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Albumasariana*

Al-ḥayātu ḥarāmūn ba'dakum, «After you life is not permitted» – this is the concluding phrase in an anecdote transmitted by Šākir al-Batlūnī¹ and printed in a chrestomathy (Brünnow – Fischer 1948: 1 [Arabic]) widely used in German universities in teaching Arabic. Let me add, by the side, that this phrase caused me great trouble when I was a student, and only years later I succeeded in catching its true meaning. But when I received the honourable invitation to take part and talk in this meeting on the most prominent event of launching R. Lemay's edition of Abū Ma'shar's *Introductorium maius*, this phrase came at once to my mind and I transformed it into: *Al-kalāmu 'alā Abī Ma'sar ḥarāmūn ba'dakum*, «To speak about Abū Ma'sar after you is almost impossible». What has there been left that could be said about Abū Ma'sar after these monumental nine volumes? So what I shall present here is but a potpourri of remarks, experiences and observations around Abū Ma'sar that occurred to me in the past three or four decades.

Let me begin with two remarks about the Arabic title of Abū Ma'sar's work that is celebrated today, *Kitāb al-mudḥal al-kabīr*. Is it correctly *madḥal* or *mudḥal*? According to grammar books (e.g. Wright 1951: I, 129 f. [§ 227]) *madḥal* would be the *nomen loci* for the first form of the verb, *daḥala* («to enter»), thus meaning the place where one enters, the entrance. In Abū Ma'sar's book title the underlying verb is *adḥala* («to introduce»), in the fourth form. For the derived forms of the verb the *nomen loci* is formed by the passive participle of a verb, hence here: *mudḥal*, «the place where one is introduced, introduction». So the matter seems to be clear for *al-mudḥal* and not *al-madḥal*.

* Updated version of a paper presented at the Incontro internazionale per la presentazione di: Abū Ma'sar al-Balḥī, *Kitāb al-mudḥal al-kabīr*..., a cura di Richard Lemay, Naples, Istituto Universitario Orientale, May 16, 1997. The Author and the Editorial Board deeply regret to announce that, while the volume was in the press, the sad news arrived of Richard Lemay's demise in New York on 11 May 2004. He was born on 30 June 1916 in Montreal.

¹ Around 1880 in Beirut; the anecdote is taken from his anthology, *Tasliyat al-ḥawāṭir* (cf. Brockelmann 1937-49: Suppl. II, 758).

Second, in reading and completely vowelling the book title one has – theoretically – two possibilities: *Kitābu l-mudḥali l-kabīri*, «The Book of the Great Introduction», *Liber introductorii maioris*; or *Kitābu l-mudḥali l-kabīru*, «The Great Book of Introduction», *Liber introductorii maior*. This is a puzzling situation in Arabic grammar, and in my lessons I used to give similar examples to the students in order to make them aware of the problem. When the gender of both the *nomen regens* and the *nomen rectum* is the same, the ascription of an attribute to one of the two remains open and can only be decided by context evidence. In our case one may ask oneself which of the two is «great», the book or the introduction. For myself I am inclined to understand the attribute as being appended to the *nomen regens* and thus to take the title as «The Great Book of Introduction».²

Whoever wants to work about or with texts of Abū Maʿšar is confronted with a major problem. Before actually embarking on his work he has to identify the text and to verify it in the manuscripts. Sezgin (1967-2000: VII, 139-51) lists more than forty titles of works by Abū Maʿšar, many said to exist in manuscripts and others only known from citations or by title. The well-known bibliographies (Brockelmann 1937-49; Sezgin 1967-2000; Ullmann 1972) are largely based on manuscript catalogues which are often unreliable or incomplete. Such catalogues often rely on the book titles and author names given in the manuscripts. All of us know that these titles and names may have been added by scribes or users and therefore in many cases cannot be taken as being authentic. The more prolific the production of an author was, the more difficult and complicated it is to disentangle the confusion between bibliographies, manuscript catalogues and the manuscripts themselves. Lemay has demonstrated this quite impressingly for the *Kitāb al-mudḥal al-kabīr*. He had to eliminate several of the manuscripts listed in the bibliographies and arrived at a total of nine manuscripts really containing this work of Abū Maʿšar.

I can confirm Lemay's experience by a similar experience made lately by myself. In editing an astrological treatise on the virtues of the fixed stars (here called *al-kawākib al-biyābāniyya*) ascribed to Hermes I was informed by D. Pingree that the same text was also incorporated as one chapter in the *Kitāb aḥkām al-mawālīd* of Abū Maʿšar. For this text Sezgin lists three manuscripts (Sezgin 1967-2000: VII, 145 [no. 7]). Eventually I learned that only one of these – Bodleian Library, Huntington 546 – really contains that work and that it does not exist in the other two manuscripts.³

The next big problem to be tackled by each worker in the field, before starting his work proper, is to procure copies of the involved manuscripts or to inspect them *in situ*. Many of the manuscripts needed are kept in libraries with

² Cf. in this sense also Kunitzsch (1996).

³ Hermes' text, in Arabic and Latin, has been published in Kunitzsch (2001).

which the cooperation is difficult or even sometimes impossible. Lemay has described his sad experience in Istanbul when he wanted to collate MS Carullah 1508 (*Albumasar* 1995-96: I, 136, 142), and perhaps each of us could tell similar stories. Especially with manuscripts kept in Oriental libraries it has become more and more difficult in the last few decades to get access to the material, partly due to administrative obstacles, partly due to technical reasons (lack of the apparatus needed for microfilming, etc.) and partly due to the circumstances prevailing in some areas (as, *e.g.*, in Kabul, from which I am in utter need of two manuscripts, but without any hope under the present conditions). Thus, also Lemay did not succeed in obtaining the microfilm of one of his manuscripts, in Calcutta (*ibid.*: I, 118).

The same problem, by the way, arises with the Latin manuscripts, when one wants to study the Latin translations of Arabic works. Also here the situation with bibliographies and manuscript catalogues is often unsatisfactory and one has to do the work from the basis, *i.e.* to locate and identify each text in each manuscript anew. To obtain copies or to inspect manuscripts is of course easier in the West than in the Orient, but it nevertheless also takes much of the time and energy of each worker in the field.

Having mentioned MS Carullah 1508, let me add another remark. Lemay complains several times in his present edition that Sezgin has chosen, for the facsimile reproduction of Abū Ma'shar's *Kitāb al-mudḥal al-kabīr*, MS Carullah which contains, as Lemay has found, the revised, 'final' version of the book of 876. I have talked to Sezgin about the production of his facsimile series sometimes and I also proposed some texts for inclusion in the series. On these occasions he pointed out to me that his choice is influenced, among others, by two aspects: a technical and a financial aspect. At first, the manuscript envisaged for reproduction must be of a certain quality, *i.e.* that all portions of the script in all parts of the manuscript are of the same colour and clearness which alone allows a reproduction; otherwise some portions would appear in the facsimile illegible. And second, if a library charges too high fees for a complete reproduction of one of its manuscripts, that would exceed the financial capacity of his institution. I must confess that, when the first volumes of Sezgin's facsimile series appeared, I was struck by this procedure which seems to be so far away from all up-to-date standards of edition. Afterwards I convinced myself (and many friends, in talks) that most of the texts published in that series would remain totally unknown and inaccessible to researchers for many years, if not forever, because the number of workers in the field is restricted and the critical editing of a text needs so much time and energy that there is no hope that most of these texts would be edited, according to modern standards, during the lifetime of most of us. It suffices to remember that Lemay's edition of Abū Ma'shar's *Kitāb al-mudḥal al-kabīr* took five decades to appear before us – a life's time for one text, even if we consider that we here have three texts, one Arabic and two Latin versions. My own edition of

Ptolemy's star catalogue, in two Arabic and a Latin versions, took me ten years to which has to be added the period of preparation, collecting sources and material etc. «In the desert... even a snake is better than nobody...», once cited a friend to me from a poem by Langston Hughes. So we should not blame Sezgin for his facsimiles – they provide at least an idea of the texts there presented. For everything more deeper research into all available sources remains indispensable.

In studying Abū Ma'šār's works one is not only confronted with the problem of identifying each work and establishing it in its genuine form. Another interesting aspect is to observe material taken over by Abū Ma'šār from other sources, to ascertain those sources and to see in which ways Abū Ma'šār handled the borrowed material. I shall give here a few examples and go into some detail.

In Book I, ch. 2 of the *Kitāb al-mudḥal al-kabīr* Abū Ma'šār speaks on the number of the stars and constellations. As a main source he mentions himself Ptolemy's *Almagest* (*Albumasar* 1995-96: II, 114-16). At the beginning Abū Ma'šār says the total number of stars observed by the *ḥukamā'* (i.e. the scholars well-known in the field since Antiquity) is 1029. This number is composed of the seven planets (including Sun and Moon), which he names individually by their Arabic names, and 1022 fixed stars. The number for the fixed stars is taken from Ptolemy, but it is often misinterpreted both by older Islamic and by modern scholars. In truth Ptolemy catalogued in his star catalogue in the *Almagest* 1025 stars, but in the current counting he included only 1022 (and therefore we find in the literature over and again this number) to which he added three 'external' stars in the constellation of Leo (the Lion); these three are counted separately, not included in the number of 1022.⁴ Ptolemy describes these three stars as belonging to the *Plokamos*, i.e. Coma Berenices. The Arabs rendered the name *Plokamos* («the Tuft of Hair») as *al-du'āba* (translation of al-Ḥaġġāġ and perhaps earlier, the «old» or «Ma'mūnian» translation) and as *al-ḍafīra* (translation of Ishāq ibn Ḥunayn).⁵ Abū Ma'šār also mentions *al-du'āba* (vol. I, p. 115, 36), but he commits two errors: he counts *al-du'āba* only as one star (*kawkab wāḥid*) instead of three, and he includes it – as one star – in the sum of 1022 stars instead of counting it separately as it should be according to the *Almagest*.

After the general introduction Abū Ma'šār gives a survey of the 48 classical constellations that were established by Ptolemy, 21 of them north of the ecliptic, 12 in the zodiac and 15 south of the ecliptic. Each constellation is mentioned by name. One might ask upon which of the Arabic versions of the

⁴ Cf. the text, *Ptolemäus* (1986-91: I, 182/83), and the German translation (*ibid.*: I, 166/70; Latin: *ibid.*: II, 168). In *Albumasar* (1995-96: II, 115, l. 31) there is a misprint, *ṭamānīn* instead of *ṭamāniya*.

⁵ Cf. the texts cited in note 4 and also Kunitzsch (1974: 284, no. 354).

Almagest Abū Ma‘šar drew when he set up this list. Of the four Arabic versions of the *Almagest* known to us two could have been – for chronological reasons – a source for Abū Ma‘šar, viz. the «old» or «Ma‘mūnian» version and the version of al-Ḥaḡḡāḡ (dated to 827-28). The text of the old version is now lost, but can be partly recovered from the star catalogue in the *zīj* of al-Battānī;⁶ al-Ḥaḡḡāḡ’s translation has survived and the star catalogue was edited in 1986 (*Ptolemäus* 1986-91, vol. I). If we compare Abū Ma‘šar’s constellation names with those of these two versions of the *Almagest*, we find that Abū Ma‘šar often gives names first used in the «old» version. But many of these were also mentioned by al-Ḥaḡḡāḡ, in addition to his own forms. It is therefore not possible to decide from this evidence which of the two was actually used by Abū Ma‘šar. But when we consider that al-Ḥaḡḡāḡ’s version was completed about twenty years before Abū Ma‘šar wrote down the first version of his *Kitāb al-mudḥal al-kabīr* it seems probable that he rather had at his disposal al-Ḥaḡḡāḡ’s version than the earlier, «old» one. Al-Ḥaḡḡāḡ’s version has also been identified as having been used by al-Farḡānī, al-Ya‘qūbī and al-Kindī (Kunitzsch 1974: 64).

Let us now examine one name in detail, the name of the constellation of the Arrow (Sagitta). In Lemay’s edited text it is called *al-nabl* (*Albumasar* 1995-96: II, 115, l. 45) which is an Arabic collective noun meaning «arrows». In the apparatus (*ibid.*: II, 136) it is indicated that all the manuscripts have a spelling with a *wāw* as the middle consonant of the noun, once even written as *al-nūn* (like the name of the letter) and once as *al-ḡūl* (i.e. the well-known word occurring with the constellation of Perseus). In al-Ḥaḡḡāḡ’s version of the *Almagest* the constellation is called: *iṣṭus wa-yusammā bi l-‘arabiyya al-‘anaza wa huwa al-nawl*, «Oīstos (i.e. the Greek word, transliterated), it is called in Arabic *al-‘anaza*, the pike or javelin, and it is *al-nawl*, the weaving-loom» (Kunitzsch 1974: 184 f.; *Ptolemäus* 1986-91: I, 296). The same word *al-nawl* is also given by al-Battānī; the editor, C.A. Nallino, unnecessarily emends it to *al-naṣl*. What has the weaving-loom (*al-nawl*) to do with the Arrow? It is apparent that the Arabic translator of the «old» version of the *Almagest* misread, or misunderstood, the Greek name of the constellation, ὀϊστός («arrow»), as ὁ ἰστός which indeed means «the weaving-loom». This fact was already known to Ibn al-Šalāḥ (died 1154) who discusses the discrepancy between the two names and decides, on the authority of a verse from Aratus’ *Phaenomena* which he quotes in full wording, that – according to the ancient tradition – the designation of the constellation as «Arrow» (*al-sahm*) is correct (Kunitzsch 1974: 184 f.; Ibn al-Šalāḥ 1975: 54 f. [no. 24]). Among the Latin versions of our text Johannes Hispalensis left the place of the name blank, obviously his Arabic source showed the name *al-nawl* in a corrupted spelling

⁶ Cf. Kunitzsch (1974: 49 ff.; on the names of the constellations: 172 ff.); Ibn al-Šalāḥ (1975: 97-105, Anhang II).

which did not allow a meaningful translation; the revision of his version, perhaps – as brought forward by Lemay – by Gerard of Cremona, inserts the name *algol*, a transliteration of the corrupted Arabic spelling *al-ġūl* (*Albumasar* 1995-96: II, 136; V, 68, l. 68; VI, 446; in the *Almagest* Gerard found in the Arabic the spelling *al-nūn* and rendered it as such, in transliteration, as: *et est nun*. Cf. *Ptolemäus* 1986-91: II, 74-75). Hermann of Carinthia in his fancy way of translating seems to have confused the whole section; in the place of the constellation Sagitta he puts the name *Orpheica Lira* which rather belongs to the constellation Lyra (*Albumasar* 1995-96: VIII, 27 [l. 52], 189 [app.]).⁷ So much ado about one single word among the many thousand words in Abū Maʿšar's book...

Another chapter dealing with the fixed stars is Book VI, ch. 20: «On the places in the zodiac indicating evils in the eye». Also this item is undoubtedly derived from classical Antiquity, but the stages and details of transmission have not yet been studied. The theory about the nebulous objects along the zodiac which cause evils of the eye is already mentioned by Ptolemy in *Tetrabiblos* III, 12. The list of these injurious nebulous stars is then transmitted by succeeding astrological authorities such as the «Anonymus of A.D. 379» (*CCAG* 1904: V, 1, 208 f.), Antiochus (*ibid.* 1908: VII, 111; cf. also 1922: VIII, 4, 187) and Rhetorius (*ibid.* 1898: I, 147; cf. also 1922: VIII, 4, 190 f.). Among Islamic authors there can be also cited – beside Abū Maʿšar – al-Birūnī (1934: 272-74 [§ 460]). I cannot go into more details here, but let me just propose a better reading for one word in the text: for the nebulous object in Scorpius, M 7 (Kunitzsch 1983: 111 [no. 132b]), the text gives the name *zand al-'aqrab* which could be translated as something like «Forearm – or perhaps Claw – of the Scorpion» (*Albumasar* 1995-96: III, 406, ll. 893 and 901). Among the variants (*ibid.*: 498) is *zubrat al-'aqrab*, «the Mane of the Scorpion», which is none the better. The proposed correct reading is: *ibrat al-'aqrab*, «the Sting of the Scorpion», which is a well-documented Arabic name for this nebulous object near the end of the Scorpion's tail (Kunitzsch 1966: no. 132a-b). The entire chapter, and especially the coordinates of the stars, need detailed study and close comparison with the other known versions of the topic, in Greek, Arabic and Latin. In the present form the numerical values of the star coordinates given by Abū Maʿšar appear to be heavily corrupted.

Another case of borrowing of an antique text by Abū Maʿšar is found, as already mentioned in passing, above, in his *Kitāb aḥkām al-mawālīd*. Here he included – as ch. 1 of Book IX – a treatise on the astrological virtues of the fixed stars which seems to have started life in Antiquity as a treatise on the

⁷ Lyra, instead, is called *Ledens Olor qui et Vultur cadens*, where the first name is wrong and belongs to the constellation Cygnus; the second name is the current Latin rendering of the traditional Arabic name of the star α Lyrae which in medieval times was often transferred upon the entire constellation Lyra.

«Thirty Bright Stars». It is found among excerpts from the work of the «Anonymus of A.D. 379» and in several other Greek compilations, but may go back to older antecedents.⁸ The treatise exists independently in an Arabic version which, as it appears, had been translated from Middle-Persian. The Arabic version was translated into Latin by Salio of Padua, perhaps in 1218. One Arabic recension of the text was also included in another compilation, perhaps by Māšā'allāh (now lost), which was translated into Latin by Hugo of Santalla and has survived under the title *Liber Aristotilis de ducentis quinquaginta quinque Indorum uoluminibus...*; the treatise here occupies ch. ii, 2 of Book III; an edition by C. Burnett and D. Pingree has been recently published (Burnett – Pingree 1997). Altogether we now have five surviving versions of this text: beside the various Greek versions, there is the Arabic version translated from Middle-Persian and its recension as transmitted by Abū Ma'shar, and in Latin there is Salio's translation of the existing Arabic version and Hugo's translation of another Arabic recension in a lost work presumably by Māšā'allāh; in addition, there is the Hebrew version, *Sefer Hermes* (edited by Lelli 2001). I have prepared an edition of all the four texts, including a reprint of Burnett and Pingree's edition of Hugo's translation, so that they will be available side by side (Abū Ma'shar's version is in Kunitzsch 2001: 83-99). One characteristic remnant of the Middle-Persian version from which the Arabic has been translated is the designation of the fixed stars as *al-kawākib al-biyābāniyya* (in Abū Ma'shar and elsewhere written *al-bābāniyya*), derived from a Middle-Persian form *a-wiyābān-īg* which literally renders the Greek term for the fixed stars, ἀπλανεῖς (ἀστέρεις). The term lived on in Latin Europe as *stelle beibenie* (Kunitzsch 2001: 16 [with n. 21], 17, 18 f.).

A last item of borrowing which I shall mention here is the famous list of the so-called «paranattellonta» in Book VI, ch. 1 of the *Kitāb al-mudḥal al-kabīr*. Paranattellonta is the designation for constellations, or portions of constellations, co-ascending, co-culminating or co-descending together with the «decans». The decans are units of division of the zodiac, first introduced by the ancient Egyptians and then merged into Greek astrology (but never mentioned by Ptolemy who strictly avoids them). The great circle of the zodiac (having 360 degrees) is divided into 36 decans, each decan thus covering 10 degrees; in other words, each of the twelve zodiacal signs (which comprise 30 degrees each) contains three decans.

Treatises describing the paranattellonta existed since Antiquity. Such material has also reached Abū Ma'shar. In the chapter mentioned above he lists the paranattellonta for each decan successively in three distinct sections: according to the «Persians», to the Indians and to the Greeks. As it seems, the material in each of these three sections was collected from a different source. What he cites for the Greeks, generally corresponds to the descriptions of the constel-

⁸ For the details see Kunitzsch (2001: 13-15).

lations in the *Almagest*; but it cannot be said whether Abū Maʿšar composed this section himself using the *Almagest*, or – perhaps more probable – whether he took the information in this section completely from some Greek text available to him in Arabic. The Indian material must of course be taken from a different source. It has been observed that, what Abū Maʿšar describes as paranatellonta of the Indians, are not really paranatellonta, but rather a personification of each decan according to Indian sources (for each decan only one complete figure is described and not, as in the other sections, scattered portions of many constellations). The most interesting is the first section of each decan cited by Abū Maʿšar for the «Persians». In reality also this section contains Greek material, but it has reached Abū Maʿšar in an Arabic version of a Persian translation of an underlying Greek text. The background behind this section was amply analysed by F. Boll (1903).⁹ The Persian intermediate between the Greek and the Arabic is still visible in many Persian words that were retained in the Arabic version, more or less heavily corrupted in the surviving manuscripts (not to speak of the Latin translations made from the Arabic). Boll has determined the treatise of Teukros the Babylonian as the ultimate source of the tradition echoed in Abū Maʿšar's first section. This text itself seems not to have survived, but there exist several Greek recensions and excerpts by later authors; especially the version transmitted by Rhetorius can now be compared to the Oriental branch of transmission represented by Abū Maʿšar's chapter. Teukros' name appears several times in Abū Maʿšar's text, corrupted into forms like Tinkalūs etc. (where the influence of the Middle-Persian intermediate is still obvious) which later, in the medieval Latin translations, became completely unrecognizable.

It was in this chapter, in the section on the paranatellonta ascribed to the «Persians», that some celestial figures were described which provoked an immense echo in Latin Europe after the spreading of the two Latin translations. Just for information I here add that two Latin translations were made of the *Kitāb al-mudḥal al-kabīr* in Spain, one – very literal – by Johannes Hispalensis which is dated to 1133 (of this, Lemay has singled out among the manuscripts used for his edition a revised version possibly due, as Lemay maintains, to Gerard of Cremona), and a second one, in 1140, by Hermann of Carinthia which is – in contrast to Johannes Hispalensis – utterly free.

For the first decan of the sign of Virgo Abū Maʿšar registers, in the section ascribed to the «Persians», the rising of the figure of a young woman nourishing a child, a little boy, with *marāq*, juice of meat (in Latin *ius* which easily suscitated the association with the other word *ius* meaning «right» or «law»). In the Greek sources this description was explicitly meant for the Egyptian goddess Isis and her boy Horus. After wandering through the Mid-

⁹ Boll also includes, as Appendix 6, the edition of the entire chapter in Arabic accompanied by a German translation (made by the orientalist K. Dyroff).

dle-Persian translation the name of Isis had been heavily distorted. Already in Abū Ma'shar's Arabic version we find the addition, concerning the child: «some nations call this boy Īsū', that is Jesus». That means that at some point between the underlying Greek text and its appearance in Arabic in the *Kitāb al-mudḥal al-kabīr* someone in the Orient – and not necessarily Abū Ma'shar himself – had already introduced the interpretation of the configuration as that of the Virgo Maria with Jesus.

It goes without saying that this configuration which was explicitly connected in the text with Jesus found greatest interest in Christian Europe. It was cited over and again as a specimen for the prophecy of the birth of Christ even by pagan, Islamic, astrology and found its way also into medieval Western poetry (cf. Lemay 1962: 38 f. and n. 3; Kunitzsch 1970; Hilder 1972).

We are happy to be now in possession, due to R. Lemay's labour over so many years, of Abū Ma'shar's book in all versions, Arabic and Latin. Everything – as the pseudo-prophecy of Christ's birth – can now be traced in the sources directly. It is a great step forward on our way to understand the great reputation that Abū Ma'shar gained, in the Orient and even more in Europe.

His works were read and cited into the 17th century. Neither even Tycho Brahe (1546-1601; cf. Hartner 1960) or Christoph Clavius (1538-1612; cf. Knobloch 1990) missed to cite him. On the other hand, as a mere astrologer he was not allowed the honour of entering the Parnassus of astronomers: his name is not among the names of thirteen Arabic-Islamic astronomers that were given to certain features on the surface of the Moon (cf. Khan 1953). A modest recompense for this loss of being immortalized among the serious scientists may be seen in what Dyroff reports in a footnote: in 1614 a theater play under the title of «Albumazar» (the Latinized form of his name) was performed in England in the presence of the King.

There is some evidence that his reputation as an outstanding astrologer, or soothsayer, is living on in the Orient into our time. In 1981 I bought in Cairo, from one of the Azbakiya bouquinists, a recently printed booklet (without date) entitled: *Kitāb al-muḥaqqiq al-mudaqqiq al-yūnānī al-faylasūf al-šahīr Abī Ma'shar al-falakī al-kabīr fihi ṭawālī 'al-rigāl wa l-nisā' bi l-tamām wa l-kamāl*.¹⁰

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¹⁰ Published by Maktabat al-Ġumhūriyya al-'Arabiyya, owner 'Abd al-Fattāḥ 'Abd al-Ḥamīd, Sanadiqiya Street, Al-Azhar.

REFERENCES

- Albumasar* (1995-96) = *Abū Ma'shar, Kitāb al-mudḥal al-kabīr.../ Liber introductorii maioris...* (éd. Richard Lemay), 9 vols. Napoli.
- al-Bīrūnī (1934) *Kitāb al-taḥfīm* (ed. R. Ramsay Wright). London.
- Boll, Franz J. (1903) *Sphaera*. Leipzig. [Repr. Hildesheim 1967].
- Brockelmann, Carl (1937-49²) *Geschichte der arabischen Litteratur*, I-II, and Suppl. I-III. Leiden.
- Brünnow, Rudolf, A. Fischer (1948³) *Arabische Chrestomathie aus Prosaschriftstellern*. Leipzig.
- Burnett, Charles, D. Pingree eds. (1997) *The Liber Aristotilis of Hugo of Santalla*. London.
- CCAG (1898-1936) = *Catalogus Codicum Astrologorum Graecorum*, 12 vols. Bruxelles.
- Hartner, Willy (1960) Tycho Brahe et Albumasar. La question de l'autorité scientifique au début de la recherche libre en astronomie, in *La science au seizième siècle*, 496-507. Paris. [Repr. in W. Hartner, *Oriens-Occidens*, Hildesheim 1968 (item 24)].
- Hilder, Gisela (1972) Abu Ma'shars "Introductorium in astronomiam" und der altfranzösische "Roman de la Rose". *Zeitschrift für romanische Philologie* 88, 13-33. Tübingen.
- Ibn al-Šalāḥ (1975) *Zur Kritik der Koordinatenüberlieferung im Sternkatalog des Almagest* (hrsg. Paul Kunitzsch) (Abhandlungen d. Akademie d. Wissenschaften in Göttingen, Phil.-hist. Kl., III, 94). Göttingen.
- Khan, Mohd. A.R. (1953) Names of thirteen Muslim astronomers given to some natural features of the Moon. *Islamic Culture* 27, 78-85. Hyderabad.
- Knobloch, Eberhard (1990) Christoph Clavius. Ein Namen- und Schriftenverzeichnis zu seinen *Opera mathematica*. *Bollettino di Storia delle Scienze Matematiche* 10, 135-89. Firenze.
- Kunitzsch, Paul (1966) *Untersuchungen zur Sternnomenklatur der Araber*. Wiesbaden.
- (1970) Das Abū Ma'shar-Zitat im *Rosenroman*, *Romanische Forschungen* 82, 102-11. Frankfurt am Main.
- (1974) *Der Almagest. Die Syntaxis Mathematica des Claudius Ptolemäus in arabisch-lateinischer Überlieferung*. Wiesbaden.
- (1983) *Über eine anwā'-Tradition mit bisher unbekannten Sternnamen* (Sitzungsberichte Bayer. Akademie d. Wissenschaften, Phil.-hist. Kl., 5). München.
- (1996) Review of the edition of Abū Ma'shar's «Small Introduction» by C. Burnett, K. Yamamoto and M. Yano, *Sudhoffs Archiv* 80, 118. Stuttgart.
- ed. (2001) *Liber de stellis beibeniis*, in Gerrit Bos et al. (eds.), *Hermetis Trismegisti astrologica et divinatoria* (Corpus Christianorum Continuatio Mediaevalis 144 C – Hermes latinus IV.4), 9-107. Turnhout.
- Lelli, Fabrizio ed. (2001) *Sefer Hermes*, in Gerrit Bos et al. (eds.), *Hermetis Trismegisti astrologica et divinatoria* (Corpus Christianorum Continuatio Mediaevalis 144 C – Hermes latinus IV.4), 109-37. Turnhout.
- Lemay, Richard (1962) *Abu Ma'shar and Latin Aristotelianism in the Twelfth Century*. Beirut.
- Ptolemäus (1986-91) = *Claudius Ptolemäus: Der Sternkatalog der Almagest. Die arabisch-mittelalterliche Tradition* (ed. P. Kunitzsch), 3 vols. Wiesbaden.
- Sezgin, Fuat (1967-2000) *Geschichte des arabischen Schrifttums*, 12 vols. Leiden [from vol. 10 Frankfurt am Main].
- Ullmann, Manfred (1972) *Die Natur- und Geheimwissenschaften im Islam* (Handbuch der Orientalistik, I. Abt., Ergänzungsband 6, II). Leiden.
- Wright, William (1951³) *A Grammar of the Arabic Language*, 2 vols. Cambridge.