds (upper right, oblique); "Beſtiæ" — beasts (vertical, along the left side); "Piſces" — fish (vertical, along the right side); "Plantæ" — plants (vertical, above the bottom point).
- Lower-left triangle of the star: "TERRA" — Earth; "Sulphur" — sulphur (along its lower left side); "Lapides." — stones (along its right side).
- Lower-right triangle of the star: "AQVA" — Water; "Metalla" — metals (along its left side); "Sal" — salt (along its lower right side).
- Half-circles on the top edge of the rectangle: "3" (lower-left point of the star), "5" (bottom point of the downward triangle), and at the lower-right point a single figure not read [?].
- Inner rectangle: "Ignis :" — fire (upper left); "Procellæ" — storms (upper right); "Inane : Tenebræ : Abyſſ⁹" — the void, darkness, the abyss; "CHA OS:" — Chaos.
- Half-circle rising from the foot of the rectangle: "Malum / SATAN" — evil, Satan.
- Frame of the rectangle, read clockwise: "V̄ IN / FER / NA / LIS" — V. Infernal.

TO THE MOST REVEREND AND MOST SERENE PRINCE AND LORD, LORD ERNEST [i.e. Ernst of Bavaria], by the grace of God Archbishop of Cologne, Prince-Elector of the Holy Roman Empire and Archchancellor for Italy; Bishop of Liège; Administrator of Münster, Hildesheim and Freising; Prince in Stavelot; Count Palatine of the Rhine; Duke of Upper and Lower Bavaria, of Westphalia, Angria and Bouillon; Marquis of Franchimont, etc.; his most gracious lord.

In our time, Most Reverend and Most Serene Prince, those portents — the new star in Cassiopeia and, within twenty years, several comets, portents of the highest order — were observed in the highest aether, not in the sublunary elementary region. They have brought it about that from then on the whole of the ancient meteorological doctrine has not only become suspect to me, but I have also begun to doubt, concerning the remaining parts and arts of natural philosophy as well, whether they are supported and founded on true στοιχείοις [Greek: stoicheiois, "elements"] and elements, and on sufficient principles.

That those portents stood in the ethereal region, and not in the lower, elementary one, many and various learned men from various parts of the world have demonstrated in their writings with the most solid and firm arguments

and reasons. Among foreigners: Tycho Brahe, a Danish nobleman; John Dee of London, an Englishman; Guillaume Postel, a Frenchman; Jerónimo Muñoz, a Spaniard. At home, among the Germans: Cornelius Gemma; Michael Mästlin of Württemberg; Christoph Rothmann, mathematician to the Landgrave of Hesse; and Tadeáš Hájek, physician to the Court of His Imperial Majesty. On the principles of the natural arts, however, the occasion for doubt was given me — besides Theophrastus Paracelsus the German — by Jean Fernel of Amiens, a French physician, and by Peder Sørensen, physician to the King of Denmark and a most excellent philosopher, *Preface.*

in his *Idea Medicinae Philosophicae* [Idea of Philosophical Medicine], printed and published at Basel in the year 1571. All of these men, I say, by their judgements and their most learned writings, brought it about that I began to think more studiously about all matters — astronomical and meteorological as well as physical and medical — and about their principles and sources; to search them out more diligently, to probe everything, and to turn it over in my mind and keep hold of it.

And from the time, Most Serene Prince, when four years ago I came to Your Highness at your summons and, in the course of conversation, heard you discoursing on various matters — opening the innermost recesses of philosophy, bringing forth hidden treasures, explaining many mysteries of nature (all of which, finally, before my departure, were also set down in writing and handed over and left to me) — from then on I began, as I ruminated, to turn these things over still more intently, to weigh them by myself more accurately and more deeply, and at length to write down the convictions of my mind in certain theses, and also in main headings.

These do indeed contain many things that seem to conflict with the popular and commonly received opinion of the philosophers. Even so, I do not put them forward with the intention of wishing to explode or to despise the masters of the ancients — Aristotle, Galen and Ptolemy — in physics, medicine and astronomy (for I too owe to them the rudiments of my studies). But since it has been found over a long course of time that their doctrines, and certain of their hypotheses, are not only insufficient but sometimes even bring absurdities in their train, this moved some men of later times to contemplate defection and to rise up against them: Nicolaus Copernicus against Ptolemy, Theophrastus Paracelsus against Galen and Aristotle, and afterwards Petrus Ramus against the same [i.e. Aristotle] — in the philosophical arts, that is — at the very time when many contentions arose throughout Europe in sacred matters and religion, and in Asia a certain Thechelles rose up against the Mahometan sect. A wondrous age indeed, this of ours, and pregnant with great things.

But since not even so has the matter been satisfied on every side, and everything is still full of contentions, labours and difficulties (with new ones arriving afresh: in astronomy and physics, new absurdities from Nicolaus Reimers Ursus of Dithmarschen; in chemistry, medicine and philosophy, many spurious and

adulterated ones, both Theophrastean and Aristotelian), I for my part, out of these difficulties and la- *Preface.* 5

byrinths and the crowd of pseudo-philosophers, I have, so far as my slender powers allowed, extricated myself in the way the following theses show. I walk, that is, a middle way: I neither reject the old entirely nor seize rashly on the new, but refer everything to the Mosaic Muse — to the most ancient, that is, and the most constant — so as to accept whatever has been truly said on either side, and to reject from every side and cast far away what is false, whether old or new.

If, however, these things do not satisfy someone either (for who could square everything to the rule, or touch every point exactly with a needle?), but someone wishes to hold on to all the ancient views with his teeth and defend them, or another would rather substitute other things in place of the new ones, he has my full leave; and I will even come over to their opinion, if they do so with firm reasons. For I wish in every way to learn, not to quarrel, since the latter belongs to silly women, while the former befits even learned men. And both sides will surely be content and will agree very well, if we are persuaded that for those who unroll the great Book of the World, or who investigate the work of God's creation [Crationis] and the nature of things, no final end can ever be reached, but that there always remains something for us to inquire into and learn thoroughly.

With this aim, therefore, I wished to put forward these theses, so that I too might be one of those who wish to investigate the works of God and to grasp them, to admire them and to celebrate them. As for my first writing them down, Most Serene Prince, the occasion was given me and the spur added by that conversation of yours, by far the most learned, and so very delightful for me to hear. As for my publishing them, certain most learned men, and very friendly to me, not only spurred me on by letters, but I also learned that learned men of other nations and provinces were treating the same kind of subject and had already published it. Among these, from foreign lands, there are Teupolus, Pursius and Tilesius, Italians; Francesco Patrizi the Dalmatian; and other writings of the same kind as well, such as the hypotheses in medicine of a certain Fl. Cygnerus, the *De Natura hominis* [On the Nature of Man] of Donius of Cosenza [i.e. Agostino Doni], and the *Cyclognomica* of Cornelius Gemma Frisius. From the Saxon parts of Germany, the very foremost of all is Jan Jesenius, in his recently published *Zoroaster*. All of these, moreover, dedicated their works to the kings and princes of their own provinces and kingdoms.

So that, then, in the upper part of Germany — the most pleasant and most fertile region, which lies between the Danube and the Rhine, on the Neckar, most celebrated rivers — there should not be lacking men who could and would do the same, I, a German born and brought up in these parts, the least indeed among the learned

6 *Preface.*

of all, and both obscure and of low standing — have nevertheless wished not to give way on that account, but on the contrary to go forward and come out the more boldly; to offer my own works too, according to my small measure and the talent given me by God; and to dedicate them to Your Highness. For you hold the principal parts both of Upper Germany on the Danube and of Lower Germany on the Rhine and the Meuse — and those the highest — with the highest wealth and the most ample goods.

Moreover, Most Serene Prince, among the magnates and princely men there is now no one who could judge such things more acutely, or understand them better, than you alone. You are of a plainly divine intellect and the keenest judgement, and to this are added an ardent zeal for hidden matters and a perfect knowledge of those sciences to which these theses of mine at least aspire, and whose first foundations they convey. Therefore, if only on this account, I wished to publish them under your most serene name, so that they might have a defender and patron at once powerful and understanding. I do not doubt that, with the serenity of countenance and readiness of mind you have shown towards me before, and usually show towards the study of the good arts, you will also accept these works of mine and interpret them in good part — especially since I seek no further counsel or help than truth demands and requires, so that it may at last win and come out on top; and let all sophistical deception and empty philosophy perish.

The theses are, indeed, for the most part paradoxical, and rather brief and rather obscure. Even so, I judged that I should refrain for now from a longer explanation, so as neither to distract the minds of readers nor, as it were, to bind them to these theses, but rather to leave each person free to think and judge freely about these philosophical matters. At some time I shall either communicate a fuller explanation, with confirmation and refutation, privately to Your Highness, or also publish it openly, if there is need and the matter seems to require it.

If I perceive that these rudiments of my nightly labours have pleased Your Highness, and see that I have obtained your favour and patronage, I shall some day give greater things: namely a work worthy of your most serene name, a chronological one, which I have now been preparing for many years on the reckoning of times. For this work, being great and very large, also requires greater expense than I am able to bear. And in that study I know — I who have experienced the difficulty of the business, and would even dare to affirm it — that there is no one yet, nor will there be, who could resolve the doubts and knots that still remain in this subject and bring the work to completion. For I also know that there is no one, nor easily will be, who will devote this effort

Preface. 7

and will bear labours as great as the work requires, and as I have now spent and borne for many years. But this work is both necessary for the reading and understanding of the Holy Scriptures and serviceable for a varied knowledge of profane histories; it is therefore worth knowing for magnates and princely

men, and supremely useful, longed-for and welcome to the whole Christian world. Your Highness would therefore also win the highest gratitude, and praise that will never die, if you were to take up its patronage and promote it with your clemency and magnificence, so that it might at some time be brought to the desired end and come forth into the light under happy auspices. That Your Highness may do this, bring me help towards such great endeavours, and hold me commended to yourself, I most humbly pray and beseech. From God, Best and Greatest, you will without doubt deserve, Most Serene Prince, to be preserved among the living as long as possible, for the common benefit of the Christian commonwealth and for the sake of good studies, and to fare as well as possible. From Hagenau in Alsace, 1595 August 24.

Your Highness's most humble Helisaeus Röslin Physician, etc.

8

PANDVLPHI LEMII IVREconſulti, ad HELISAEVM ROSLIN MEDICVM ET ASTRONOMVM CARMEN EXTEMPOraneum, opuſculi huius Elenchum continens.

An impromptu poem by Pandulphus Lemius, jurisconsult, to Helisaeus Röslin, physician and astronomer, containing a summary of this little work.

That the World is an image of God; by what spheres the frame of the vaulted heaven Rolls its spheres for ever; And what the courses of the planets [Plantearum] are; what revolution Turns them; what events follow dire chasmata [Chaſmata]; By what plan GOD marked out the sphere of heaven, And fixed to the starry axis the golden-haired globe, the changeable light of the Moon, And the ethereal torches; What power the stars have; how each one rises and sets; In what station of the pole the stars, in what region the winged creatures Of the air fly through the void, in what region the comets; What it is that gives life and soul to chemical things; What the potent tincture, Salt, Sulphur and Hermes can do; That these are principles, and what the elements of things are; From where so many contagions of disease come upon the wretched: All this, with manifold and solid knowledge, this book of ROSELLUS Teaches, cracking the darkness of the ancients down to the kernel. Come then, reader, rejoicing, make use of these longed-for writings; Take up the roses with a grateful heart; receive the gifts of the skilled Astronomer, whose renowned fame, since, spread through the world, It cannot be shut in by the world, now knocks at Olympus.

Idem in repentinam authoris metamorphoſin.

The same, on the author's sudden metamorphosis.

Lately, as you wandered through the domain of the Count of Hanau, You were an Amphiaraus, digging out ancient bronzes. Now, when a craving

[orexis] for the earth and the cavern has seized you, Like a second Alcides you at once make for the stars [aſtrapetis][1]

AD VIRVM CLARISSIMVM MEDIEVM [recte: MEDICVM] ATQVE ASTRONOMVM PERItiſsimum D. D. Holiſæum [recte: Heliſæum] Roslin, Phyſicum Haganoenſem.

To the most distinguished man, the physician and most skilled astronomer, Dr Helisaeus Röslin, town physician of Hagenau.

Lest the world perish, not yet sufficiently known to anyone, Or the great machine of God collapse, tottering, The starry seer, taught on the summit of Helicon, Gives warning, and at the same time lays open here more clearly What the origin, what the end, what the props of things have been, So that the world may not lack knowledge of itself. Come then, show in the same way your remaining labours, your own, The long-awaited, splendid chronicle work [opus chronicum]. You will win worthy rewards, you who delight in the name of the Rose: So for you, and so for yours, the Rose will rise in honour.

Leonhardus Doldius of Hagenau, D.

DE OPERE DEI CREATIONIS SEV DE MVNDO HYPOTHESES.

Hypotheses on God's Work of Creation, or On the World.

I.

[Margin: What the world is.]

The world is the system, framework or compass [comprehenſio] of all natural things. They were created out of nothing in the beginning, in six days, by the triune [vnitrino] GOD, and are to be propagated in a fixed order right to the end, so that from things visible and natural the invisible and supernatural may in some way be known: that is, so that from the type and the creature, the Archetype and Creator, and he himself, [the maker] of his own work, GOD, may be celebrated. Romans 1, 3, 8.

II.

[Margin: Bodies of the world.]

The world itself, or the whole system of nature, is divided into simple bodies and bodies composed of simples; all of these are called bodies of the world [corpora mundana], or natural bodies.

III.

[Margin: Simples.]

Simples are those which do not come from other, prior things existing separately; rather, all things come from them, and all things go into them.

[Margin: Composites.]

[1] construed as *astra petis*.

Composites are those which both come from simples and are laid down into simples.

IIII.

Of the simples, some are elements, others principles.

V.

[Margin: Elements.]

Elements are those from which things not only exist, but into which, as into receptacles, all other things are also deposited. And these are of two kinds.

[Margin: Material.]

The material elements behave rather passively in the compound, and contribute not so much to being as to well-being [non tàm de eſſe,quàm de benè eſſe]. Of these there are three, Earth, Water and Air, namely the lower elements.

[Margin: Formal.]

And there is one formal or essential element: Heaven or Aether, the upper element. For that is how many receptacles of things there are; and the stars too are set in the heaven, for which reason it earns the name of element. Aristotle also calls it τὸ [ἄνω?] στοιχείον [Greek: to [?] stoicheion, "the [?] element"].

VI.

But the heaven holds the principal place. Not only do actions in the Great World take their origin from it — or, it is the cause of actions in these lower things, and stands in the role of a parent and of being [οὐσίας; Greek: ousias, "of being, of essence"] — but in the Microcosm too, and in any composite thing whatever, the form and essence are [?] from the aether and ethereal.

[Margin: Heaven is as it were the Soul of the World.]

Therefore the heaven is also a principle, and the formal or essential element. For the heaven differs in its whole essence from the remaining elements, as Aristotle rightly laid down.

VII.

These four great receptacles of things in the world also present themselves to the outward senses.

[Margin: Elements.]

In chemical resolution, however, the three lower elements show themselves: in the air that is exhaled, in the watery humour that is distilled, and in the earthy dregs that remain behind.

VIII.

[Margin: Principles.]

But what presents itself further by means of fire — in 1. a spirituous, thin substance; 2. an oily, fatty one; 3. a solid, salty one — the chemists call Mercury, Sulphur and Salt: namely the three principles of natural things. These contribute to the being of a thing and behave actively, and from them come the powers and faculties of things in the compound.

IX.

For this reason the principles are ethereal, formal and substance-giving [ſubſtantifica], while the lower elements are material. The form of any thing

whatever is the very essence of the thing, and its being [οὐσία; Greek: ousia, "being, essence"], which gives the thing its existence.

X.

[Margin: Fire is the heaven.]

As for fire, the fourth element, we recognise no other in the Macrocosm than the heaven or aether, so called from αἴθειν [Greek: aithein, "to burn"], from burning, shining or giving light, as Anaxagoras held. So the heaven ought rather to be called the fourth essence than the fifth, since the being [οὐσία'; Greek: ousia] and essence of all things consists in the Tetractys [Tetractide] or Quaternary and the first Pyramid (the emblem of fire or aether), as the Cabalists of the more secret philosophy put it.

[Margin: The quaternary is the first pyramidal number.]

XI.

So that there is a unity of being [οὐσίας; Greek: ousias, "of being"] or essence in, as it were, three hypostases [hypoſtaſib.], in nature and the universe of things no less than in the Godhead. For the sensible world was made after the likeness and pattern of the intelligible world [Mundi intellectualis] of the Archetype, and of the Idea of the divine Mind.

XII.

[Margin: Mercury, Sulphur, Salt.]

Therefore in the Microcosm too, or in any composite thing whatever, three formal and, as it were, hypostatic principles present themselves: Mercury, Sulphur and Salt. Because these are ethereal, the chemists say they belong to the fifth essence; but we say, more correctly, that they belong to the fourth.

XIII.

[Margin: Spirit, Soul, Body.]

These three, however, just as the chemists name them so on account of a certain analogy, were by the same reasoning called Body, Soul and Spirit by the famous Hermes Trismegistus, the most ancient of philosophers. Salt, namely, is designated by Body, Sulphur by Soul, while Mercury is Spirit and a spirituous substance. For just as the two extremes, the most remote from each other, Body and Spirit, are joined into one subsisting thing through one middle term, namely Soul, so are Salt and Mercury through the middle term Sulphur.

XIIII.

[Margin: Material fire.]

But the fire which the Aristotelians call materiate [materiatum] in these lower elements, existing in a matter foreign to it — this, I affirm, exists in a matter of its own, analogous to itself; and I say that this lower fire itself is analogous to the upper, ethereal fire.

XV.

[Margin: Principles.]

The principles in a composite thing, then, are those from which (and not from the mixture [craſi] of the elements) proceed the principles of actions, the causes of faculties, and properties: so that there is no constant property of any

body which [?] not either in Salt, or in Sulphur, or in Mercu- ry of that same body is detected.

[Margin: Elements.]

The elements, however, are the props of things, or their supports, binders and vehicles, etc., by which things are held up, hold together and keep in good condition.

[Margin: Essence.]

The essence of each thing, on the other hand, comes from the aether and from the heaven, and it is also fostered and stirred from outside by the heaven, so that the internal powers or faculties may come forth into act and reveal themselves in various works.

XVI.

[Margin: 1. ὁ ἀήρ (ho aēr, "the air"); 2. ὁ αἰθήρ (ho aithēr, "the aether"); 3. ὁ αἰών (ho aiōn, "the age, eternity").]

There are, moreover, in general three highest receptacles of things, in which God placed all created things. The first, that of the lower, elementary world, consists of earth, water and air, which is also called heaven many times in Holy Scripture. The second heaven is that of the ethereal, starry world. The third heaven, that of the angelic world, is above all these; it was so named by St Paul when he says that he was caught up into the third heaven (2 Cor. 12).

[Margin: The third heaven.]

XVII.

[Margin: Heaven.]

And these are distinguished by their times in such a way that the third is from eternity, outside all time, before the beginnings of things.

[Margin: Aether.]

The second, the ethereal, was completed on the first day of Creation together with the light, and is the shining heaven.

[Margin: Air.]

The first heaven, however, namely the air, was finished on the second day, and is presented to us by Moses under the name of the Firmament, the Expanse or the Liquid [Liquidi]. Water, however, and the finished [abſoluta] earth were separated from each other and finished on the third day, whereas in the beginning all things were Chaos, mixed with one another. And these are the simple things.

XVIII.

[Margin: Composites.]

Of composite things, however, and of things placed in the receptacles just mentioned, there are three highest kinds. For some are minerals, some animals, some vegetables, together with what is analogous to these. Each of these three is in turn subdivided into, as it were, three species.

[Margin: Minerals. Animals. Vegetables.]

For of minerals there are three: metals, juices [Succi], stones. Of animals three: land animals, water animals, flying animals. And just as vegetables belong

to the lower, elementary world, so stars belong to the ethereal, and angels to the angelic world.

[Margin: Stars. Angels.]

So that, out of three times three, the species of all com- posite and created things consist.

XIX.

[Margin: The Pythagorean Seal of the World.]

The reason for these things, moreover, is shown to you and set before your eyes by the number six, namely the first perfect number. For this reason it was called by Pythagoras the Seal [Signaculũ] of the World: because, laid out on a plane and resolved into triangles, it comprehends both the universal elements and principles of the world, and the very being [οὐσίαν; Greek: ousian, "being"] and essence of things, and the genera and species of all composite things — as the figure placed right at the beginning, on the first page, showed you.

XX.

[Margin: Meteors.]

Just as God adorned the earth with plants and the heaven with stars, so the meteors in the air no less celebrate the power of God, as Psalm 149[2] testifies. And these are, as it were, fruits of the heaven, such as also the many kinds of manna and of dew, which correspond, namely, to the mineral juices; just as it is also established, from histories and from experience, that stones have been generated above and have often fallen from there.

XXI.

[Margin: Lower things.]

Created things differ from one another, however, in this: that the things belonging to the lower world, being composed no less of contrary and materiate [materiatis] elements than of formal principles, are also placed in the material elements; and for that reason all things in the lower, elementary world are subject to generation and corruption.

[Margin: Stars.]

The stars, by contrast — from principles alone, and those the purest, and foreign to all matter of the elements — are placed in the essential element. Therefore in the ethereal world there is a perpetual conservation of individuals, and the stars are subject to no corruption.

[Margin: Angels.]

The angels, however, are neither from principles nor from elements, but are pure minds and spirits: therefore they are destined for immortality and eternity.

XXII.

[Margin: Meteors.]

[2]so printed; the meteors praising God — fire, hail, snow, stormy wind — are Ps. 148:7–8

The generation of meteors, however, is imperfect, and as it were momentary, and they have not withdrawn far from the nature of the elements: therefore they are also easily dissolved into the elements, and are soon subject to destruction.

[Margin: Metals.]

The generation of metals, on the other hand, behaves in the contrary way. For it is most perfect, especially that of gold, and is accomplished only over a long time: therefore metals are also dissolved with the greatest difficulty, and also only over a long time, and scarcely even then.

XXIII.

[Margin: Stars.]

That the stars are made of the three principles, the analogy of metals — especially of gold, the most perfect of all — and of precious stones can teach you. For all these things, the more they consist of purer principles and the less they have of the elements, the more excellent their powers and the harder they are to corrupt; so much so that gold even rejects all the force of fire. Since the stars, therefore, are perpetual and not subject to corruption, they are for that reason made of the purest principles, and are of the greatest powers beyond all other things.

XXIIII.

[Margin: Comets.]

That the heaven and the ethereal bodies are nevertheless not wholly unalterable is proved by the comets of our time [emtpore] [recte: tempore], observed in the aether by most learned and most skilled practitioners [artificibus]; and the fact that, conversely [contra], [?] of the planets' orbs are changed[3]; and many other reasons besides can be brought forward.

[Margin: Stars of the second rank.]

For this reason we judge that comets should be admitted into the second rank [numerum] of stars.

XXV.

[Margin: Motion of the stars.]

That the stars, however, do not wander here and there in the aether as birds do in the air, but are either guided by a certain knowledge of their own, implanted by God, or moved by definite orbs, is shown by their constant motion.

XXVI.

[Margin: Universal spheres.]

We do not, however, recognise more universal orbs in the heaven, or more spheres, than God and nature have marked out with bodies and globes and made visible: namely nine — the sphere of the fixed stars, called the eighth; the seven spheres of the planets; and, if one wishes to add it, a ninth, namely that of

[3]the page reads "contra" (checked at native resolution); the Latin gives "mutentur" no subject. "centra" (the centres of the planets' orbs) would supply one, but that is a conjecture and is not adopted

the earth. For the air, which encloses the globe of earth and water on all sides, is also called heaven in Holy Scripture.

XXVII.

[Margin: That there are not more spheres.]

Therefore what the ancients laid down about a ninth sphere, a tenth, which they called the primum mobile, and about an eleventh sphere, the Empyrean heaven, the watery Crystalline — all these I judge to be empty fictions and dreams; no less than the notion that elemental fire lies between the air and the aether, and is called the fiery or Olympian heaven.

XXVIII.

[Margin: The sphere, the primum mobile.]

Just as God the Creator is of infinite essence, so all creatures and things created by him are finite; and the whole universe is bounded and enclosed by the highest heaven, that of the stars. Hence, too, it is called *caelum* by the Latins, because it hides [cælet], comprehends and contains all things within itself. And on this reasoning the eighth sphere, that of the fixed stars, will be the primum mobile for us.

XXIX.

[Margin: Nothing in nature is infinite.]

If, then, there is no infinity of the aether, the formal element as it were, much less will there be an infinity of the air, the material element: so that the air too has a definite proportion in quantity to earth and water, no less than a definite analogy and ratio in quality.

XXX.

[Margin: Qualities of the elements.]

In quality, however, the difference of the elements consists in this: that they differ from one another in the passive qualities, dryness and moisture, and in other qualities which are, as it were, their offshoots and offspring — such as rarity, liquidity, softness, density, thickness, etc. For earth is dry, dense, firm, stable; water moist, soft, fluid; air rare, liquid, permeable. All are tempered in such a proportion to one another that, just as air with its rarity and liquidity stands to the moisture and softness of water, so water with its moisture and softness stands to the dryness and density of earth: neither extremely rare nor extremely dense, but as it were a mean between the two extremes.

[Margin: Analogy of the elements.]

XXXI.

By the same reasoning, the firmness or stability of earth, the fluidity of Water and the permeability of Air are also analogous. That permeability is the property by which an easy passage is granted to all animals and by which air is drawn in by breathing — just as water, by its softness and fluidity, offers passage to ships and fishes. Earth, on the other hand, resists by its firmness, so that both creeping and walking animals can plant their feet on it and move forward upon it.

XXXII.

[Margin: The neighbourliness of the elements.]

Sometimes, however, an element passes over into its neighbour: so that air is at one time rarer and at another becomes more humid, so that it is even condensed into water; just as water quite often becomes rarefied and is resolved into air, but quite often has something of the earthy element mixed into it. For the middle element stands between the two extremes; and earth too is diluted by moisture.

XXXIII.

Therefore, since the two extremes are joined through one middle and third, it was not necessary for Aristotle to invent a fourth element of fire — hot, that is, and dry; just as it is not necessary to attribute heat to air either, since air can be both hot and cold by accident. In the same way these same active qualities are present by accident, not per se, in the two remaining elements, Earth and Water; for the elements behave in a purely passive way, and by their own nature are endowed with passive qualities only.

XXXIV.

[Margin: Active qualities.]

To the principles, however, belong the active qualities. Aristotle had understood that these must be present in a composite thing — especially that fiery and hot quality — and so the opinion took hold of him that he should conceive of a fiery element; and he looked in the materiate elements for the active qualities which he ought to have looked for in the formal principles.

XXXV.

Since the heaven, however, is the essential and formal element, and is, as it were, the father with respect to the lower elements; and since the stars likewise are made of the purest principles and are separated from all matter of the lower elements — for this reason the heaven is also the highest agent, and the stars are of the highest powers, which they exercise in manifold ways upon these lower bodies, both simple and composite.

[Margin: The heaven and the stars are the highest agents.]

XXXVI.

In this, however, they differ from the lower agents: that the heaven suffers nothing in acting. Therefore Aristotle rightly calls the celestial bodies agents κατ' ἐντελέχειαν [Greek: kat' entelecheian, "in actuality"]. Lower things, however, while acting from their principles, are also acted upon in turn, because the matter of the elements is mixed into them.

XXXVII.

The heaven, moreover, does not have only this property, that it heats these lower things: we find by experience that it also brings on cold, to such a degree that the lower elements as a whole are, as it were, contracted. Therefore the heat of the heaven will not arise from motion, as Aristotle held; otherwise the heaven would always heat. Rather, just as heat is in the Sun, so cold is in Saturn, and other qualities are in other stars; so that there is nothing the heaven does not effect in these lower things.

XXXVIII.

That these same actions and qualities in the stars come from the principles, and not from the mixture [crafi] of the elements, the lower things can teach you. In them we see that not all fine, spirituous and sulphurous things are hot.

[Margin: Camphor.]

But camphor, although it has a very fine spirit — so fine that it burns even when placed in water, and quite often vanishes of itself into the air — is nevertheless not hot; on the contrary, the Arabs placed it as cold in the third degree. Therefore the powers of things are not to be judged only by the mixture of the elements, nor solely from rarity and density; rather, in the celestial bodies they depend on the principles, and so too in these lower things, since these are entirely ana- logous to those, and the moving causes of the higher things are proportioned to the effects of the lower.

XXXIX.

Therefore we rightly say that the Sun and Mars heat and dry; that Jupiter and Venus moisten with a moderate heat; that the Moon moistens with cold; that Saturn brings on cold and dries; and that other stars too exercise other qualities upon these lower things. And all this proceeds from the nature of their principles, of which they consist, and from the fact that they are placed in the ethereal element.

XL.

Let those people be gone at last, then, who judge everything by the mixture of the lower elements and by the secondary qualities. With their doctrines they achieve nothing except that, teaching wrongly themselves, they hinder in their course others who wish to learn rightly — so that one never arrives at the knowledge of the truth, as Paul says (2 Timothy 3), and the rich are sent away empty (Luke, chapter 1).

XLI.

[Margin: The heaven is luminous.]

Just as the elements in this lower world differ from one another in rarity and density, so the ethereal element, the heaven, differs from them in luminosity [luciditate], which is proper to it and is present in the heaven by nature and in the highest degree; just as in the element of earth, the most remote from the heaven, the greatest density and darkness are present. The intermediate elements [?], however — water and air — just as they hold a middle position in rarity and density, so too receive light from the heaven; and through the absence of light all things grow dark and are obscured.

XLII.

From these things it is also permissible to conclude that privations and the chaos of the elements — such as darkness, emptiness, the abyss, restlessness, and whatever belongs to confusion and is destined for corruption, as also the materiate and accidental fire, namely in the earth's

[Margin: Privations of the elements.]

bowels — have their proper seat; and that from there they quite often break out onto the surface and into the elements, to ruinous effect, when, that is, the abysses are opened; but when these are shut, the earth too must be shaken and moved.

XLIII.

[Margin: The infernal world.]

Hence, therefore, it is also inferred that the infernal world, destined for impure spirits, the Devil and his angels, is in the bowels of the earth and around the centre; just as reason itself and sacred scripture teach us that the angelic world, dedicated to pure minds and to the elect of God, has its space most remote from this one, and is above all these things, and is therefore also called supercelestial.

XLIV.

[Margin: The supercelestial world.]

[Margin: The lower, elementary world.]

Just as infinity (ἀοριστία) [Greek: aoristia, set as the Greek counterpart of the Latin *infinitas*, "infinity"], immutability, immensity, and eternity or aevum [æuum], ὁ αἰών [Greek: ho aiōn, "the age, eternity"], are proper to the supercelestial world, so time, motion and place properly belong to the lower, elementary world. For time is the measure of motion according to before and after; and that this belongs to this world is inferred above, from the definition of the world. Motion, moreover, is from place to place.

XLV.

[Margin: On [?] the system of the world.]

[Margin: The motion of the elements.]

Since, therefore, the lower elements differ from one another in heaviness and lightness, their motion is for that reason along a straight line. Light air, therefore, must be carried upward and occupy the highest place; heavy earth must tend downward and rest immobile at the centre of the world. Water, however, being intermediate between these qualities, would also have occupied the middle place, had not God, for the benefit of created things, made the earth uneven, as it were with mountains and mounds, so that it might offer the water a place in valleys, trenches and channels — so that the earth together with the water thus forms, as it were, one globe.

XLVI.

The heaven, therefore, which contains all things, since it dif- [Margin: Circular motion]

fers in its whole essence from the lower elements, being neither heavy nor light, must therefore be moved round in a circle with a circular motion. And that motion is entirely proper to it, and the highest mobility is in it by nature; just as the highest immobility is present per se in the element most remote from the heaven, namely the Earth. That is why Aristotle held that the heaven was called αἰθέρα [Greek: aithera, "aether"] by the Greeks, from ἀεὶ θεῖν [Greek: aei thein, "always running"], from its always running.

XLVII.

[Margin: Violent motion.]

The intermediate elements, however, air and water, are quite often agitated by violent motion, through the force of winds and storms; this motion is compounded of the circular and the straight. And it also happens that the earth is sometimes moved violently; and all such motions are per accidens.

XLVIII.

[Margin: Axiom. Aristotelian, on the motion of the heaven]

In the heaven, however, things are likewise so arranged with respect to motion that, although one simple body has only a single, simple motion per se, it may nevertheless have several motions per accidens.

XLIX.

[Margin: Astronomical.]

[Margin: The eighth sphere, the primum mobile.]

Therefore the eighth sphere of the fixed stars is carried by its own simple motion, and per se, from east to west and back again into the east, about the centre, axis and poles of the world; and, returning to the same point in the space of 24 hours, it makes the natural day, which they call the nychthemeron [Nychtemeron]. By this daily and nightly revolution it carries all the lower spheres of the planets along with it from east to west; and this motion is indeed accidental to the planets.

L.

[Margin: Motion of the planets.]

The proper motion of the planets, however, is that they are carried by a contrary motion from west to east: the Sun and Moon about the centre of the world, but the five remaining planets about another centre, namely the Sun. Each of the planets is the swifter in its proper motion the more remote it is from the eighth sphere, and by so much the more is it able to resist the prior motion by its own motion.

LI.

So that this may be possible, and so that the planets may be able to resist, it has been brought about that their proper motion takes place about another axis and other poles, namely beneath the zodiac.

LII.

[Margin: Accidental motion of the fixed stars]

Hence another motion also befalls the fixed stars, as if by way of retaliation — from the planets, namely: they are carried about the axis and poles of the zodiac with a contrary motion, from east to west, according to the order of the signs, but with a very slow motion, [?] so that they complete one period in 49,000 years, according to the ancients. According to Copernicus and the more recent writers, however, that motion is completed in a shorter time, in the space of 28,000 years.

LIII.

[Margin: Accidental motion of the planets.]

And since the Sun is the centre of the orbs of the five planets — Saturn, Jupiter, Mars, Venus and Mercury — this motion also befalls them besides: the Sun, by its own proper motion, carries these five along with it, following the progression of the signs, in the order of the signs [in conſequentia]. Venus and Mercury, indeed, it carries through the whole zodiac in the space of a year, but Saturn, Jupiter and Mars through some part of the zodiac. So, according to this annual solar motion, these three planets describe an epicycle, as it were, in their own sphere; and according to it they are now direct, now retrograde, now swift, now slow, now stationary, now in the lowest part of the sphere, near the earth, now in the highest, remote from the earth. These affections, however, belong to Venus and Mercury from their proper motion — for a different reason, namely because the orbs of these two do not encompass the earth, as those of the three superior planets do.

LIIII.

[Margin: Physical axioms.]

And since no empty space is granted in the heaven, and no interpenetration of the orbs either, according to the principles of physics, it follows from this that the sphere of the three superior planets is as great as the whole diameter of the Sun's sphere is. For that epicycle requires that much space through the annual motion of the Sun, as the centre of the superior planets, by which it is described.

LV.

[Margin: Definite and certain space of the spheres]

In this way the distance of the spheres of the superior planets as far as the fixed stars will be known. And God has wonderfully so arranged it that, where parallaxes cease — namely in the Sun and in Mars (when it is acronychal [Acronichus], that is, nearest the earth), beyond which the distance of the remaining planets cannot be taken by instruments — we can then explore that distance and reason it out by another method, namely from the diameter of the Sun's sphere; so that, since God's visible work of creation is enclosed and bounded by the outermost heaven, its limit too may be known, and nothing remain unknown to the skilled and shrewd astronomer.

LVI.

[Margin: Motion of trepidation]

But as for the eighth sphere's being moved by a third motion, which the moderns [Neoterici] call the motion of trepidation — the motion according to which the equinoxes and solstices change, and the stars too have an unequal declination from the equator, as the Sun also does — it is not necessary on that account to invent a new sphere. Rather, that inequality befalls the fixed stars either from the fact that the heaven trembles and is not entirely unalterable, as we accepted above; or, if you like, you will be able to save this by particular orbs or epicycles of the eighth sphere as well, no less than in the planets.

LVII.

[Margin: Particular orbs.]

[Margin: Tycho Brahe contradicts this opinion of Michael Mästlin.][4]

[Margin: New star]

And the motion of the comets in our time proves that the particular orbs of the planets exist — either the same ones that the experts posit, or ones conforming to them (and not merely imaginary circles). For the comet of the year 1577 progressed continually on a particular orb in the sphere of Venus; the comets of the years 1580 and 1585, moreover, were observed even above the Sun; and finally the star of the year 1572 stood motionless continually in the eighth sphere. From these facts this too is concluded: that, all the more, the stars fixed in their orbs are carried round in the aether, and do not wander here and there in the air.

LVIII.

[Margin: Motion of comets]

And this makes it credible that the comets of earlier times were badly observed by the experts. But since most or all of them progressed with the daily motion of the eighth sphere (which for us is the primum mobile), one must judge that they stood in the aetherial region, and that their proper motion is altogether other than, and different from, the motions of the planets — arising either from particular orbs of the planets, or from a knowledge implanted in them by God, according to which they range even outside the zodiac into every part of the heaven.

LVIIII.

[Margin: The uppermost air.]

And that the uppermost air is moved by the daily motion of the primum mobile, and is violently carried round with the spheres of the planets, is entirely contrary to reason. Since the heaven differs in its whole essence from the lower elements, the lower things can therefore in no way be capable of that most rapid motion.

LX.

Yet it is not contrary to reason that the aetherial region extends farther below the Moon, since it can be demonstrated by optical arguments that the air does not extend that far, and that its space is not as high as the natural philosophers [Phyſici] have hitherto supposed, dividing it into an uppermost, a middle and a lowest region.

LXI.

[Margin: The uppermost region of the air.]

Therefore what they have hitherto considered the uppermost region of the air will rather be aetherial, movable by the daily motion; and it will be the region of those comets that did not occupy a higher space of the heaven — so that no empty space is left in nature.

LXII.

[4] the margin is read as "ſententia", a nominative; the English construes it as a dative (*sententiae*), with Tycho Brahe as the subject.

The middle region, however, in which the clouds stand, and from which rain, snow, hail and so on are generated, can be shown from the first chapter of Genesis to be rather the uppermost region of the air: there the air is mentioned under the name of the expanse or the firmament

[Margin: Heaven and firmament.]

by Moses, as are the waters — that is, the waters generated from the clouds and suspended — above the expanse or firmament; in this way he assigns the uppermost place of the air to the waters and the clouds. Sacred Scripture, moreover, calls the air and the aether by a common word "heaven" and "firmament".

LXIII.

[Margin: Composites of the heaven]

In this way three kinds of composites belong to the heaven: the stars to the highest heaven, or aether; meteors to the intermediate heaven, that is, to the uppermost region of the air and the lowest region of the aether; and flying creatures to the lowest heaven and the air. Hence in Sacred Scripture they are also called the flying creatures of the heaven.

LXIIII.

[Margin: Water.]

[Margin: Earth.]

Three kinds of composites also belong to water: aquatic animals, and two minerals, metals and juices. Three likewise belong to earth: plants or vegetables; stones; terrestrial animals. Thus God created all things in a definite order and, as it were, with a mutual compensation.

LXV.

Among these it is further so arranged that in each kind one thing is more perfect and hard to dissolve: as in the kind of celestial things, the stars; in the kind of terrestrial things, precious stones; in the kind of aquatic things, metals. Another is less perfect, very easy to dissolve, and of short life, as it were: as in the kind of celestial things, meteors; in the kind of terrestrial things, plants; in the kind of aquatic things, juices. Animals — celestial, terrestrial and aquatic alike — hold a middle position.

LXVI.

Three things, therefore, are to be observed in any composite: 1. the material, passive elements; 2. the formal, active principles; and 3. the essence [Greek: οὐσία (ousia, "being, essence")] itself and the form of the thing. Among the principles, however, the one that comes nearer to the nature of the aether — namely Mercury, or Spirit — is aetherial above the rest, and is both essential [Greek: οὐσιῶδης? (ousiōdēs, "essential") [?]] and the nearest instrument of the essence [Greek: οὐσίας (ousias, "of the essence")] or form.

[Margin: Essence]

LXVII.

[Margin: Ousia [Greek: οὐσία]: the essence in any thing.]

But just as in the kind of animate things there is the essence [Greek: οὐσία] and entelechy [Greek: ἐντελέχεια (entelecheia, "actuality")] of the soul, so in

the kind of minerals something similar exists, which the chemists [Chimiſtis] also call a soul. In the kind of vegetables it is the vegetative faculty, which the natural philosophers less properly call vital. The stars, moreover, also have their essence, and one so excellent that most of the philosophers have called it animate and intelligent. In meteors everything is obscure in respect of essence [Greek: οὐσίας] and principles, because they have not withdrawn any great distance from the nature of the elements; in this respect they stand in the opposite condition to the stars.

LXVIII.

[Margin: Essential [Greek: οὐσιώδη? (ousiōdē) [?]]]

[Margin: Accidental heat.]

[Margin: Native heat.]

That among the principles, moreover, one is essential [Greek: οὐσιῶδες (ousiōdes, "essential")] in the highest degree becomes evident in the kind of animate things. There a twofold heat exists: one, namely, fiery, which Aristotle called elemental, and which shows itself in the humours, especially in yellow bile. But this should rather be called accidental, and that in respect of the other heat — the native heat, namely — which shows itself in the spirits. And those spirits are Mercury: that essential and aetherial thing, the nearest instrument of the soul, not the essence [Greek: οὐσία] and soul itself.

LXVIIII.

[Margin: Chemistry]

What the chemists separate, therefore, and what remains after the final separation, are only principles and elements, not the essence or soul itself. That essential and aetherial thing — namely spirit and Mercury — can indeed be obtained from minerals and vegetables. In animals, however, it excels in subtlety, so that it is not subject to the operations of the artificer and cannot be captured. Much less, therefore, is the essence and soul itself graspable in any thing, so that in separation it vanishes entirely.

[Margin: Death]

Hence death and mortification are nothing other than the separation of the soul from the body, and the resolution of the body into elements and principles.

LXX.

[Margin: A chemical axiom]

It is therefore a chemical axiom that when something returns into that which it was before (as in the resolution of metals, which of all is the most difficult, happens rather often), this is a sign that the final resolution has not yet been accomplished, nor the soul separated from the body. But when something cannot be brought back into what it was before, the final resolution and mortification has now been accomplished, the form has been separated from the elements and principles, and the chemist has attained his final goal.

LXXI.

The goal, however, is that he should separate the principles, in which the powers of all things reside, from the elements [recte: Elementis], and have

them in their purest state — not that he should grasp separately the essence [Greek: οὐσίαν] itself, or the form and soul (except insofar as sulphur is called a soul by analogy; yet it is not the form itself of the thing, but a medium made of the principles). How, then, the chemists can boast that by means of it they are able to increase themselves [ſe augmentare], or even to procreate new species, I cannot sufficiently understand. Indeed, I think it is concluded from what was said above, and from their very own axiom, that this belongs to no artificer, but that God has left this whole work to Nature. And since they cannot capture even the air, that material element, and in very many cases not even that aetherial and essential [Greek: οὐσιῶδες] thing — namely spirit or Mercury — much less, therefore, will they grasp separately the essence [Greek: οὐσίαν] itself of a thing, its entelechy [Greek: ἐντελέχειαν] or form, which is apprehended by reason or mind rather than by the senses.

LXXII.

Yet I will never deny that one skilled in the chemical art can, by his work and industry, bring to perfection through maturation that which is imperfect but nevertheless has in itself a soul and potency, so that the potency brings itself into act by means of the heat of fire. He does so in the same way as the farmer, by his cultivation, brings it about that the seed — which has in itself a seminal power, or soul — once cast into the field, grows and is perfected by means of the heat of the Sun, and is thus brought from potency into act.

LXXIII.[5]

[Margin: Tincture.]

And in this way the chemist will have the soul not entirely pure and separate; rather, it will consist in some tincture, as they call it. By its projection, I will not deny, he can augment, or transmute, or introduce a new form. Indeed, I will go further and affirm — and infer from the analogy of the three highest kinds — that just as animals consist by nature alone, and vegetables by both nature and art, so in minerals art has very great power, so that what nature scarcely completes in many ages of years in the caverns of the earth, art can accomplish in a shorter space of time.

LXXIIII.

[Margin: Mercury]

[Margin: Sulphur]

[Margin: Salt.]

[Margin: Phlegm]

[Margin: Caput mortuum.]

Five things, therefore, present themselves in resolution. First, that aetherial, essential [Greek: οὐσιῶδες] body, a spirituous substance: Mercury. Second, a certain sulphurous body, or oily substance, called Sulphur. These two are of such subtlety that, unless they are well preserved, they rather often vanish into the air. Third, Salt, which, however much coarser, nevertheless has a power

[5]The print sets this number twice: as the last line of p. 27, and again here at the head of p. 28, where the thesis begins.

that is not obscure. Fourth is phlegm, the watery element. Fifth, the earthy element, called the caput mortuum ("dead head"). These two are dead and have no powers.

LXXV.

[Margin: Air]

Air, however, the third element, is not captured separately, but remains mixed either with Mercury, or with Sulphur, or with Water; or else it vanishes entirely. So too those skilled in the art can labour until, by the force of fire, the remaining two elements are not only separated but also consumed and annihilated, leaving only the three hypostatic principles. These are indeed the signs of vivification, resurrection and perfection, as the elements are the cause of fragility, corruption and mortification.

[Margin: Salt, a body as it were new]

LXXVI.

Hence the number of the elements and principles together, as it presents itself to the senses in resolution, consists in the number five.

And if sulphur — which catches fire, and for that reason perhaps gave Aristotle occasion for the fiery element — were the fourth element, then certainly spirit and Mercury, which is above all of aetherial substance and equals aetherial bodies in its powers, would rightly be called the fifth essence [quinta essentia].

LXXVII.

[Margin: Fourth essence.]

More often, however, only four present themselves in separation: namely two active principles, sulphur and salt, or spirit and salt; and two passive elements, water and earth, or phlegm and caput mortuum. So the noblest and most excellent thing — the aetherial thing, namely, the essential [Greek: οὐσιῶδες (ousiōdes)] or substantific — is rather to be called the fourth essence, just as the aether too is the fourth essence.

LXXVIII.

[Margin: The work of creation triune.]

Three, moreover, show themselves even to ordinary people and to one less experienced in the art. In the sublimation of wine, for instance, the cooper [vietor] obtains Mercury, namely that aetherial spirit; second, the water, or phlegm; third, the earthy part, the lees and tartar. So too simple women, in the resolution of milk, obtain an oily substance, butter; second, a watery one, whey; third, an earthiness, namely cheese. Thus the work of creation shows itself as triune [vnitrinum] even in common experience.

LXXIX.

[Margin: Mosaic philosophy]

Moses too, under the unity and the single word "Earth", comprehends the whole matter of the thing. In the first chapter of Genesis, indeed, he comprehends the three material elements, the receptacles of things, as they show themselves in the macrocosm and constitute the lower world; just as

Moses soon resolves the unity into a ternary and explains himself in these words: 1. "And the earth was void", and 2. "the Spirit moved upon" 3. "the waters".

[Margin: The trinity of the elements.]

LXXX.

In the second chapter, however, when he says, "God had formed man from the soil, or earth, and from the earth every beast of the field and every bird of the heaven", Moses understands both the elements and the prin- ciples, as they show themselves conjointly in the microcosm, or in any composite thing.

LXXXI.

One proof of this, for instance, is that in chapter 1 he draws the flying creatures out of the water, and in the second chapter out of the earth. In the first chapter, namely, he understands the elements as the receptacles of things — that is, where the birds came forth from and where they were placed: out of the water, into the water and the air. For some of them swim on the waters, while others fly before the earth in the expanse of the heaven, that is, in the air. In the second chapter, however, Moses understands by "earth" the matter out of which things are made, and whatever lies hidden under that earthy matter — namely the remaining material elements and the formal principles. Out of these consists the composition of animals, of flying creatures, of man, and of all things.

LXXXII.

[Margin: The trinity of the principles.]

For Moses had already mentioned the three formal principles earlier, in the second chapter. And by Sahab, Bdola and Schoham he does not understand only minerals; rather, I think he also denotes the principles of things: Mercury, Sulphur and Salt. For gold, or Sahab, is the most complete and most perfect Mercury. Bdola is the pearl, or union-pearl [vnio]: the best and most excellent juice or oiliness, denoting Sulphur. Schoham, a concreted stone, of the coarser kind among the principles, is the token of concreted Salt.

[Margin: Sahab.]

[Margin: Bdola.]

[Margin: Schoham.]

LXXXIII.

[Margin: Unity: essence.]

The unity of form or essence in the macrocosm and in the elements, according to Moses, is the heaven. In the microcosm and in composite things it is the power of producing seed [virtus ſeminificandi]; and the divine prophet understood this not only of plants or vegetables but also of metals and the remaining minerals. In the kind of animals, however, that formal faculty is called by the same writer ψύχη ζῶσα [Greek: psychē zōsa], "living soul"; so that the vital faculty, or life, pertains only to the kind of animals, not to vegetables — and this also from the fact that the vital faculty, which has its seat in the heart, is never without the animal faculty, which has its seat in the brain. The natural

or vegetative faculty, however, which in the kind of animals has its seat in the liver, can exist even without the vital faculty, as certainly happens in plants.

LXXXIV.

[Margin: Grades of forms.]

And so Moses establishes three grades of forms, according to which all things are distinguished into three highest kinds: the lowest, the highest and the middle; and each of these is subdivided into its own species, as it were.

LXXXV.

[Margin: The lowest composites.]

The first kind, that of the lowest things, embraces all things that either lie hidden in the earth or put themselves forth out of the earth onto its surface, yet cling to it and have roots in it: such as 1. metals; 2. stones; 3. plants, or vegetables properly so called. To these, in place of form, belongs the power of producing seed, or vegetation; and they were created by God on the third day, after the completion and perfection of the elements.

LXXXVI.

[Margin: The highest.]

The second kind is that of the highest things, namely the celestial ones. Of these some are corporeal, such as 1. the stars, set in the aether and created on the fourth day; others are incorporeal and supernatural, such as 2. the angels, whose essence is spiritual, and who are spirits, separated from all admixture of matter and destined for eternity. Therefore I judge that they existed outside time and before the beginning of the six days of creation. In the same way, 3. meteors, themselves also corporeal, came forth and were generated only after the first seven days of creation, as is clear from chapter 2 of Genesis. They can therefore rightly be called secondary creatures, just as we earlier called comets secondary stars.

LXXXVII.

[Margin: The intermediate.]

The middle kind is that of the intermediate things, which roam with free motion before the surface of the earth and above the earth, either in the water or in the air: such as 1. fishes; 2. birds, pro- duced from the water on the fifth day; 3. land animals, created on the sixth day. The essential form of all of these is ψύχη ζῶσα.

LXXXVIII.

[Margin: Man.]

Man, however, created on the sixth day as the end of all things, is said not simply to have received a living soul, but to have been made in the image of God; and through the inbreathing of the spirit of life, or breath of life, he is said to have been made into a living mind [animum viuentem]. By this name he received something more excellent, above all visible creatures — something angelic, namely mind and reason — yet in unity of essence and as one form with the soul; so that of one thing there is only one essential form, not several.

LXXXIX.

[Margin: The principles of the constitution of things.]

And when Moses says at greater length, "The Lord God formed man, taking dust from the earth, and breathed into his face the breath of life", he denotes the two most general principles of the constitution of things, matter and form. Saint Paul too comprehends these, in only two words, when he says in 1 Cor. 15 [Greek: ἔστι σῶμα ψυχικὸν (esti sōma psychikon)], "there is an animal body": by ψυχικὸν [psychikon, "animal, ensouled"] denoting the unity of form, and by "body" the matter — which he then explains, saying: "The first man was made [Greek: ἐκ γῆς χοϊκὸς (ek gēs choïkos)], of the earth, earthy."

XC.

[Margin: Simplest.]

[Margin: Conclusion and recapitulation of the doctrine of the principles.]

In this way, moreover, we shall be reconciled with Aristotle: if, with him, we lay down matter, or the subject [Greek: τὸ πρῶτον δεκτικὸν τῆς ἀντιφάσεως (to prōton dektikon tēs antiphaseōs, "the first recipient of contradiction")], and the two opposites [Greek: ἀντικείμενα (antikeimena, "things set against each other")] — namely form and privation (which is the aptitude in the subject for receiving form) — as the three first and simplest principles of the generation of things, since nothing is prior to these or simpler, out of which all natural things are primarily constituted. Let us, however, call simple both the elements and the principles, properly so called and pre-eminently [Greek: κατ᾽ ἐξοχὴν (kat' exochēn, "par excellence")], because they [i.e. the principles] are formal and of greater power, as those [i.e. the elements] are material. Out of both of these, secondarily as it were and most immediately, all mixed things are composed

[Margin: Simple.]

[Margin: Prime matter.] [Margin: Second.]

and consist. By prime matter we understand the remote matter, which sustains all the changes of forms; by the passive elements, the second and proximate matter, subsisting of itself in the world. And in place of Aristotle's fire, endowed with some active energeia, we substitute either the heaven and the highest aether as the agent, or ethereal and active principles.

XCI.

[Margin: Man.]

Man, therefore, the end of all creatures, for whose sake all things exist and to whom all things are subject, has his body from the lower, elemental world; his soul from the ethereal world; and from the angelic world mind, reason and intellect, so that among the animals he alone partakes of reason. On this account he is also the most perfect of all creatures; and for this reason, too, he is truly called a microcosm and a little world, because whatever is in the whole, in the universe, all flows together, as it were, in one man.

[Margin: Microcosm.]

XCII.

[Margin: 1. By reason of form.]

For in this way man, the microcosm, by reason of one substantial form of all created things — terrestrial, celestial and intermediate — has all three grades and faculties of the soul: 1. the natural; 2. the vital or animal; and 3. the rational. And by reason of each grade he has, again, three other, lower faculties or δυνάμεις [Greek: δυνάμεις (dynameis, "powers")].

XCIII.

[Margin: 1. The natural or vegetative faculty.]

For by reason of vegetation man has three faculties: 1. the nutritive; 2. the augmentative; 3. the generative. These they call lower and corporeal, because they serve to sustain and preserve the body: so that the body, by means of nourishment, is 1. nourished and 2. increased, and, by means of seed, 3. multiplied.

XCIV.

[Margin: 2. The animal and vital, perpetually joined.]

By reason of the vital soul there are also three faculties: 1. the sensitive; 2. the phantastic; 3. the motive. For in this place a process takes place from the external things and 1. the senses to the internal ones. Then come 2. the common sense, memory, will and desire; and from there, going out from the internal things, the process runs back again to the external: then 3. local motion.

XCV.

[Margin: 3. The rational or intellective faculty.]

By reason of the spirit or mind, man likewise has three faculties: 1. διανοητικὴ [Greek: διανοητικὴ (dianoētikē, "of the understanding")]; 2. λογιστικὴ [Greek: λογιστικὴ (logistikē, "reasoning")]; 3. ἐπιστημονικὴ [Greek: ἐπιστημονικὴ (epistēmonikē, "knowing, scientific")] — that is, Intellect, Reason, Mind. For here the process runs from the internal things: from 1. the intellect, perceiving and being acted upon, to the external; then reasoning and 2. the agent intellect; and again a return takes place from the external things to the internal: then knowledge and 3. the simple mind, or ἀπαθής [Greek: ἀπαθής (apathēs, "impassible")].

XCVI.

[Margin: 2. By reason of body and matter.]

In the same way, in animals, three kinds present themselves by reason of the body. From these all the parts of the body — 1. the solid, 2. the fleshy and 3. the spirituous — partly consist and partly are nourished and preserved.

XCVII.

[Margin: 1. The radicals.]

The first kind is that of the radicals, and of an animal balsam, as it were; and this is threefold: 1. the more solid and dense radical, from the principle of animal Salt; 2. the radical moisture, or primigenial moisture, from the principle of animal Sulphur; 3. the spirituous radical, or that of the inborn spirit, from the principle of animal Mercury.

[Margin: Three spirits.]

Of spirits, moreover, there are three: 1. the natural, in the liver; 2. the vital, in the heart; 3. the animal, in the brain — one following the other and generated from the other. And all these are ethereal, just as ethereal bodies too come from the principles; and in them, too, the native heat — which is itself ethereal as well — consists and is founded, as it were, essentially [?] [Greek: οὐσιώδης or οὐσιωδῶς; the ending is open (ousiōdēs, "essential"; ousiōdōs, "essentially")].

[Margin: Native heat.]

XCVIII.

[Margin: 2. The elementates.]

The second kind is that of the elementates [elementatorũ], and this too is threefold: 1. the earthy and dry, most conspicuous in the solid parts, the bones, is the support of the body; 2. the watery moist, by which, as by birdlime, the earthy parts of bodies are joined and cohere, is the glue and vehicle of the body; 3. the thin airy, by reason of which it comes about [?] that living things are lighter and more agile than dead ones; it is the fan [ventilabrum] of the body.

XCIX.

[Margin: 3. Things mixed from elements and principles.]

The third kind is that of the humours useful in the body, from which all the things mentioned above receive nourishment and are preserved. These too are threefold, differing from one another in degree by reason of perfection and imperfection, as the three spirits also do. The first humour is chyle; it is made in the stomach and the neighbouring veins: hence the first concoction and the first rudiment of nourishment. 2. Chyme, juice or blood, which is made in the liver, the heart and the veins: hence the second concoction, more perfect still.

[Margin: Blood.]

The third, properly called the alimentary humour, is made in the habit of the whole body: hence the third and most perfect concoction, namely the assimilation and conversion of the nourishment into what is nourished.

[Margin: Alimentary humour.]

C.

The genital seed, however — the last and most useful thing left in the habit of the whole body after nutrition — proceeds by the contrary way. For it receives its first rudiment in the habit of the whole body, namely from the solid or spermatic parts (for the solid parts take their origin from the seed); it is then concocted in the veins and made more complete, until it attains its final perfection in the spermatic vessels. It flows down, therefore, from the habit of the whole body, as nourishment is converted into the habit of the whole body.

[Margin: Genital seed, or sperm.]

CI.

Further, just as in the alimentary humour there is much of the elements and little of the radicals, and it is brought about by an alien faculty — namely that of the parts to be nourished — so that what is nourished in potency becomes nourished in act: so conversely in the genital seed there is much of the radicals,

and of heat too, but little of the elements; and it is brought about by the seed's own faculty, so that what is an animate body in potency becomes animate in act, and from the inflowing nouri- shment of the mother's blood in the womb it receives growth, all the way to its final perfection and right up to birth.

CII.

[Margin: Three humours.]

Besides these useful humours, however, which are necessary for the preservation both of individuals and of species, three other humours present themselves, accidental, as it were, and excrementitious, yet not entirely useless: 1. phlegm, cold and moist; 2. black bile, or the melancholic humour, cold and dry; 3. yellow bile, hottest and driest, especially that which has its seat in the gall-bladder.

[Margin: Accidental heat and fire.]

And from this the accidental heat in the microcosm takes its origin, and it behaves like the accidental fire of the great world. This heat, therefore, is not from the elements, as some have said it is elemental, and much less is it ethereal; rather it ought to be called accidental, fiery and corrupting, as the native heat proper is substantial and preserves the body.

CIII.

[Margin: Excrements.]

And even those excrements, wholly useless and burdensome to nature, bear witness that all this is so: namely, those of the elements — 1. the earthy, feculent; 2. the watery, serous; 3. the airy, flatulent; those of the principles — 1. the salty; 2. the sulphurous; 3. the spirituous; those of the useful humours — 1. the raw, chylous; 2. the sanguine; 3. the spermatic; and those of the accidental humours — 1. the black, melancholic; 2. the pituitous, phlegmatic; 3. the bilious, yellow.

CIIII.

[Margin: Galen and Hippocrates.]

From here, according to Galen and Hippocrates, a very wide field now opens up for diseases and medicines. And those physicians who knew only the elements (and not even in the right number) judged everything — the diseases as much as the medicines themselves — from the first, second and third qualities, and from matter.

[Margin: Elemental diseases.]

But whatever they could not account for from these, they ascribed to an occult property and to the whole substance. Yet since they could not explain it, to

[Margin: From the whole substance.]

the commixture and crasis [craſin] of the four Elements they once again resorted, as did Galen and his followers.

CV.

[Margin: Jean Fernel of Amiens, a Frenchman.]

Jean Fernel, however, in our own time philosophized more accurately about these matters, and probed those diseases that come from the substance more deeply — that is, from hidden causes. Yet since he did not know their reasons

and did not find them out at all, he too stopped, as it were, halfway, and could not adequately explain those diseases.

CVI.

[Margin: Ethereal diseases.]

Among these, indeed, he counts the pestilential diseases — epidemic, contagious, poisonous and so on. Others he calls beyond nature [trans naturam]: those, namely, that come from incantations, sorceries and other things of this kind, supernatural as it were.

[Margin: Spiritual.]

These we may call Spiritual, just as we call the former ethereal.

CVII.

[Margin: Ethereal diseases.]

For that most of them are Ethereal, and take their origin from celestial influence, this alone is evidence: that in them there is usually something singular, beyond the usual course (what physicians call the character [Greek: τὸ ἦθος (to ēthos)]) of other diseases.

CVIII.

[Margin: Astrological.]

To these also belong those ethereal diseases which befall particular persons from a particular influence, by reason of the constitution of the heaven under which a person was born or brought into the light. They show themselves at their own time, as when encounters of the malefic Planets, or of the [Greek: ἀναιρετῶν (anairetōn, "of the destroyers", i.e. the anaeretic planets)] [?], take place with the aphetic places of the heaven and of the Planets. That time, indeed, is disclosed through the Directions, as the Astrologers call them.

CVIIII.

[Margin: The doctrine of directions.]

And that doctrine of directions, the chief foundation in Astrology, is confirmed even by the well-known example of King Hezekiah from Holy Scripture, 4 Kings 20 [i.e. 2 Kings 20] — an example which, however divine and supernatural, nevertheless according to a natural mode

and so that it should accord with celestial things, was granted. For in most directions of the Ascendant, or of another apheta [Aphetę], to the anareta [Anæretam], fifteen degrees of the zodiac correspond exactly to ten degrees, or lines, of the Equator; and that a single year answers to each one of these, not only did the Arab and Greek astrologers hand down, but in most cases experience itself confirms this very thing.

CX.

[Margin: Critical days.]

And to this also belongs the reckoning of critical days, which depends on the motion of the Moon in the zodiac, considered in itself. According to it, the Moon reaches the quadrate place on the seventh day; the opposite place on the fourteenth; the other quadrate on the twentieth day (and not the 21st); and on the twenty-seventh day it runs back to the beginning (not the 28th), so that the

Moon completes its course in twenty-seven days and a few hours. According to these days and aspects, its motion corresponds exactly to the Critical days.

[Margin: Galen.]

This, like many other difficult things worth observing from the motions of the Stars in both the generation and the changes of diseases, Galen either did not know at all or, knowing it, chose to ignore, so that he might give the reasons of all things in an easy way, merely from the disposition of Matter and the crasis of the Elements.

CXI.

But I judge that there is something more beyond these things, and that it was with respect to it that Hippocrates said there is something Divine in diseases, and that this Divine, τὸ θεῖον [Greek: τὸ θεῖον (to theion, "the divine")], is above all to be observed by the physician.

[Margin: τὸ θεῖον, something divine in diseases.]

[Margin: Hippocrates, in the little book On Ancient Medicine.]

He himself, moreover, noticing that marked differences of Flavours are mixed into things, and that these do not arise from the crasis of the Elements, ascribed the origins of diseases to the sweet, the sour, the harsh, the bitter and so on, and said that cures too are accomplished [by them]. In this matter he certainly came nearer to the truth, yet he did not entirely reach the mark.

CXII:

[Margin: Theophrastus Paracelsus.]

Theophrastus Paracelsus, however — that man so remarkably skilled in the Chymical art — discovered by its help these marked Flavours, and what-

ever of qualities, faculties and actions is in things, to be present in them by reason of the principles of Salt, Sulphur and Mercury. From these, therefore, he took the origins of his Diseases and the indications for Medicines and for cure.

CXIII.

[Margin: Macrocosm.]

[Margin: Microcosm.]

He also adapts the disposition of the Greater World, as of a Parent, to Man as the Microcosm. And since Man, by reason of his substantific form [formæ ſubſtantificæ], has in himself all three grades and faculties of the Soul, and by reason of the body has the Radicals, the Elementates and the Accidentals (discussed above), he therefore asserts that the seeds of all things are in Man — of the Stars, of Meteors, of Metals, of Minerals, of Vegetables, of Animals, and also of Spirits or Demons, namely by reason [?] of the Mind or Spirit of Man.

CXIIII.

[Margin: Five genera of Entities.]

Elsewhere, however, he reduces diseases to five supreme genera, according to the five genera of Entities [Entium].

[Margin: Metaphysics.]

The first of these is the Ens of God, or the Deal [Deale]; the second the Astral or ethereal Ens; the third the venenal [venenale]; the fourth the natural

or elemental; the fifth the Magical Ens, or the Ens of Demons and Spirits. Each one of these Entities can afflict and undermine our body, Soul and Spirit in various ways.

CXV.

[Margin: The demoniac Ens.]

And to take up only this last one, leaving the earlier ones aside: that some people become Demoniacs and are driven by evil Spirits, and that their body is then, as it were, informed by the Spirit of Satan, is foreign neither to Holy Scripture nor to reason.

[Margin: Note the three: body, soul, and spirit or demon.]

For the Apostle James calls all the Knowledge and Wisdom of Man, as he has and acquires it from nature after the fall, 1. ἐπίγειον [Greek: epigeion, "earthly"], 2. ψυχικὴν[?] [Greek: psychikēn, "of the soul"; one further sort unread], 3. δαιμονιώδη [Greek: daimoniōdē, "demonic"] — Earthly, Animal and demoniac; but that Wisdom which is from above he calls τὴν ἄνωθεν σοφίαν [Greek: tēn anōthen sophian, "the wisdom from above"].

CXVI.

[Margin: 1. ἐπίγειοι [Greek: epigeioi, "earthly ones"], Earthly.]

And in the World, certainly, a threefold kind of men plainly shows itself. The first is that of the Sons of the earth: these are the ones who, enslaved to the lower Elements, seek only what is earthly and of this World — goods, riches, honours, pleasures and so on — in all of which they wallow like a pig in the mud. And they are so sunk in earthly things that the passage is easy for them, and at last it is made from earth to Orcus, from the Elemental World to the Infernal World.

CXVII.

[Margin: [?]. ψυχικοὶ [Greek: psychikoi, "men of soul"], Animal.]

Others are called Sons of the aether, or of heaven: these are the ones who, made gentler and more humane by discipline and studies, seek higher things and fly up to the aether in their thoughts, so that they may come to know the causes of things. These admire the works of God and strive to know the Creator from created things, the invisible from the visible.

[Margin: 1. Grade of the knowledge of God.]

And this is the first grade of the knowledge of God, though still imperfect.

CXVIII.

[Margin: 3. πνευματικοὶ [Greek: pneumatikoi, "spiritual men"], Spiritual.]

The third kind of men is that of the Sons of God, who, already made partakers of the Holy Spirit through Faith in regeneration, seek the things that are above us, despising these worldly things. These know God himself, the Archetypal World, and behold him in hope and faith.

[Margin: 2. Grade of the knowledge of God.]

And this second grade of the knowledge of God is perfect for Salvation.

CXVIIII.

Hence the Christian Man now consists of three hypostases and essential parts — Body, Soul and Spirit — as Hermes also recognized. And so the Mind of the Christian man receives a new form and is, as it were, informed by the Spirit of God.

[Margin: The Christian man.]

By reason of this he is no longer called ψυχικὸς [Greek: psychikos, "of the soul"], the Animal man, but the Spiritual, πνευματικὸς [Greek: pneumatikos, "spiritual"] (for the name is taken from the better part), the inner man, a new Creature. And so the Trinity in Unity gra-

phically is expressed by man, and more significantly than by any other created thing; and what he had lost in the first man, Adam, he acquires again through the second Adam, Christ the God-man [Greek: θεάνθρωπον (theanthrōpon, "God-man")], and much greater things besides.

CXX.

[Margin: Immortality of the Soul.]

It is indeed because of the simple Mind of Man that the Soul is immortal, whereas in the other animals it is mortal, since through Death the Soul departs from the body and the body is resolved into the Elements and Principles. On this account the Souls of the Wicked are immortal too, and are reserved, together with the evil Spirits, for eternal punishment and damnation.

CXXI.

But because of the Holy Spirit, of whom the Christian Man has now been made a partaker through faith, not only is the Soul immortal, so that at its separation from the body it remains with the Spirit;

[Margin: Resurrection of bodies. Rom. 8.]

but because of the Spirit the body too will be raised on the last day, and because of the Spirit the body too will be spiritual, πνευματικὸν [Greek: pneumatikon, "spiritual"], which was sown (that is, in the earth) animal, ψυχικὸν [Greek: psychikon, "of the soul"], as is stated in 1 Cor. 15.

CXXII.

And so the Creature will be set free from the bondage of corruption into the liberty of the glory of the Sons of God, as Paul says in Rom. 8, on the day of the last judgement and of the perdition of the ungodly, when all the rest of things and the whole universe will be dissolved and annihilated by fire, as Peter testifies in chapter 3 of his second epistle.

CXXIII.

And this too was the end of Man as created from the very beginning: the first Adam, of the earth, earthly, and a type, was created after the Image of God (which Christ is — namely the express image and Character of his substance), so that the second Adam, from heaven, heavenly, might form and perfect this image of his in us.

[Margin: G. Nasianz. [i.e. Gregory of Nazianzus]: The mystery of the creation of Man is that he should take on divinity.]

That just as we have borne the image of the Earthly, so the image of the heavenly

[Margin: Life and eternal blessedness.]

we may bear, and may behold the Archetype face to face, when God will be all in all in his faithful and elect.

[Margin: III. grade of knowledge.]

And this, now, is the third and most complete grade of the knowledge of God, and the ultimate goal and end of things.

CXXIIII.

[Margin: Conclusion.]

And let it suffice to have set this out, and briefly run through it, for students of Philosophy, concerning the first work of God, namely that of Creation. But as for what concerns the other work — namely Regeneration, which I have barely touched on here — and what the Kingdom of God is, and the new heaven and the new earth in which Righteousness dwells, and what awaits all the Elect according to God's promise: these things we leave to the Theologians to weigh and examine.

FINIS THESIVM.

End of the Theses.

APPENDIX.

Appendix.

AD INTELLIGENDVM PROPOSITIONES DE SYSTEMATE MVNDI TVM Phyſicas tum Aſtronomicas intermedias à XXIIII. ad LVI. vſque.

For understanding the propositions on the System of the World, both Physical and Astronomical, that lie in between, from XXIIII all the way to LVI.

PTOLOMÆI ET VETErum Philoſophorum de Syſtemate Mundi Hypotheſes.

The Hypotheses of Ptolemy and of the Ancient Philosophers on the System of the World.

That the Earth, the universal centre of the World, is placed in the middle.

2. That the Earth is also nearly the true centre of all the orbs of the planets.
3. That the Earth is immobile.
4. That the eighth sphere, together with all the Spheres of the Planets, is mobile.
5. But that the Planets are moved by definite orbs, and those eccentrics and epicycles.

CONSEQVENTIÆ.

Consequences.

1. That a penetration of dimensions, or of the celestial orbs, takes place — contrary to physical principles.
2. That the visible appearance of the Planets does not correspond to the size of the Planets' orbs — contrary to optical principles.
3. That the calculation of the Planets does not agree with Astronomical observations — contrary to Mathematical principles.

[Margin: See Petrus Ramus in the Astronomical Proem.]

We find that Eudoxus of Cnidus was the first among the ancients to devise hypotheses and orbs — and those concentric — for saving the motions of the planets, and to introduce them into Astronomy. But since the concentrics could not satisfy the phenomena of the planets, the Pythagoreans next discarded them and brought in Eccentrics and epicycles. Ptolemy received these as if handed on to him, approved them, built his Astronomical hypotheses on them, and deduced consequences from them. But since those consequences are false and collide with the principles of the arts, it must be that either all or some of the hypotheses are false and insufficient: for the false does not follow from the true. The falsity of the consequences, moreover, shows itself plainly in the Sphere of Mars. If, according to Ptolemy's hypotheses, an Epicycle is assigned to it, it can never be made so large that its visible appearance corresponds to its size without a penetration of the orbs; added to which, Ptolemy's calculation does not agree with Astronomical observations either. When Copernicus noticed this in our own time, he introduced other hypotheses, altogether different from Ptolemy's hypotheses and almost contrary to them; and since he had found that truer consequences followed from them, he also held the Hypotheses to be true.

NICOLAI COPERNICI Hypotheſes.

The Hypotheses of Nicolaus Copernicus.

1. That the Sun is placed in the middle as the universal centre of the World — and of the Earth also.
2. That the Earth is only the Centre of the orb of the Moon.
3. That the Sun is immobile.
4. That the Earth is mobile in the air, no less than a Planet is in its orb.
5. That the eighth sphere is immobile.
6. But that the Planets and the Earth are moved by definite orbs. From this it follows:

CONSEQVENTIÆ.

Consequences.

1. That no penetration of the orbs of the Planets does indeed take place, in accordance with physical principles; but that meanwhile there is a

huge and immense space, empty of stars, between the eighth sphere and the Sphere of Saturn — which does not seem consistent with physical principles.
2. That the visible appearance of the Planets corresponds to the size of the Planets' orbs, in accordance with optical principles.
3. That the calculation of the Planets agrees as nearly as possible with Astronomical observations, in accordance with Mathematical principles.

Since, then, the consequences are for the greater part true, while some of the hypotheses are nevertheless manifestly false — contrary to experience and to physical reason, and contrary to sacred scripture — it follows that true consequences do not necessarily follow from the premisses, but merely happen to follow in this way. For the true also follows from the false, not necessarily but contingently. Again: since, according to the hypotheses of Copernicus, the Earth has an unequal distance from the fixed stars, and yet there is no parallax [diuerſitas aſpectus] of the fixed stars with respect to the Earth, it will be necessary to posit an immense space between the fixed stars and the Sphere of Saturn — and one so great that it exceeds every proportion of sight. But since these things are consistent neither with reason nor with physics, and since nothing has been created in vain and no empty space is admitted in nature either, it is therefore not credible that so great a space lies between the Sphere of Saturn and that of the fixed stars. Other hypotheses on the System of the World will therefore also have to be established; and Nicolaus Reimers Ursus has also introduced others, which follow.

[Margin: III.]

NICOLAI RAYMARI VRSI DIETMARSI HYPOTHESES.

The Hypotheses of Nicolaus Reimers Ursus of Dithmarschen.

1. That the Earth is placed in the middle as the universal centre of the world.
2. That the Earth is also nearly the true centre of the motion of the Sun and the Moon.
3. That the Sun is nearly the true centre of the motion of the five remaining Planets.
4. That the Earth is mobile.
5. That the fixed stars are immobile.
6. But that the Planets and the stars are not fixed to orbs, but either stand still in the air or wander in it like birds — yet in a definite manner. From this it follows:[6]

CONSEQVENTIÆ.

Consequences.

1. That no penetration of the orbs of the Planets does indeed take place, since there are no orbs; but that meanwhile the space of the three superior

[6]so numbered; the print sets "7." after "5.", with no item 6 (checked at native resolution)

Planets is so contracted and narrow that one of them sometimes moves into the other's place — which does not seem consistent with Physics.

2. That the visible appearance of the Planets corresponds after a fashion to the distance of the Planets, in accordance with optical principles.
3. That the calculation of the Planets agrees as nearly as possible with Astronomical observations, in accordance with Mathematical principles.

Since, then, some of the hypotheses are no less false than the hypotheses of Copernicus — contrary to physical reasons and contrary to sacred scripture — it follows that whatever is true in the consequences does not follow necessarily from the premisses, but merely happens to follow in this way. Now, to put a false gloss on false hypotheses, he contrives this physical axiom:

1. Namely, that a single body has only one simple motion, and none by accident — contrary to the Aristotelian Axiom. From this there follow necessarily:
2. That the Earth is mobile.
3. That the fixed stars are immobile. Likewise:
4. That the lower and denser air is more mobile than the upper and rarer.
5. That heavy things tend downward not because of their heaviness, but by a certain magnetic force.
6. That there is no ethereal region.
7. That the air also extends through that region. And:
8. That the air extends to infinity, even above the firmament — so much so
9. That there is no proportion in quantity between the air and the two remaining elemen-

ts, Water and Earth (for he too denies fire, along with us).

10. And so that the stars wander in the air, are not fixed to orbs, and are not moved with orbs, so that in this way no penetration of the orbs can take place. And he plainly posits all these consequences, and infers them from the Axiom he laid down first. From them one could infer still more, namely:
11. That there is an infinite in the nature of things.
12. That the visible work of creation is not enclosed by the outermost heaven.
13. That the heaven is subject to every kind of change — and more propositions besides, all of them contrary to Physics and sacred scripture, following one upon another from the first Axiom given: that a single body has only one motion per se, and none by accident. For on this reasoning the *primum mobile* would not carry the other, lower Spheres along with it — as he in fact also lays down. Hence it would be necessary to give the Earth the daily motion of the *primum mobile*, and for the fixed stars to be immobile. And this hypothesis, though it is the primary one and the foundation of the whole business, Ursus puts in last place. But how consistent he is with himself he betrayed on the preceding page of his little book, where he assigns to the Planets a double motion: one proper, and the other accidental, from the motion of the Sun. So he

forgets himself, cuts his own throat with his own sword, and himself refutes his own pseudo-physical Axiom. It therefore also follows that all the remaining consequences that hang on that false Axiom are false — above all this one, namely that the fixed stars are immobile. For just as he assigns to the Planets an accidental motion from the motion of the Sun, by the same reasoning we can also give all the Spheres of the Planets an accidental motion, from the motion of the fixed stars or of the eighth sphere. Since, then, so many absurdities follow from the Axiom he laid down, it follows that it is false, while the Aristotelian Axiom is true and stands firm: namely, that a single physical body has one motion per se, and can have several by accident.

[Margin: 1. Reason.]

Moreover, since it agrees with physical truth that none of the three superior Planets moves into the place of another Planet, but that each holds its own space in the heaven, like a king in his kingdom, it follows that Ursus gives the three superior Planets too contracted and narrow a space, and that the system of the world built from his false hypotheses is not true. And it was this falsity in the hypotheses of earlier times that led Petrus Ramus to reject every account and positing of hypotheses in Astronomy. But in all the arts there must be definite hypotheses, from which the consequences and conclusions and everything else that belongs to the art are then deduced — as Ramus himself admits, and infers from Proclus. Therefore in astronomy too we must be all the more concerned about true hypotheses, and must not be frightened away from the art by mockeries of this kind. For to mock and chastise what is false lies within reach even of any grammarian; but to find and demonstrate what is true — that is the task, that is the toil. I, therefore, having been concerned about other hypotheses, and not in vain, have at last by divine grace found these, and have chosen to set them out.

[Margin: IIII.]

HELISÆI RÖSLIN MEDICI HYPOTHESES CONVENIENTES CVM PTOLOMÆI hypotheſibus, excepta vnica, tertia ſcilicet.

The Hypotheses of Helisaeus Röslin, Physician, agreeing with the hypotheses of Ptolemy, with a single exception — namely, the third.

1. That the Earth is placed in the middle as the universal centre of the world.
2. That the Earth is also nearly the true centre of the orbs of the Sun and the Moon.
3. That the Sun is nearly the true centre of the orbs of the remaining five Planets.
4. That the Earth is immobile.
5. That the eighth sphere, together with all the Spheres of the Planets, is mobile with the daily motion.

6. That the Planets are moved by definite orbs, and those eccentric. From this it follows:

CONSEQVENTIÆ EÆDEM FERE CVM Copernici conſequentiis.

Consequences nearly the same as the consequences of Copernicus.

1. That not only is there no penetration of the orbs of the Planets, but also that the space is neither too ample and empty of stars, nor so contracted and narrow that one of the Planets could enter the place of another — according to physical principles.
2. That the visible appearance of the Planets corresponds exactly to the magnitude of the orbs of the Planets — according to optical principles.
3. That the calculation agrees as closely as possible with astronomical observations — according to mathematical principles.

Since, therefore, none of the hypotheses set out above is contrary to physical [?] principles, or contrary to reason and experience, and none is contrary to sacred Scripture, but all correspond to the truth; and since, likewise, all the consequences are true, and none of them collides with the principles of the arts: it follows that these true consequences follow necessarily from true premises (for from true premises only what is true follows), and that no other true hypotheses can be given; and so that we have arrived at one definite truth. And it follows also that the System of the world built from these true hypotheses is true and is one, and that there is no other, nor can any other be given, except this single one built from the hypotheses above.

While I was engaged in these reflections on the System of the world, and had already set down my view in the theses above, a little book of Tycho Brahe, a Danish nobleman and a most excellent astronomer, on the Comet of the year 1577, was brought to me. In it he too derives a new System of the world, from hypotheses that agree almost entirely with mine, as follows.

[Margin: r.][7]

TYCHONIS BRAHE NOBILIS DANI ET Aſtronomi excellentiſſimi,Hypotheſes.

The Hypotheses of Tycho Brahe, Danish nobleman and most excellent astronomer.

1. That the Earth is placed in the middle as the universal centre of the world.
2. That the Earth is nearly the true centre of the motion of the Sun and the Moon.
3. That the Sun is nearly the true centre of the motion of the five remaining Planets.
4. That the Earth is immobile.

[7] so printed; the same mark stands at the same place in a second copy of the 1597 print (Deutscher Wetterdienst, Retrosammlung)

5. That the fixed stars and the Planets are mobile with the daily motion.
6. But that the Planets are neither moved by orbs nor wander in the air, but revolve in what is most fluid and most simple, in accordance with a knowledge divinely implanted. From this he infers:

CONSEQVENTIÆ.

Consequences.

1. That there is indeed no penetration of the orbs of the Planets, since for him there are no orbs; but that he nevertheless gives the three superior Planets a space so contracted and narrow that one of them sometimes enters the place of another, which does not seem consistent with physics.
2. That the visible appearance of the Planets corresponds after a fashion with the observations of the Planets — according to optical principles.
3. That he will make the calculation of the Planets agree exactly with astronomical observations — according to mathematical principles.

I have chosen to set these out so carefully, each with its own definite hypotheses and consequences, so that the difference between the views can be detected even in the smallest words. It is truly remarkable that my view agrees so exactly with that of Tycho Brahe that we differ in only a single hypothesis: the one in which he denies that the stars are moved by orbs, holding rather that they revolve by a definite knowledge implanted in them. But however closely I come to Tycho's view, even in this hypothesis, in the consequences I still hold back on that part in which, no less than Ursus, he grants the three superior Planets too narrow a space. For it does not seem consistent with physics that, either by the motion of the *primum mobile* about the centre of the world or by its own motion about the Sun as centre, a Planet should sometimes enter and occupy the space of another — that is, that Saturn and Jupiter, when they are acronychal [acronychi] and nearest the Earth, should be nearer the Earth than Mars is when it is most remote from the Earth.

[Margin: 2. Reason.]

To the reason given above there is added also this second one: that parallax, or visible appearance, which arises through the eyes

(for instruments do not reach that far) does not agree to such a degree as it would if, according to my hypotheses, a larger space were given to them. Mars, indeed, appears largest when it is nearest the Earth, and smallest when it is remote. Saturn, however, is indeed large when nearest the Earth and small when more remote; but it does not undergo so great a parallax, nor is it as large and as small, as it would be if it ever came nearer the Earth than Mars. It is therefore reasonable that both Jupiter and Saturn occupy a higher space than Mars, even when most remote from the Earth, can either reach or pass beyond.

[Margin: 3. Reason [?].]

Thirdly, since God's work of creation is enclosed and bounded by the outermost heaven of the fixed stars, I judge that God the creator so distributed the Spheres or places of the Planets up to the fixed stars, and gave each of the

Planets so much space, that a definite limit can also be known. But by no other distribution of the Spheres can a limit resting on definite reasons be known than according to my System of the world. For whether you give more space, as Copernicus does, or a more contracted one than I do, as Ursus and Tycho do, the space from the Sphere of the Sun or of Mars up to the eighth, that of the fixed stars, will be uncertain; for with the same reasoning and the same ease another will be able to give one either more ample or more contracted. My System, however, is built and founded on its own definite reasons, taken at once from the motion of the Sun and from the universal motion of the *primum mobile*, so that with respect to both motions none of the Planets enters the place of another, and no space empty of stars is allowed either. My System therefore seems more probable, and more consistent with physical principles, than the System of Tycho Brahe, even if I grant him to the fullest that the Planets are not moved by orbs but by a certain knowledge divinely implanted in them.

Nevertheless I leave each view to the learned to weigh and examine. Above all, however, I wish to hear the judgement on these Theses of mine of those who were mentioned in the preface, and to submit to their censure — first of all that of Tycho Brahe, so that with that freedom

and candour that he showed toward me in the little book on the Comet of the year 1577, he may examine these theses of mine too, and confirm them — namely in the part in which they are true and correspond — but reprove and chastise them in whatever part he thinks them false. For I wish to be reproved and instructed by those learned men and their like; not by those half-learned cooks, whose

vessel of the head will long keep the scent
it was once steeped in when new, etc.

And in that pot they cook merely the [relollaceas][8] qualities of the elements; and they recook cabbage mixed with worthless darnel and mandrake, and, twice cooked, they devour it themselves to the point of vomiting, and they always want to give it to others, who are nauseated, and force it on them: so that others too, along with them, are wrapped in the fogs of ignorance and in sleep and are blinded, and, the blind leading the blind, both fall into the pit. But there will be time enough to rise from that sloth and torpor, and, once the densest fogs are dispersed, to receive the light and see the Sun: so that, illuminated by the clarity of knowledge, we may detect the false paint and empty deceit of the pseudo-philosophers, and be able to attain the truth in philosophical matters no less than in sacred ones. May he bring this about who is truth itself and light, and who alone has power to drive away frauds and darkness: God Jehovah, through our Lord Jesus Christ, in the Holy Spirit the illuminator. Amen.

[8]so printed in both copies checked; not a known Latin word. Perhaps a coinage on *lolium*, "darnel", which follows in the next clause, i.e. "darnel-like"; not adopted

SYSTEMA MVNDI SECVNDVM PTOLOMÆI ET VE- I. / terum Philoſophorum Hypotheſes.

System of the world according to the hypotheses of Ptolemy and the ancient philosophers. I.

Diagram. A woodcut of concentric circles occupying the upper half of the page. The outermost band, between the two outer circles, carries twelve six-pointed asterisks for the fixed stars. Inside it, a sequence of concentric circles carries the planetary signs, running inward: Saturn, Jupiter, Mars, the Sun, Venus and Mercury, each on its own circle — Saturn and Jupiter at the upper right, Mars at the upper centre-right, and the Sun, Venus and Mercury at the centre right. A large circle stands across the upper part of the figure, and Mars sits where one of the circles meets its right side. The Moon's crescent sits at the upper left of a small circle placed on the innermost circles. The small circle at the very centre has no label.

- ♄ [Saturn] (upper right, third circle in from the band of stars)
- ♃ [Jupiter] (upper right, below and right of ♄, next circle in)
- ♂ [Mars] (upper centre-right, next circle in, where that circle meets the right side of the large circle)
- ☉ [Sun] (sun face with rays, centre right, below ♂, next circle in)
- ♀ [Venus] (centre right, below and left of ☉, next circle in)
- ☿ [Mercury] (centre right, below ♀, next circle in)
- ☽ [Moon] (left of centre, crescent at the upper left of a small circle)

SYSTEMA MVNDI SECVNDVM NICOLAI COPERNICI II. Hypotheſes.

System of the world according to the hypotheses of Nicolaus Copernicus. II.

Diagram. A woodcut of circles occupying the lower half of the page. The outermost band carries ten six-pointed asterisks for the fixed stars. The Sun, drawn as a face with rays, stands at the centre inside a small circle, on which Venus (left, below the Sun) and Mercury [?] (right, below the Sun) are set. Below the Sun a smaller circle carries the Moon's crescent at its upper right; a larger circle encloses both the Sun's circle and the Moon's. Outside that group, signs for Mars, Jupiter and Saturn stand on successive circles on the right-hand side. A second sign for Mars, in a larger sort, stands freestanding at the upper centre, in the band between the second and third circles from the central group, and a second sign for Saturn stands freestanding at the lower centre, in the band between the outer planetary circles below the Sun group.

- ☉ [Sun] (centre, inside a small circle)
- ♀ [Venus] (on the small circle round the Sun, left and below)
- ☿ [Mercury] [?] (on the same small circle, right and below)
- ☽ [Moon] (crescent at the upper right of a smaller circle below the Sun)

- ♂ [Mars] (right of centre, on the circle next outside the circle enclosing the Sun group)
- ♃ [Jupiter] (right, below and right of that ♂, next circle out)
- ♄ [Saturn] (right, above ♃, next circle out)
- ♂ [Mars] (upper centre, freestanding in the band between the second and third circles from the central group, in a larger sort)
- ♄ [Saturn] (lower centre, freestanding in the band between the outer planetary circles below the Sun group)

SYSTEMA MVNDI SECVNDVM RAYmari Vrſi Dietmarſi hypotheſes. III.

System of the world according to the hypotheses of Ursus of Dithmarschen. III.

Diagram. A woodcut of circles occupying the upper half of the page. The outermost band, between the two outer circles, carries at least twelve six-pointed asterisks for the fixed stars. At the centre the Sun, drawn as a face with rays, stands inside a small circle; Mercury is set just below and right of it on that small circle, and Venus to the left and below on a larger circle that overlaps it. The Moon's crescent sits below and right of the Sun, at the upper right of an inner small circle. To the right of the central group, Mars stands on the next circle out, with Jupiter immediately to its right against the following circle, and Saturn on the outermost planetary circle at the upper right. A second sign for Mars stands freestanding in the space above the central group, and a second sign for Saturn freestanding in the space below it.

- ♂ [Mars] (upper centre, freestanding above the central group)
- ♄ [Saturn] (upper right, on the outermost planetary circle)
- ☉ [Sun] (centre, inside a small circle)
- ☿ [Mercury] (just below and right of ☉, on the small circle round it)
- ♀ [Venus] (left of and below ☉, on a larger circle overlapping the Sun's small circle)
- ☽ [Moon] (crescent below and right of ☉, at the upper right of an inner small circle)
- ♂ [Mars] (right of centre, on the circle next outside the central group)
- ♃ [Jupiter] (immediately right of that ♂, against the next circle out)
- ♄ [Saturn] (lower centre, freestanding below the central group)

SYSTEMA MVNDI SECVNDVM HELISÆI Roslin Medici hypotheſes. IV.

System of the world according to the hypotheses of Helisaeus Röslin, Physician. IV.

Diagram. A woodcut of circles occupying the lower half of the page; its lowest circles run to the lower edge of the leaf on the scan. The outermost band carries at least thirteen six-pointed asterisks for the fixed stars. At the centre the Sun, drawn as a face with rays, stands inside a small circle; below it, on a circle that overlaps the Sun's, Venus is set at the left and Mercury at the right, and

the Moon's crescent sits at the lower right of an inner small circle. To the right of the central group, Mars, Jupiter and Saturn stand on three successive circles. Freestanding signs fill the bands above and below the centre: above, Saturn, Jupiter and Mars in that order from the outside in; below, Mars, Jupiter and Saturn in that order from the inside out.

- ♄ [Saturn] (upper centre, freestanding, in the band just inside the outermost planetary circle)
- ♃ [Jupiter] (upper centre, freestanding, below that ♄)
- ♂ [Mars] (upper centre, freestanding, just above the central group)
- ☉ [Sun] (centre, inside a small circle)
- ♀ [Venus] (left, below ☉, on a circle overlapping the Sun's)
- ☿ [Mercury] (right, below ☉, on the same circle)
- ☽ [Moon] (crescent at the lower right of an inner small circle below ☉)
- ♂ [Mars] (right of centre, on the circle next outside the central group)
- ♃ [Jupiter] (right, beyond that ♂, on the next circle out)
- ♄ [Saturn] (right, beyond that ♃, on the next circle out)
- ♂ [Mars] (lower centre, freestanding, just below the central group)
- ♃ [Jupiter] (lower centre, freestanding, below that ♂)
- ♄ [Saturn] (lower centre, freestanding, in the band just inside the outermost planetary circle)

SYSTEMA MVNDI SECVNDVM THYCHONIS BRAHE Nobilis Dani Hypotheſes.

System of the world according to the hypotheses of Tycho Brahe, Danish nobleman.

The courteous reader will please remember that the figure which was second is to be moved to this place, and this one put in the place of the second; and let him pardon the error. V.

Diagram. A woodcut of concentric circles occupying the upper half of the page; the lower half is blank. The outermost band, between the two outer circles, carries at least thirteen six-pointed asterisks for the fixed stars. The Sun, drawn as a face with rays, stands at the centre inside the innermost circle. Mercury is set on that innermost circle to the right of the Sun, and Venus on the next circle out. Above the central circles stands a small circle, at whose lower right the Moon's crescent sits where it meets the next circle out. Mars, Jupiter and Saturn stand on three successive circles to the right.

- ☉ [Sun] (centre, inside the innermost circle)
- ☿ [Mercury] (right of ☉, on the innermost circle)
- ♀ [Venus] (right of and below ☿, on the next circle out)
- ☽ [Moon] (crescent at the lower right of a small circle above the central circles)
- ♂ [Mars] (right of centre, on the next circle out)
- ♃ [Jupiter] (right, beyond ♂, on the next circle out)
- ♄ [Saturn] (right, beyond ♃, on the next circle out)

Blank page (show-through of the woodcut and text on the other side of the leaf only).

IIII. SYSTEMA MVNDI SECVNDVM HELISÆI ROSLIN MEDICI HYPOTHESES in maiori forma.

IIII. System of the world according to the hypotheses of Helisaeus Röslin, physician, in a larger form.

Diagram. A full-page woodcut of circles under the caption. An outer double circle forms a band; at least thirteen six-pointed asterisks stand on it, all on its upper and right-hand side, with none on the left half. Outside the band stand three quarter labels — *Occaſus* (West) at the top, *Meridies* (South) at the left, *Oriens* (East) at the bottom — and, round the circle, the twelve signs of the zodiac; on the right-hand side, outside the outer circle and following its curve, stand the words *Sphæra … octaua … Stellarum … Fixarum*, "sphere eighth of the fixed stars", that is, the eighth sphere of the fixed stars, with ♓ [Pisces] set between *Sphæra* and *octaua* and ♉ [Taurus] beside *Stellarum*. The figure runs to the fore-edge of the leaf at the right, where two items are cut by the edge and cannot be read: the feet of a word set vertically just outside the band, level with the centre, and half of a zodiac sign. At least thirty-five labels stand on the page. Inside the band, successive circles are labelled for the spheres of Saturn (*Saturni … Sphæra*), Jupiter (*Iouis*), Mars (*Martis*) and the Sun (*Solis*). At the centre a small circle labelled *Luna* (Moon) encloses a still smaller empty circle with a crescent at its foot; it overlaps a small circle on its right that holds a rayed Sun (☉), round which *Mercuri[?]* (of Mercury) curves, with *Veneris* (of Venus) set vertically to its right; the sign ☿ [Mercury] stands just left of the Sun, and ♀ [Venus] below it, where the circles cross. Below the central group, the signs of Mars, Jupiter and Saturn stand on successive circles, Mars inverted on the circle that encloses the group.

- *Occaſus* [West] (top centre, outside the outer circle, set vertically)
- [?] (top centre, left of *Occaſus*; possibly ♑ [Capricorn], not settled)
- ♐ [Sagittarius] (upper left of centre, outside the outer circle)
- ♏ [Scorpio] (upper left, outside the outer circle)
- [?] (left, above the level of the centre, outside the outer circle; in form like ♑ [Capricorn], where the order of the circle puts ♎ [Libra]; not settled)
- *Meridies* [South] (left, at about the level of the centre, outside the outer circle, set vertically)
- ♍ [Virgo] (left, below *Meridies*)
- ♌ [Leo] (lower left, outside the outer circle)
- ♋ [Cancer] (bottom centre, outside the outer circle, left of *Oriens*)
- *Oriens* [East] (bottom centre, below the outer circle, set vertically)
- ♊ [Gemini] (lower right, on the outer band beside an asterisk)
- *Fixarum* [fixed] (lower right, outside the outer circle, along the curve)

- ♉ [Taurus] (right, beside *Stellarum*)
- *Stellarum* [of the stars] (right, below the level of the centre, outside the outer circle, along the curve)
- [?] (right, at the fore-edge; half of a zodiac sign, cut by the edge of the leaf)
- [?] (right, at the fore-edge, level with the centre; the feet of a word set vertically, cut by the edge of the leaf)
- *octaua* [eighth] (upper right, outside the outer circle, along the curve)
- ♓ [Pisces] (upper right, between *Sphæra* and *octaua*)
- *Sphæra* [sphere] (upper right, outside the outer circle, along the curve)
- ♒ [Aquarius] (upper right of centre, outside the outer circle)
- *Saturni* [of Saturn] (upper centre-left, inside the outer double circle)
- *Sphæra* [sphere] (upper centre-right, in the same band as *Saturni*)
- *Iouis* [of Jupiter] (upper centre-left, inside the next circle in)
- *Martis* [of Mars] (centre, above the central group)
- *Solis* [of the Sun] (centre, below *Martis*, inside a smaller circle)
- *Luna* [Moon] (centre, at the top of a small circle left of the sun face)
- ☽ [Moon] (small crescent at the foot of the empty circle under *Luna*)
- ☉ [Sun] (a rayed disc filling the small circle right of centre)
- *Mercuri[?]* [of Mercury] (curving round the Sun; ending not settled)
- ☿ [Mercury] (just left of the Sun, inside the Mercury circle, turned)
- ♀ [Venus] (below ☿, where the Venus circle crosses, turned)
- *Veneris* [of Venus] (right of the sun face, set vertically)
- ♂ [Mars] (centre, below the central group, inverted, on the circle enclosing it)
- ♃ [Jupiter] (below and right of ♂, on the next circle out)
- ♄ [Saturn] (lower right of centre, on the next circle out, near the outer double circle)