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*Libro delle Stelle fisse* (Alfonsine *Libro del Saber de Astrologia* in Italian translation)

Florence

1341 / 1470-85

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The manuscript contains a translation of the treatises on the constellations collected in the *Libro del Saber de Astrologia*, made for for Alfonso X el Sabio of Castile. It also contains a series of texts on astronomical instruments, such as celestial globes, astrolabes, quadrants and mechanical clocks.

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#### contents

The ms has been fully described by SAXL I 1915, pp. 95-100; KNECHT 1965 and METZGER 2016.

- pp. viii a-b      An index, with a preface and chapter list (according to which, several of the listed items are missing in the current ms).
- pp. 1a-102      *Libro delle stelle fisse* (ed. KNECHT 1965): ... *il quale libro fece traslatare di caldeo e de arabicho in vogare castellano lo Re Don Alfonso figlio ... E translatollo per suo chomandamento Guida il Choenso al Harquin. E Guillienarremon da Spaso chericho. E fue fatto nel quarto anno che regno il sopradetto Re. che correva gli anni domini Mcclvj annj. ... E quanto lo linguaggio indiricço pur egli, ma l'altre cose ebbe per suoi aiutatori il maestro Giovannj di Missina, e il maestro Gi/uda sopradetto, e Samuel.*
- pp. 103ra-130b      *Libro della spera solida* (*Delle faccezze della spera e di sue figure e di sue opere*). A translation of the *Kitāb al-'amal bi-l-kura al-fulkyā* (*Book*

*on the Celestial Sphere*) by Qustā ibn Lūqā (originally written during the 2nd half of the 9th century). On p. 103: *E dopo molto tempo che andaua la era in . M.CCC.LXXI. Villi, anni. E gli anni domini . in . M.CCC.XLI. essendo in Ispagna nella citta di Sibia. Guer uccio . figliuolo di Cione Federighi della molto nobile citta di Firenze . fece traslatare questo libro . di Casteilano in Fiorentino.* See SAXL I, 1915, p. 95.

- pp. 131a-133     *Capitolo sulle Armelle dell'Atacyr.* Supplement to the previous work on the celestial globe (cf. KNECHT 1965, p. xxi).
- pp. 133b-134     blank
- pp. 135a-182b     *Libro dell'Astrolabio rotondo.* An astrolabe treatise with numerous illustrations of the construction and plates. Part I (pp. 135-156) is on the construction of the instrument; and Part II (pp. 157-82) is on the use of the instrument.
- pp. 183a-263b     *Libro dell'Astrolabio plano.* In five chapters:  
                       chap. 1 - p. 183  
                           p. 211: *Questa e la tavola di sapere in qual grado del zodiaco e il sole.*  
                       chap. 2 = p. 219 (on the use)  
                       chap. 3 = p. 236  
                       chap. 4 = p. 244  
                       chap. 5 = p. 259.
- pp. 264a-315b     *Libro della Lamina universale.* Further explanations on the astrolabe and the astrolabe discs. Copiously illustrated.
- pp. 316a-384b     *Libro delle lamine delle VII pianete.* Copiously illustrated.  
                           pp. 316-356: *Libro delle armilla*  
                           p. 356: *Tavola di sapere lombria conversa del altura.*  
                           pp. 357-384: *Questo e lo libro delle lamine delle sette pianete.*

- pp. 384b-399b *Libro del Quadrante ch consi rectificata*. On how to construct an astronomical quadrant to measure the geographical latitude and the altitude of the Sun, etc. Copiously illustrated.
- pp. 400a-410b *Libro della pietra della Meriggia: Questo e lo libro in che favella della pietra dell'ombra*. On the construction of sundials (the text follows closely on from the previous text).
- pp. 411a-432b *Libro del relogio del aqua*. On the water clock. Illustrated.
- pp. 422a-432b A section on determining the astrological Ascendent.  
pp. 423 and 424 =Tables with coloured depictions of the signs of the zodiac
- pp. 433a-441 *Libro del relogio del ariento vivo*. On the mercury alarm clock with a mechanism for a bell to strike at a specific time.
- pp. 441b-448b *Libro del orologio della candela*. On the candle clock, incomplete at the end. The following two texts according to the chapter index are also missing (cf. KNECHT 1965, p. xxii).
- pp. 449-464 *Tabulae Stellarum fixarum*. Fixed star tables converted to the year 1470, with an addendum for the period between 1470 and 1485:  
pp. 449-459  
inc: *Per Ga. Provanum noviter calcukata > verificata Anno Domini 1438. verificata Anno domini. 1438. Et addit super loca stellarum equata per Alfonsium .1. gradum .56. Minuta.*  
  
expl: *... non intrat numerum. Expliciunt loca stellarum fixarum per antiquos astronomos obseruata/et per me Ga. Pirouanum artium et medicine doctorem nouiter calculata presupposita radice tempore Ptholomei calculata per eum anno dominij138 uel 140 sed aliam uiam nunc currente vere anno domini a natiuitate1470 die 30 nouembris hora .17a. Johannes Francischus de Pergamo transcripsit.* (indicating that Giovanni

Francesco da Bergamo copied the converted tablets on this date, thus providing a *terminus ante quem*).

p. 449 has a note: *Addas super vera loca hie. Minuta. 33. (corr. 23 .) . . . et erit equata ad annum. 1476.*

p. 460 *Tabula longitudinum regionem que est elongatio earum ob occidente et latitudinis cui est similis altitudo poli.*

p. 461 1. *Tabula 27 mansionum lune seeundum summam Anglicanam*  
2. *Tabula mansionum lune et sunt numero 28 et quelibet est 12. gradus .51. Minuta .28. (corr.: .26.) Secunda.*

p. 462 1. *Tabula dignitatum planetarum in nocte in unaquaque facie signorum excepta dignitate terminorum.*  
2. *Tabula dignitatum planetarum in die in unaquaque facie signorum excepta dignitate terminorum.*

p. 463 *Conclusiones medie Jouis et Saturni ad Cremonam et etiam (?)*.

p. 464 *Conclusiones vere Saturni et Jouis ad Cremonam.*

pp. 465-467 blank.

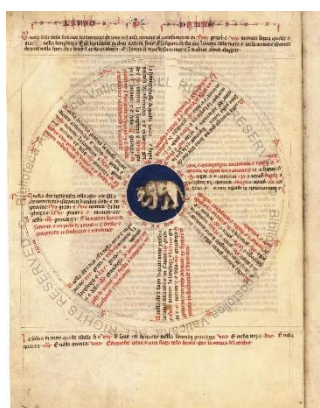
p. 468 A note: *anno 1485 addi 2 di Maggio comincio Ruberto e Piero Maria a studiare in istologia ( isto logia or astrologia ?)*. Otherwise blank.

pp. 469-470 blank

illustrations



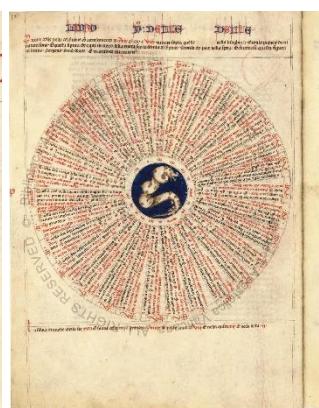
p. viii



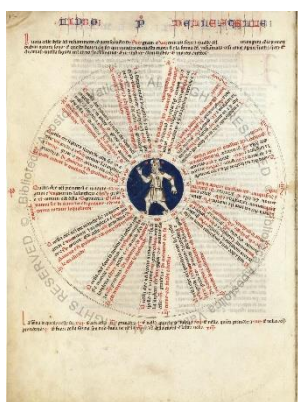
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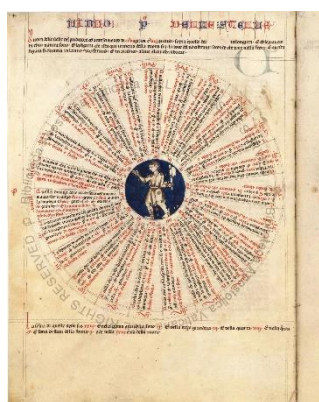
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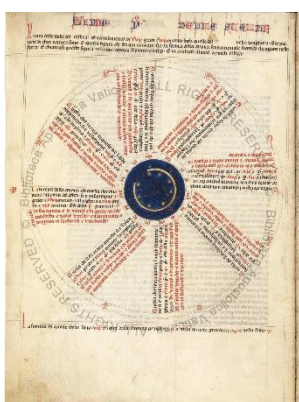
p. 10



p. 12



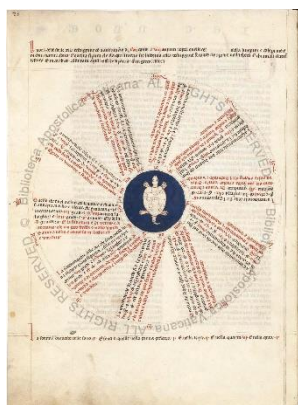
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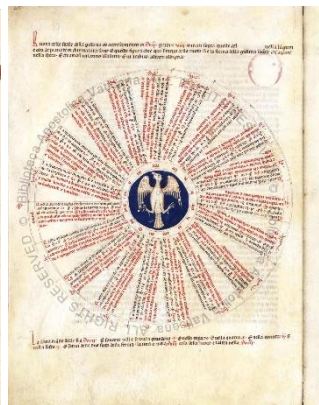
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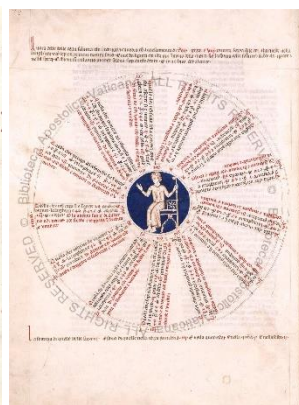
p. 18



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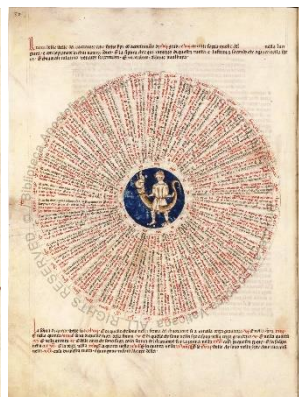
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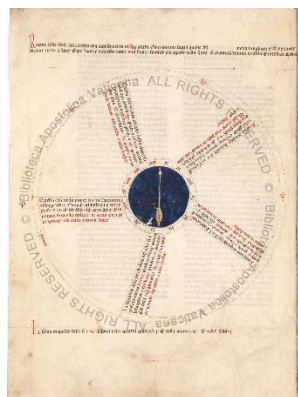
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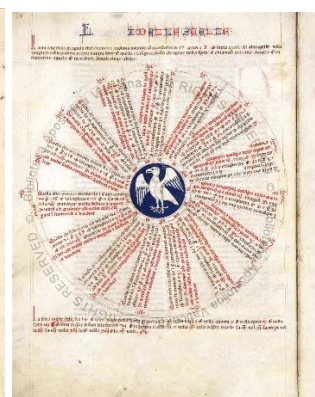
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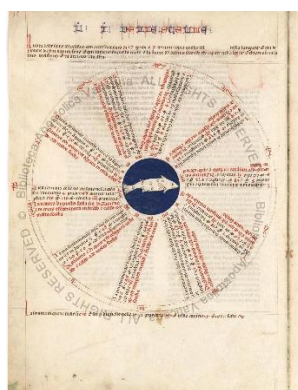
p. 30



p. 32



p. 34



p. 36



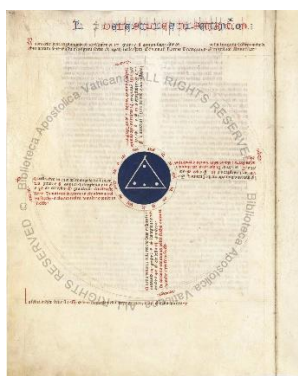
p. 38



p. 40



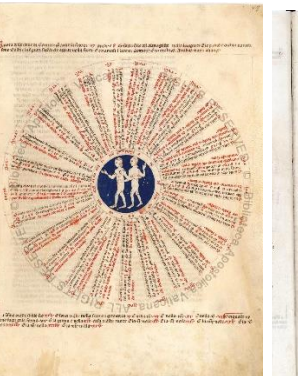
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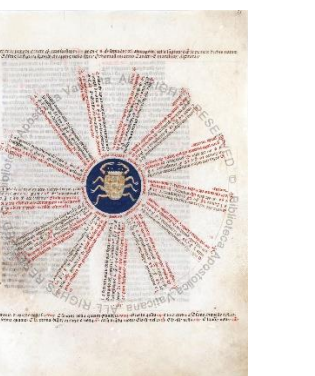
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p. 53



p. 55



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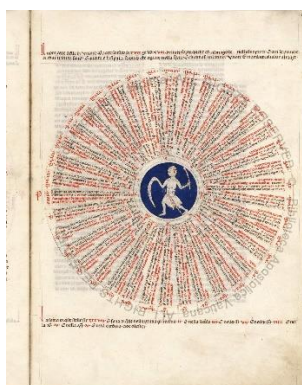
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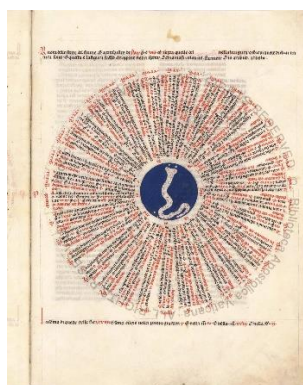
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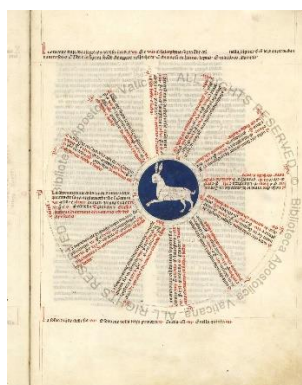
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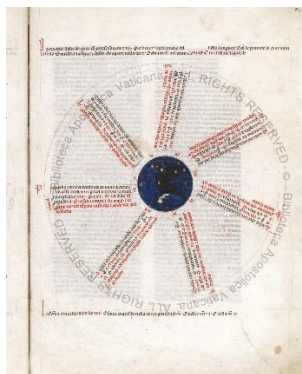
p. 79



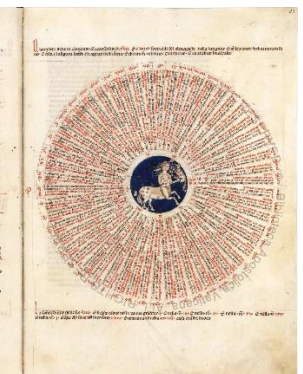
p. 81



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p. 85



p. 87



p. 89



p. 91



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- p. viii opening index.
- pp. 6- 93 A series of 44 rotae, in which the central medallion contains an image of a constellation. The external sections of each rota (the 'spokes') contain astronomical and astrological information concerning each of the stars in that constellation. The stars have been added as open circles to each figure - some of which have been gilt with gold leaf or coloured red. Most of the figures are simply dressed and barefoot.
- note:** some of the transcriptions of the variant names of each constellation need to be re-checked.
- p. 6 URSA MINOR is a light brown bear walking to the left, with his head dipped and a long tail. It is marked by gold stars. The title reads: *Ruota delle stelle ... nel orsa minore ... in latino si dice ursa minor, e in arabico aldub alazgar.*
- p. 8 URSA MAIOR is a larger light brown bear walking to the left, with its head lowered and a shorter tail. It is marked by gold stars in the body and red stars outside it. The heading reads: *Ruota delle istelle del orsa maggiore ... in latino ursa maior, e in arabico aldub alacbar.*
- p. 10 DRACO is a reverse 'Z'-shape with its large head to the right. It has 3 coils in the body and it is marked by stars. The heading reads: *Ruota delle stelle del serpente... in latino serpente sive draco, e in arabico altanuyu.*
- p. 12 CEPHEUS walks to the left, with his right arm bent and raised in front of him and his left arm bent and lowered behind him. He is bearded, wears a cap and a belted, knee-length robe. He is marked with stars and there are two red stars on each side of his head. The heading reads: *Ruota delle stelle del infiammato ... in latino inflamatus, e in arabico almultahib, e in greco cayfeos.*
- p. 14 BOOTES walks to the left, facing the viewer. His right arm is raised in front of him and he holds a staff with a circular segment attached to it in his left hand behind him. His mouth is open. He is marked by gold stars, with a single red star between his legs. The heading reads: *Ruota delle stelle del gridatore ... in latino vociferans, e in arabico alaue alcayah albacar.*
- p. 16 CORONA BOREALIS is shaped like a simple torque with an opening on one side. There are 8 golden stars within the circlet. The heading reads: *Ruota delle stelle del elfeca ... in latino corona septentrionalis, e in arabico alalil aymeli elfeca.*

- p. 18 HERCULES runs to the left, with both elbows bent and arms raised. The palm of his right hand is open and he holds a sickle in his left hand. He wears a short, belted tunic. The stars are marked, but no colour has been added. The heading reads: *Ruota delle stelle del genuflexu ... in latino incurvatus super genu ipsius, e in arabico aliezibile rocbatyhi alraqiz.*
- p. 20 LYRA is a tortoise seen from above, with its head towards the top of the page. It is marked with stars that are not coloured. The heading reads: *Ruota delle stelle della testugine ... in latino testudo, e in arabico alsulyaca alzil haffech alzanja, e in greco allora.*
- p. 22 CYGNUS is a splayed bird, with its belly facing the viewer and its head towards the top of the page. It is marked with uncoloured stars. The header reads: *Ruota delle stelle della gallina ... in latino Gallina, e in arabico altayr aldigea.*
- p. 24 CASSIOPEIA is a woman sitting sideways to the left on a spindly chair. She holds on to the back with her left hand and gestures in front of her with her right. She wears a long gown and has short hair. She is marked by uncoloured stars. *Ruota delle stelle della femina che siede nella cattedra ... in latino mulier sedens super cathedram, e in arabico det alcorcy.*
- p. 26 PERSEUS strides to the right but turns his head back to the left. He faces the viewer and is dressed in a short, belted tunic. In his right hand, he holds a decapitated head of a demon. In his raised right hand, he holds a straight sword. He is marked by uncoloured stars. The heading reads: *Ruota delle stelle di perseus che il portatore del capo dalgol ... in latino ferens caput algol, e in arabico Barseus hanul raz algol.*
- p. 28 AURIGA stands to the left. He holds two sets of straps (reins) in each of his hands, the right one in front of his waist and the left one out to the right. He is dressed in a short, belted tunic and has a Phrygian cap on his head. He is marked by uncoloured stars. The heading reads: *Ruota delle stelle del tenitore delle redine ... in latino tenens habenas, e in arabico mumzic alayna alanaza.*
- p. 30 OPHIUCHUS faces slightly to the left. He holds the SERPENS with both hands and its body passes between his legs. The Snake's head is to the left and its tail to the right and both are raised. There are two curls in the Snake's neck. The stars are marked in gold. The heading reads: *Ruota delle stelle del cacciatore delle stelle serpi ... in latino venator serpentum, e in arabico alhaue hualhaya.*
- p. 32 SAGITTA points vertically upwards. It is marked by 4 gold stars. The heading reads: *Ruota delle stelle della saetta ... in latino sagitta, e in arabico alzehm.*

- p. 34 AQUILA faces to the left with its wings outspread. It is marked with uncoloured stars and there are 6 small stars behind its head. The heading reads: *Ruota delle stelle del aquila che e chiamata avoltoio volante ... in latino aquilo, e in fiorentino aquila, e in arabico alnazr altayr.*
- p. 36 DELPHINUS is a small fish, swimming to the right. It has uncoloured stars. The heading reads: *Ruota delle stelle del dalfino ... in latino delfinus, e in arabico al dalfin.*
- p. 38 EQUULEUS is the head, neck, chest and stomach of the horse (the front legs are cut off). It stands to the right and has 4 uncoloured stars in the head. The heading reads: *Ruota delle stelle del pezzo del cavallo ... in latino equus prior, e in arabico quitat alfaraz.*
- p. 40 PEGASUS is half a winged horse charging to the right, with its front legs extended and its wings raised. It is marked by uncoloured stars. The heading reads: *Ruota delle stelle del cavallo maggiore ... in latino equus maior, e in arabico faraz aladam.*
- p. 42 ANDROMEDA walks to the left. She raises both her arms with bent elbows. Her hair is loose and she wears a short robe that has bands around the waist, the hem and a single band running between the two. She has a small fish, facing to the left, across her chest; and a large fish between her calves, facing to the right. She has many uncoloured stars and the bands are also marked with open circles. The heading reads: *Ruota delle stelle della femina incatenata ... in latino mulier catenata, e in arabico almara almuzelzela hualzamaca.*
- p. 44 TRIANGULUM is an equilateral triangle with four uncoloured stars inside it. The heading reads: *Ruota delle stelle del triangolo ... in latino triangulus, e in arabico almutalat.*
- p. 47 ARIES is a long-fleeced ram, that leaps to the left, but turns its head back to the right. Both front legs are slight bent. It has flattened horns and a long tail and is marked by uncoloured stars. The heading reads: *Ruota delle stelle del segno daries ... in latino aries, e in arabico al hamal.*
- [The image of TAURUS is missing]
- p. 49 GEMINI are two nude women, walking to the left, with their inner arms crossed in front of each other and their outer arms raised. They are marked by uncoloured stars. The heading reads: *Ruota delle stelle di Gemini ... in latino Gemini, e in arabico altahuamayyu aliauze.*

- p. 51                   CANCER has a U-shaped body, with his head towards the top, there are two larger claws and 6 smaller claws it is marked by 4 uncoloured stars on the shell, 4 above the head and two large black stars on the shoulders of the front claws. The heading reads: *Ruota delle stelle di Cancro ... in latino Cancer, e in arabico alzaratau.*
- p. 53                   LEO prances to the left with its front legs stretched out and its tail raised. It has uncoloured stars in and outside the body. The heading reads: *Ruota delle stelle del leone ... in latino leo, e in arabico alazar.*
- p. 55:                   VIRGO walks to the left. She wears a calf-length belted tunic and holds her hands out to her sides with the palms raised. She is winged. She is marked by uncoloured stars. There is a large circle on her right hand, but no Spica). The heading reads: *Ruota delle stelle di virgo ... in latino virgo, e in arabico aladra alzumbula.*
- p. 57                   LIBRA is a beam balance without a stand, with round pans. The heading reads: *Ruota delle stelle di libra... in latino libra, e in arabico almizen.*
- p. 59                   SCORPIO has a long oval body and is placed vertically on the page, with his head towards the top. He has two rounded arms and three soft legs on each side, with a very long segmented tail. It is marked with uncoloured stars. The heading reads: *Ruota delle stelle dello scorpione ... in latino scorpio, e in arabico alacrab.*
- p. 61                   [The image of SAGITTARIUS is missing].  
CAPRICORN is a goat-fish facing to the left. Its front legs are bent, and it has long, thin straight horns and a beard. There is a curl in the fish tail. It is marked with uncoloured stars. The heading reads: *Ruota delle stelle di Capricorno... in latino Capricornus, e in arabico aliadi.*
- p. 63                   Aquarius stands facing the viewer with both arms outstretched. He turns his head to the right. In his left arm, he holds a two-handled jug from which water pours down and then to the left under his feet. He wears a short, belted tunic. He is marked with uncoloured stars and the heading reads: *Ruota delle stelle daquario ... in latino aquarius, e in arabico celquib alme aldalu.*
- p. 65                   PISCES both face upwards with their backs to the left. They are connected at their tails by a V-shaped band that has a kink in it. They are marked by uncoloured stars and there are 4 stars outside the figures. The heading reads: *Ruota delle stelle di pescies... in latino pisces, e in arabico alzamacatayu a lot.*
- p. 67                   CETUS is a sea monster with a canine front half, cloven hooves and a fish's back half. He faces to the right, exposes very sharp teeth and is marked by uncoloured stars. The

heading reads: *Ruota delle fisse cioe ferme di Caytos ... in latino Cetus, e in arabico Caytos hayauen bahri.*

- p. 69 ORION walks to the left with his arms extended. His leading right arms is covered with an over-long sleeve and he holds a club vertically in his left hand. He has a long straight sword at this waist and is marked by uncoloured stars. The heading reads: *Ruota delle stelle di Urione... in latino Urion, e in arabico aliabar aliauze.*
- p. 71 ERIDANUS is a segment of a stream with a very twisty end. The upper part is bifurcated. It is marked with stars. The heading reads: *Ruota delle stelle del fiume... in latino flumen, e in arabico almahr.*
- p. 73 LEPUS is a hare that leaps to the left. Its front legs are extended, and its ears are vertical. It is marked with 12 stars. The heading reads: *Ruota delle stelle della lepre ... in latino lepus, e in arabico alarnab.*
- p. 75 CANIS MAIOR is a snub-nosed dog that walks to the right it is marked with uncoloured stars and the is one star above the head and a group of stars below the right hind leg. The heading reads: *Ruota delle stelle del cane maggiore ... in latino canis maior, e in arabico alqub alacbar.*
- p. 77 CANIS MINOR is a small dog that trots to the right with its right front leg extended. It has two dark stars. The heading reads: *Ruota delle stelle del cane minore... in latino Canis minor, e in arabico alquab alacgar.*
- p. 79 NAVIS is a full ship that sails to the right. It has two sets of sails (the front one opened and the main mast one tied back) and the rigging is evident. There is a stern-castle on the stern and two rowing oars. It is marked with gold stars The heading reads: *Ruota delle stelle della nave... in latino navis, e in arabico alzafina.*
- p. 81 HYDRA is a snake, set diagonally on the page, with its large head towards the top left. It has one curl in its body and is covered with gold stars, with one red star in front of its mouth. The heading reads: *Ruota delle stelle di ydro... in latino ydra, e in arabico alsuiah.*
- p. 83 CRATER is a delicate vase with two handles, that end in small animal heads, and a raised foot. It is marked with gold stars. The heading reads: *Ruota delle stelle del vaso... in latino vas, e in arabico aluatia alquam.*

- p. 85 CORVUS is a black bird with white legs that flies to the left, with its wings extended behind it. It is marked with golden stars. The heading reads: *Ruota delle stelle del corbo... in latino corvus, e in arabico alqurab.*
- p. 87 CENTAURUS is a centaur that leaps to the right, with both its front legs raised. The human half wears a tight shirt. In his right hand he holds the legs of a small animal (LUPUS). In his right hand he holds a flowering plant. He is marked with gold stars. The heading reads: *Ruota delle stelle di Centauro... in latino Centaurus, e in arabico husalzaba.*
- p. 89 ARA is a cauldron set upon a multi-legged stand with flames coming from the top. It has golden stars. The heading reads: *Ruota delle stelle del fochoiare... in latino lar, e in arabico almahmara.*
- p. 91 CORONA MERIDIONALIS is an ovate shield with the point towards the bottom. It is marked by golden stars. The heading reads: *Ruota delle stelle della corona meridionale... in latino corona meridionalis, et in arabicho alaclil ahanubi.*
- p. 93 PISCIS AUSTRINUS is a large fish that faces diagonally to the upper left. T has pointy teeth. It is marked by gold stars. The heading reads: *Ruota delle stelle del pescie... in latino piscis meridionalis, e in arabico alhot ali anubi.*
- p. 102 Full-page rota of all the main stars on an astrolabe, with astrological indications.
- pp. 136, 146, 187, 190, 196  
A selection of the numerous drawings detailing the construction of an astrolabe (*astrolabio rotondo*).
- pp. 212, 218, 270 Two of the many drawings detailing the construction of the universal astrolabe (*astrolabio plano*).
- p. 329 An armillary sphere.
- pp. 423-433 Two pages with zodiac signs
- p. 440 One of many drawings of a clock with mercury.

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**notes**

40.5 x 29.9 cm, 234 folia, paginated, high-quality parchment (pp. I-IV and 449-470 are paper), Italian *textura rotunda*, two columns, very carefully and elaborately written and rubricated.

The *Libro delle Stelle fisse* is based primarily on the translations of the *Kitāb al-kawakib al-tabita al-musawwar*, written by the Arab astronomer Abd al-Rahman ben Umar al-Sufi, and other Arabic treatises prepared in 1256 by Yehudá ben Mošé ha-Kohén and Guillén Arremón d'Aspa for Alfonso X of Castile. The Castilian text was edited in 1276 by Yehudá ben Mošé with the collaboration of Samuel ha-Levi Abulafia and two Italians: Giovanni da Messina and Giovanni da Cremona. In 1341, the treatise on the celestial globe was translated into Florentine *volgare* in Seville on behalf of Gueruccio di Cione Federighi from Florence (cf. p. 103).

The entries on the calculation of the Alfonsine tables and their use by 'Roberto' and 'Piero Maria' provide a definitive *terminus ante quem* for the paper parts to 30 November 1470 to 2 May 1485.

The relationship between the *Libro de las Estrellas fixas* and al-Sufi's *Kitāb suwar al-kawākib* has been studied in detail by Julio Samsó and Mercè Comes (SAMSÓ/COMES 1988 and COMES 1991-92). The Alfonsine text is not simply a translation of the Arabic book of fixed stars, but an adaptation that contains a large amount of additional information. Its claim to depend on 'Chaldean sources' is fictional; though it is worth noting that the *Libro delle stelle fisse* contains numerous additions concerning magic and astrological talismans, which are also the central themes of the Alfonsine *Lapidario*, probably reflecting Alfonso's personal interest in these aspects of astrology.

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