

Basel

Universitätsbibliothek

Ms F. II. 33

Astronomical and mathematical compendium with a 'Ptolemaic picture book'

Basel?

Second-half 14th century to 1400, with the picture book dating to the third-quarter 14th century

contents

The manuscript contains six separate sections. Björnbo (BJÖRNBO/VOGL 1912) identified 9 different hands in various scripts. The organisation suggests that it was put together in the 15th century.

The contents have been described in BJÖRNBO/VOGL1912 and by METZGER 2016.

I

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|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| fof. 1r-v | <i>De electionibus et apellationibus</i> (fragment). Secondly used as a flyleaf. The canonical discussion deals with the election of bishops and the related appeal options to the papal curia. A <i>Canonicus Nemauseniensis</i> is mentioned, as well as the provost and chapter of <i>Nemausen</i> . |
| fol. 1v | Index. Glued-on parchment slip with a table of contents from the 15th century. The last entry <i>De motu corporum coelestium</i> (= <i>Parvum almagesti</i>) was added by another hand. |
| ff. 1r-23v | C. Julius Solinus, <i>Collectanea rerum memorabilium</i> (ed. MOMMSEN 1895). 15 verses have been added as an addendum: <i>Tantillus tamen nanciscens dogmata tamen – Servanti bene sit fraudanti porrove sit.</i> |

II

- ff. 24r-37v Hyginus, *De astronomia* (ed. VIRÉ 1992).
- fol. 37v Drawing of a scholar (THORNDIKE/KIBRE 1963, col. 661, no. 12). On his banderole: *Ymagines huius seculi subiciuntur ymaginibus super celestibus* ('The images of this world/age are subjected on the images above the sky').
- ff. 38r-41r Drawings of the constellations.
- ff. 41v-43v *Tractatus De fluxu et refluxu maris* (THORNDIKE/KIBRE 1963, col. 1703, no. 4).
- fol. 42r A circular diagram outlining the sky, poles, tropics, *principium arietis*, and *the principium libre*.

III

- ff. 44r-57r Alfraganus, *Differentiae scientiae astrorum* (THORNDIKE/KIBRE 1963, col. 960, no. 3). The *Rudimenta astronomica* of Alfraganus in the Latin translation by John of Seville (ed. CARMODY 1943)
- ff. 57v-63v Messahala, *De orbe* (THORNDIKE/KIBRE 1963, col. 722, no. 7). The Latin translation by Gerhard of Cremona (cf. CARMODY 1956, p. 180). In the same hand as the Alfraganus.
- ff. 64r-64v Esculeus (Hypsicles), *De ascensione signorum* (ed. BOFFITO 1903; THORNDIKE/KIBRE 1963, col. 1449, no. 1). The Latin translation by Gerard of Cremona.

IV

- ff. 65r-86v Jordanus de Nemore, *Arithmetica* (THORNDIKE/KIBRE 1963, col. 1600, no. 14; cf. GLORIEUX 1971, no. 284b; THOMPSON 1976). With several schematic representations in the margins and on blank areas (*i.e.*: ff. 83r and 83v)

- ff. 87r-95r Gernardus, *Algorismus de minutiis* (THORNDIKE/KIBRE 1963, col. 399, no. 1). Part 2 of the *Algorismus demonstratus*. Sometimes also attributed to Jordanus de Nemore (cf.: THOMPSON 1976). See also ff. 99r-105r below.
- ff. 95v-98v Nicolas Oresme (?), *Algorismus de proportionibus* (THORNDIKE/KIBRE 1963, col. 1596, no. 5; ed. CURTZE 1868). In the margin and on fol. 98v there are numerous diagrams to explain the text. At the end, the aspects of the zodiac are discussed (trigon, square, hexagon, octagon).
- ff. 99r-105r Gernardus, *Algorismus de mensuris* (THORNDIKE/KIBRE 1963, col. 431, no. 2). Part 1 of the *Algorismus demonstratus*. Sometimes also attributed to Jordanus de Nemore (cf. ENESTRÖM 1913; THOMPSON 1976). See also ff. 87r-95r below.
- ff. 105r-106v Ibn al Haitam (Alhacen), *De speculis comburentibus* (THORNDIKE/KIBRE 1963, col. 392, no. 9; GLORIEUX 1971, p. 342, no. 417av; LINDBERG 1975, p. 20, no. 3C). Numerous explanatory drawings on the outer edges of the pages, such as fol. 106r. The text also appears in Lyon, BM, PA 45, ff. 157r-160v.
- ff. 107r-108r *De figuris isoperimetrales* (THORNDIKE/KIBRE 1963, col. 1083, no. 4). See BJÖRNBO 1909, p. 393; THOMPSON 1976 (as ps.-Jordanus de Nemore).
- ff. 108r-109v Jordanus de Nemore, *Demonstratio de plana spera* (THORNDIKE/KIBRE 1963, col. 1525, no. 8; cf. THOMPSON 1976). On the 'squaring' or calculating the area of the circle.
- ff. 109v-110v Thydeus, *De speculis comburentibus* (THORNDIKE/KIBRE 1963, col. 1388, no. 11; LINDBERG 1975, p. 76, no. 103). The Latin translation by Gerard of Cremona. The text also appears in Vatican, BAV, Pal. lat. 1377, ff. 11v-18r.
- ff. 110v-112r Ibn al Haitam (Alhacen), *De crepusculis* (THORNDIKE/KIBRE 1963, col. 1022, no. 5; LINDBERG 1975, p. 15, no. 1A). The Latin translation by Gerard of Cremona, cf. CARMODY 1956 (citing this manuscript). With geometric marginal drawings.

- ff. 112v-114v Thebit ben Corat, *Liber Karastonis* (THORNDIKE/KIBRE 1963, col. 260, no. 4; ed. CLAGATT/MOODY 1952, pp. 88-117). A treatise on the asymmetrical beam balance with a movable weight.
- ff. 114v-116r Autolycus Pitanensis, *De sphaera mota* (THORNDIKE/KIBRE 1963, col. 1151, no. 13; ed. MONGENET 1948). The Latin translation by Gerrard of Cremona.
- ff. 116v-122r Ahmad ibn Musa, *Geometria trium fratrum* (THORNDIKE/KIBRE 1963, col. 1687, no. 3 and col. 1145, no. 5; ed. CURTZE 1885).
- ff. 122v-127r Alkindi, *De aspectibus* (THORNDIKE/KIBRE 1963, col. 1013, no. 3; LINDBERG 1975, p. 12, no. 4; ed. BJÖRNBO/VOGL 1912, pp. 3-41). The Latin translation by Gerard of Cremona.
- ff. 127v-128v ps.-Euclid, *De speculis* (ed. BJÖRNBO/VOGL 1912, pp. 97-106; LINDBERG 1975, p. 55, no. 80; THORNDIKE/KIBRE 1963, col. 1084, no. 7). The Katin translation by Gerhard of Cremona (?). On differently-shaped mirrors and the corresponding mirror images. The text also appears in Lyon, BM, PA Ms. 45, ff. 170r-172v
- ff. 129r-130r *Libellus de Triangulis* (THORNDIKE/KIBRE 1963, col. 276, no. 7; cf. BJÖRNBO/VOGL 1912, p. 127). With illustrations of different triangles as explanatory illustrations in the margin. On the angles and sides in a right-angled triangle, etc.
- ff. 130v-131v *Demonstrationes quadrantis* (THORNDIKE/KIBRE 1963, col. 1305, no. 9; cf. BJÖRNBO/VOGL 1912, p. 127). On trigonometry and the use of a quadrant. With illustrations in the margins on ff. 130v-131r.
- ff. 132r-137r Jordanus de Nemore, *De ponderibus* (ed. CLAGATT/MOODY 1952, pp. 128-142; THORNDIKE/KIBRE 1963, col. 1000, no. 14; THOMPSON 1976).
- fol. 137r *Quadratura circuli* (THORNDIKE/KIBRE 1963, col. 1156, no. 11; cf. BJÖRNBO/VOGL 1912, p. 127). Below the text, there is a drawing of a circle inscribed in a square with an inscribed square.
- ff. 137v-138r Theodosius, *De locis habitabilibus* (THORNDIKE/KIBRE 1963, col. 684, no. 4; cf. BJÖRNBO/VOGL 1912, p. 127). With marginal drawings of the latitudes and circles.

- ff. 138v-145v Jordanus de Nemore, *De numeris datis* (THORNDIKE/KIBRE 1963, col. 959, no. 6).
- ff. 146r-150v Jordanus de Nemore, *De triangulis* (ed. CURTZE 1887; THORNDIKE/KIBRE 1963, col. 260, no. 5). Numerous triangles and angles as explanatory illustrations in the margin.
- ff. 151r-153v Archimedes, *De curvis superficiebus* (THORNDIKE/KIBRE 1963, col. 277, no. 1).
- ff. 154r-159r Dominicus de Clavasio, *Practica Geometriae* (ed. BUSARD 1965; THORNDIKE/KIBRE 1963, col. 1175, no. 1). Numerous marginal drawings for the trigonometric determination of the height of towers and mountains, especially ff. 154v-155r. The text also appears in: Cambridge (MA), Harvard College, Houghton Library, fol. Ms. typ. 43, part II, ff. 230r-236r; Lyon, BM, PA Ms. 45, ff. 92r-105v and Munich, BSB, clm 10662, ff. 217v-223v.
- ff. 160r-170v Theodosius de Bithynia, *De sphaera* (THORNDIKE/KIBRE 1963, col. 1523, no. 10; GLORIEUX 1971, p. 144, no. 117a). The Latin translation by Gerard of Cremona. Numerous drawings on spherical geometry in the margins.
- ff. 171r-172r Levi ben Gerson, *De numeris harmonicis* (THORNDIKE/KIBRE 1963, col. 666, no. 6 and col. 1005, no. 13).
- fol. 172v blank.

V

- ff. 173r-193r Johannes Campanus, *Theorica planetarum* (THORNDIKE/KIBRE 1963, col. 1124, no. 1; GLORIEUX 1971, p. 119, No. 75c). With detailed drawings set within the text block with the usual representations.
- ff. 193v-194r Thebit ben Corat, *De motu octave spere* (THORNDIKE/KIBRE 1963, col. 661, no. 6). With a drawing at the end of the text
- ff. 194v-196v Petrus de Mutina, *Epistola Dedicatoria ad Johannem de Ganduno* (THORNDIKE/KIBRE 1963, col. 1044, no. 2). Dedicatory letter of the

commentary on the *Theorica planetarum* 'Gerhardi', dated 1349. On astronomical questions.

VI

ff. 197r-220r Ptolemy, *Optica* (THORNDIKE/KIBRE 1963, col. 287, no. 3; LINDBERG 1975, p. 74, no. 100). The Latin translation by Eugenius de Palermo. Ends incompletely with: ... *rursus protrahantur proponderis ar/* (text breaks off without space).

fol. 220v blanky

ff. 221r-244r Geber, *Almagesti minoris libri VI.* (THORNDIKE/KIBRE 1963, col. 1006, no. 9).

There is a Table of contents in Italian by Alarico Carli (dated June 1871), which had been temporarily bound into the end of the manuscript, but is an independent fascicle enclosed with the manuscript today (Mscr. to F II 33).

illustrations



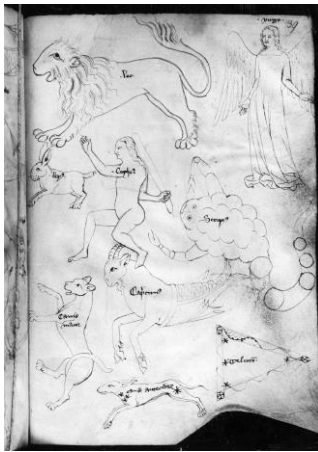
fol. 37v



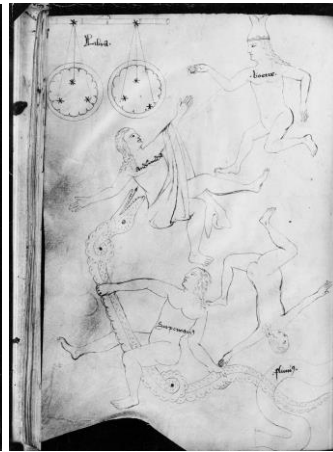
fol. 38r



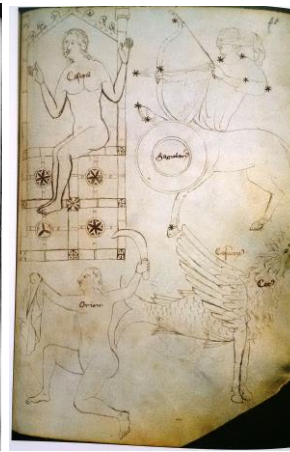
fol. 38v (set upright)



fol. 39r



fol. 39v



fol. 40r



fol. 40v



fol. 41r

ff. 38r-41r

Simple line drawings of the 48 Ptolemaic constellations, but without independent illustrations of grouped constellations (such as Lupus or Corona meridionalis, etc.). They are placed haphazardly on the page, but there are some clusters of figures that belong together. The constellations on fol. 38v are upside down. Almost all the human figures are nude, and it is often difficult to determine the gender. Almost all the constellations are labelled with the usual mix of Latin and latinised Arabic names, and there is a confusion between the figures of Cepheus and Bootes and their labels. METZGER 2016 suggests that the drawings are Northern, but after an Italian model. They are all represented in 'globe view'.

fol. 38r

URSA MINOR (labelled: *ursa minor*) is a small bear, with its head lowered. It walks to the right and has a long tail. The stars are marked. Almost all the constellations are labelled and a few are marked with stars like asterisks.

URSA MAIOR (labelled: *ursa maior*) is a larger bear the torts to the left. It has a long tail that is raised and the stars are marked.

DRACO (labelled: *draco*) is an S-shaped snake, set sideways on the page, with its dragon's head to the right. There are two stars: 1 in the mouth and 1 in the tongue.

LYRA (labelled: *vultur cadens*) is a scaly-backed gila monster with a long fat tail and a smiling face. It is seen from the back, with its head towards the top of the page and cross-hatching on the legs and the tail.

Cygnus (labelled: *gallina volans*) is a rooster with a head comb. Its wings are extended and its head is towards the bottom of the page. It is marked by stars.

AQUILA (labelled: *vulture volans*) is placed sideways on the page, and it facing to the left. It has a hooked beak and stands on a SAGITTA (not labelled) which has its tip towards the left. It has 3 stars.

DELPHINUS (not labelled) is a fish, seen from the side, with its head pointing towards the top of the page.

CORONA BOREALIS (not labelled) is shaped like a large, curved breast-plate (or a crescent moon), with the opening at the top.

fol. 38v

CANCER (labelled *cancer*, upside down) a lumpen flea-like beast with a human face, with its head pointed diagonally, towards the upper right corner. It has three arms on each side that end in pincers.

GEMINI (labelled: *Gemini*, upside down. are two long-haired nudes that sit together, with their legs to the left. The Right Twin embraces the Left Twin, who turns back but reaches his/her hand out to the left (as if trying to escape?).

PERSEUS (labelled: *Perseus*, upside down) is a bearded nude man who walks to the right, but turns his upper body back to the left. In his right hand, he holds the head of a lion (labelled: *caput algol*). Above his head he holds a straight sword with this left hand. He is bearded.

AURIGA (labelled: *Auriga*, upside down) is a nude figure that crouches to the left. He holds two three straps in each hand. The right is held out to the side and the left is in front of his genitals. He has long hair and no beard.

TAURUS (labelled: *taurus*; upside-down) is the front half of a bull, placed vertically on the page and facing to the right. He turns his head to face the viewer. His front legs are extended and bent. There is a straight cut-off and the horns are long and curved.

PISCES (labelled: *pisces*, upside down), two fish with large noses, both facing to the right with their backs upwards, but set almost at right angles. They are connected with a string between their tails.

ARIES (labelled: *aries*, upside down) is a long-haired ram, lying towards the left, with his head turned back to the right. The horns are lumpy and curled. The tail is hairy, long, and raised.

PEGASUS (labelled: *equus secundus alatus*, upside down) is the front part of a winged horse, facing to the right. Its legs are extended straight out in front and its mouth is open.

EQUULEUS (labelled: *primus* (?) upside down) is the head and neck of a horse, facing to the right.

fol. 39r

LEO (labelled: *leo*) runs to the left with his front legs stretched forward, his mouth open and his tail raised.

VIRGO (labelled: *virgo*) stands facing the viewer, slightly to the left, she has long wings that are partially opened and wears a long, tight-fitting gown. Her hands are held down by her sides, but the left one is slightly raised.

LEPUS (labelled: *lepus*) is a hare trotting to the left with its long ears raised.

BOOTES (labelled: *cepheus*, incorrectly) naked youth with long hair who sits facing to the left. He raises his right arm upwards, and hold a club vertically in his left hand behind his back.

SCORPIO (labelled: *scorpius*) is a lumpen being with a human face, with its head pointing to the left. It has two segmented front claws and a long, smooth tail that has 5 circles on it.

CANIS MAIOR (labelled: *canis maior*) is set vertically on the page, with its head towards the top, facing to the left. It is walking, with the right forefoot leading and its tail is curled between its hind legs

CAPRICORNUS (labelled: *capricornus*) is a goat-fish facing to the left. The goat half bends its front legs and has short, curved horns and a beard,

CANIS MINOR (labelled: *canis antecedens*) is a small, greyhound-like dog that races to the left.

TRIANGULUM (labelled: *Deltoton*) is a triangle, which has a decorative pattern on it.

fol. 39v

LIBRA (labelled: *Libra*) is a beam balance with the pans tipped upwards as if seen from above. There are 3 stars in each pan and 2 stars in the beam.

CEPHEUS (labelled: *boetes*) is a nude man who walks to the left 'like and Egyptian' with his right arm bent and leading and the left arm bent and behind his back. He has a tall cap shaped like a fish tail on his head.

ANDROMEDA (labelled: *andromada*) is in a sitting position, facing to the right and is nude, apart from a swathe of clothe around her hip and over he leading left arm. Both arms are extended outwards.

OPHUCHUS (labelled: *Serpentarius*) is nude and walks to the left. His arms are extended and he holds the body of the SERPENS, which passes between his legs. The Serpens is a long snake with a lizard's head and its tongue sticking out. There are two curls in the body and both the head and tail are raised.

HERCULES (not labelled) kneels to the left with his back towards the viewer. His left leg is leading as he kneels on his right knee. Both arms are outstretched to the side.

ERIDANUS (labelled: *fluvius*) is an S-shaped segment of a stream.

fol. 40r

CASSIOPEIA (labelled: *Casepia*) sits facing to the left on a very ornate chair that has a high back decorated with cusps, and a very elaborate seat (almost like a carpet). Her hands are raised so that her arms make a 'W'- shape. She is nude and her hair is uncovered.

SAGITTARIUS (not labelled) is a centaur facing to the right. He raises and extends his right foreleg and the space between the two legs contains CORONA MERIDIONALIS (labelled: *Sagitaris*). His human half is dressed in a loose tunic and he is blindfolded, with the ends of the blindfold fluttering behind him. He draws a bow with his left hand. He is marked by stars. The Corona is a wide circular band without decoration.

ORION (labelled: *Orion*) is nude and kneels to the left on his right knee. His upper half seems to be facing away from the viewer. His left arm is raised in front of him and he holds a piece of cloth in it. His right arm is raised above his head and he holds a curved sword.

CETUS (labelled *Capricornus* - which has been erased; and re-labelled *Cetus*) is a strange hybrid, with a leonine head, neck and chest (*leo marinis*); his two front legs are equine; he raises a pair of wings behind his back and he has a fish tail. He faces to the right and turns his head to look at the viewer.

fol. 40v

HYDRA, CRATER and CORVUS (labelled: *ydra*, *Crater*, *Corvus*). Hydra is long, sinuous snake with a dragon's head, set diagonally on the page with its head to the left and 2 twists in its body. Its underside is scalloped. Crater is a cup with an elaborate base and stem. CORVUS is a bird, facing to the left, and pecking the Hydra's tail.

Aquarius (labelled: *Aquarius*) sits to the right, but turns his upper torso back to the left. He is nude and extends his right arm behind him. In his right hand, he holds an upturned vase, from which water is pouring downwards and into the mouth of the Piscis Austrinus. His right foot rests on its back.

PISCIS AUSTRINUS (labelled: *piscis meridionalis*) is a large fish, facing to the right and it receives the stream of Aquarius in its mouth.

ARA (unlabelled) is like an inverted cup or a bell. With a decorated handle.

fol. 41r

NAVIS (labelled: *navis*) is a full, wooden ship that sails to the right, it has a large sails and a long pennant flying from the main mast. There are two steering oars towards the stern

CENTAURUS (labelled: *centaurus*) is a centaur that trots to the right. His human half is nude, and there is a fringed belt between the two halves. He holds the hind legs of a large beast (LUPUS) in his left hand and holds a piece of folded cloth (cf. the bundled straps in Auriga's hand in his right hand. The hooves are marked with 4 stars.

notes

30.0 x 27.2 cm, 244 folia, parchment; the constellations drawings follow directly on from the text of Hyginus, but the iconography is certainly from the *Sufi latinus*/Alfonsine tradition. METZGER 2016 notes the similarity with the Alfonsine map in Madrid (Real Academia de la Historia, Ms. d97, copy from the 16th century, cf. DOMÌNGUEZ RODRÌGUEZ 1992, p. 11).

bibliography

HAENEL 1830, Col. 518-520, 522.

CANTOR 1892, p. 100.

BJÖRNBO/VOGL 1912, pp. 124-129.

ESCHER 1917, pp. 127f., no. 158.

ZINNER 1925, p. 75, no. 2009b.

THORNDIKE 1959, p. 48.

THORNDIKE 1965, p. 102.

LIPPINCOTT 1985, p. 69. German; first half 15th c (wrong).

KRISTELLER 1990, p. 66.

ŚNIEŻYNSKA-STOLOT 1994, p. 65.

STEINMANN 1998.

As of Jan. 2025, the ms has not been digitised, but images are available via the Warburg Iconographic Database.