

because of appendixes 3 and 4: the solar altitudes of the table in appendix 3 are calculated for the latitude of Cordova (38;30°); the interpretation of this table in the translation (Fasc. 3, p. 186) is full of errors and absurd values, mainly because the translator is not aware of the existence of a Western *abjad* system in which several letters have different values from those in Eastern *abjad*. This table had already been edited twice, by King (1978) and by Casulleras (1996). On the other hand Cordova is explicitly mentioned in appendix 4. It seems that the authors of this publication do not realize that the four appendixes have nothing in common with the machines described in chapters 1-30 and that at least two of them derive from earlier sources: appendix 1 is attributed to Ibn al-Šaffār and appendix 2 to al-Battānī in the text; appendix 1 is identical to the description in the *Kitāb fī l-hay'a* by Qāsim b. Muṭarrif al-Qaṭṭān as established by Casulleras (1993). To this one should add that Casulleras has established that the maximum rising and setting amplitudes of the sun mentioned in the text is 30°, which corresponds to a latitude of 37;6° and could be that of Cordova. It seems clear that machine 31 and the four appendixes derive from Cordovan sources.

In the rest of the book (machines 1-30) the situation is entirely different: in machines 14, 17, 18, and 27 we find explicit references to

a length of 15 equinoctial hours for the longest day of the year and this value corresponds to a latitude of 40;41° (if we use an obliquity of the ecliptic of 24°) and of 41;17° (for an obliquity of 23;33°). This value does not correspond to Cordova but rather to Toledo and this is why I suggested that al-Murādī was living in Toledo during the period in which the city became the most important scientific centre in al-Andalus (see *Las Ciencias de los Antiguos en al-Andalus*, Madrid, 1992, pp. 249-257). This is a mere hypothesis but it seems to me more acceptable than placing the author in Cordova.

As a conclusion, I would say that this publication is an important advance in the study of an extremely interesting scientific work because it provides us with an excellent facsimile of the manuscript, an edition and a translation which make the text more accessible. It is not, however, a finished product and an accurate interpretation of the machinery described in the 29 extant chapters is still needed. I only hope that the work done by the authors will encourage other scholars to finish the task.

Julio Samsó

Charles Burnett, *Arabic into Latin in the Middle Ages. The Translators and their Intellectual*

and Social Context. Ashgate-Variorum, Farnham, Surrey, 2009. VIII + 412 pp.

Charles Burnett is today's leading expert in the history of medieval scientific and philosophical translations from Arabic into Latin (an updated list of his works can be found at <http://warburg.sas.ac.uk/institute/cburnett.htm#top#top>). His editions, in collaboration with M. Yano, and K. Yamamoto, of Arabic astrological works (Abū Ma'shar and al-Qabīṣī), together with the corresponding Latin translations and bilingual glossaries of technical terms, have become a model to be imitated and the only way through which a serious study of the medieval translation phenomenon can be undertaken. This is why the present volume will receive a warm welcome from the community of scholars interested in the subject.

Arabic into Latin in the Middle Ages is a collection of nine long papers previously published between 1990 and 2002, followed by a detailed *Addenda et Corrigenda* and indexes of manuscripts and names. The order in which the articles are printed follows the chronology of the topics dealt with, beginning towards the end of the tenth century and ending in the first half of the thirteenth. The series of nine papers closely follow the great steps in the history of the translations from Arabic into Latin and, thus, represent an analysis of crucial problems at each one of the different stages. In five of these

papers (I, V, VI, VII, VIII) the translated sources come from al-Andalus; paper III deals with Adelard of Bath, who used Andalusian sources in spite of the fact that he never came to the Iberian Peninsula, although his probable passage through Antioch raises the possibility of the introduction of sources available there. This idea is reinforced in paper IV on the existence of a connection between Antioch and Pisa, which explains the arrival in Europe of Eastern books that were unknown in al-Andalus. Paper II is concerned with the analysis of a few Arabic-Latin translations related to natural philosophy, the origin of which is not clear, made in southern Italy in the 11th c. Finally paper IX is, again, concerned with Antioch through the figure of Theodor, who became the philosopher of Emperor Frederick II.

The opening paper ("King Ptolemy and Alchandreus the Philosopher") deals with the European diffusion of the Latin texts of the "early collection" on the astrolabe and other astronomical instruments, based on Arabic sources of some kind, which seems to have been compiled in Catalonia towards the end of the 10th c. In 1931 Millàs Vallicrosa proposed that Gerbert of Aurillac (ca. 950-1003), the future Pope Sylvester II, was the main transmitter of the corpus. Burnett tends, instead, to emphasize the importance of the monasteries near Orléans (St. Benoît of Fleury and St. Mesmin of

Micy), as well as of the cathedral of Chartres, in the transmission of these texts. The collection probably reached Fleury very early, when Abbo was the abbot of the monastery (988-1004) and Constantine of Fleury was studying there. It was later transmitted to Micy, probably by Constantine himself, who was dean of St. Mesmin (988-996) and abbot of the same monastery (1011-1020). Constantine had connections with Gerbert of Aurillac and asked Ascelin of Augsburg for an explanation of the construction of the astrolabe. The result was Ascelin's *Compositio astrolabii* which Burnett edits, translates and comments in an appendix (pp. 343-358). Ascelin was, probably, the master of Bern de Prün who later became abbot of the monastery of Reichenau (ca. 978-1048) and the teacher of Hermann Contractus (1013-1054), the author of a treatise on the construction of the astrolabe as well as of other texts related to the early collection. As a consequence, Burnett establishes a possible chain of transmission from Fleury to Micy, as well as, later, to Reichenau. To this he adds that two manuscripts of the collection seem to have been copied in Chartres, the exemplar of which derives from Fleury via Micy.

With the second paper ("Physics before the *Physics*") Burnett moves to southern Italy in the 11th century through the study of the contents of two 12th century British manuscripts which contain a series of texts (*De elementis*, *De metallis*, *De*

cibis, Hippocrates's *Airs, Waters and Places* and pseudo-Galen's *De spermate*) which are Grecizing translations of Arabic texts, similar to those of Constantine the African, although they do not appear in the lists of translations made by the latter author. As a conclusion he states that, in the 11th c., there were translations from Arabic into Latin related to natural science which must have begun before the arrival of Constantine in Salerno, coming from Qayrawān, ca. 1077. In the appendix (pp. 81-109) Burnett edits and translates *De elementis*, *De metallis* and *De cibis*.

The story continues in the British Isles as well as in several places in the Mediterranean in the first half of the 12th c. with a most illuminating analysis of the mysterious figure of Adelard of Bath. (III "Adelard of Bath and the Arabs"), one of the most important translators of the period and one of the very few who never went to the Iberian Peninsula, in spite of the fact that his scientific translations show clearly that he is using Andalusian materials. He probably learnt Arabic in Syracuse and Burnett suggests a stay in Antioch (IV, pp. 2-4; V, pp. 228-229 and *Addenda*, p. 4). There are works of his written in elegant Latin and not based in Arabic sources (*De cura accipitrum*, *De eodem et diverso*, *Quaestiones naturales*, an introduction to the abacus): they are dedicated to important persons, such as William, Bishop of Syracuse, in the case of *De eodem et diverso*, and they are intended for the education

of young noblemen and the members of bishops' households. In one case (*De opere astrolapsus*) we have a work sharing the characteristics of the previous group, dedicated to Henry, the king's nephew and the future King Henry II, which is based on previous sources belonging to "the early collection" (*De utilitatibus astrolabii, Geometria incerti auctoris*), which had clearly reached the British Isles by then. A third group of works is the most interesting for our purposes, because it contains a series of translations of Arabic mathematical and astronomical works: Euclid's *Elements*, al-Khwārizmī's *Zīj*, Abū Ma'shar's short introduction to astrology, a series of astrological maxims attributed to Ptolemy, and the *Liber prestigiorum*, an incomplete translation of Thābit b. Qurra's book on the elaboration of talismans. These works are clearly intended for Adelard's students and they are written in a careless Latin and lack dedications. The Arabic sources used are Andalusian in most of the cases (al-Khwārizmī's *zīj*, in the version revised by Maslama al-Majrīṭī is a clear example) and Adelard probably obtained them from Petrus Alfonsi, an Aragonese Jew converted to Christianity in 1106, who was working in Britain in the first half of the 12th c. and was the author of a clumsy adaptation of al-Khwārizmī's *zīj* to the Christian solar calendar. Most interestingly, Burnett suggests that this group of Adelard's translations

might have been a mere Latinization of a previous translation made by Petrus Alfonsi into some kind of common language. This would therefore be an early example of the four-hand translations which became common slightly later.

The fourth paper ("Antioch as a link between Arabic and Latin culture") develops a new idea also studied in another paper published by Burnett in J.P. Hogendijk and A.I. Sabra (eds.), *The Enterprise of Science in Islam: New Perspectives*, Cambridge, Ma., 2003, pp. 23-51: the existence of a channel of transmission of science between Antioch and Pisa in the first half of the twelfth century. I have already mentioned (paper III) Burnett's hypothesis about Adelard of Bath's possible stay in Antioch where he might have found the Arabic original of the *Liber prestigiorum*. In this city, Adelard was a near contemporary of Stephen of Pisa who translated 'Alī b. 'Abbās al-Majūsī's *al-Kitāb al-Malakī* (*Regalis Dispositio*) and wrote the *Liber Mamonis*, a summary of Ptolemaic astronomy, in which he used an Arabic-Latin translation of the first four books of the *Almagest* made in Antioch by a mysterious 'Abd al-Masīḥ of Winchester and extant in a Dresden manuscript. Both the *Liber Mamonis* and the Dresden *Almagest* use a Latin alphanumerical notation and Hindu-Arabic numerals in their oriental form (see Appendix II, pp. 61-66). These Eastern numerals were also used by Abraham b. 'Ezra who

seems to be another important link in this chain of transmission: he not only compiled the *Tabule Pisane*, based on a lost *zīj* by ‘Abd al-Raḥmān al-Šūfī which, apparently, never reached the Iberian Peninsula, but he also mentions in his *Fundamenta Tabularum* a series of Eastern Arabic astronomical sources entirely unknown in al-Andalus. Appendix I contains critical editions and translations of several prefaces of Stephen’s works.

With papers V (“Magister Johannes Hispalensis et Limiensis” and Qusṭā ibn Lūqā’s *De differentia spiritus et animae*”) and VI (“John of Seville and John of Spain. A *mise au point*”) Burnett brings us back to the Iberian Peninsula and poses the problem of the identification of one or several translators called John of Seville [and Limia], John of Spain and John David of Toledo. Since the publication, in 1954, of a famous paper by Marie Thérèse d’Alverny, it has been clear that John of Seville is not the Jewish translator called Avendauth, but we still have the problem of establishing whether Johannes Hispalensis et Limiensis is also the person called Johannes Hispalensis, without any reference to Limia (Portugal). In paper V (published in 1995), Burnett does not adopt a clear position, but in paper VI (2001) he favours this identification. Johannes Hispalensis [et Limiensis] travelled into “Hispanae partes” in search of Thābit b. Qurra’s book on magical images, partially translated by Adelard of Bath in his *Liber prestigiorum*, of

which a complete translation was made by John (*De imaginibus magicis*, see the edition and translation of the preface in V, pp. 252-255): according to Burnett, this means that he came from outside the Iberian Peninsula and that he probably stayed in Seville: this contradicts the fact that several manuscripts call him “episcopus” and that the archbishop Rodrigo Jiménez de Rada mentions a certain John, bishop of Seville, who fled from Seville in 1148 when the Almohads subjugated the city. John of Seville stayed in Limia (Portugal) where he served Queen Tarasia/Teresa (r. 1112-1128) to whom he dedicated his short version of the *Secret of Secrets* (edition and translation of the preface in V, pp. 255-258). Probably before 1143 he dedicated his translation of Qusṭā b. Lūqā’s *De differentia spiritus et animae* to archbishop Raymond of Toledo (1125-1152). Although there is no evidence that he ever stayed in Toledo, it is clear that this work was known in the city and used by Dominicus Gundissalinus and Avendauth in their translation of Ibn Sīnā’s *De anima* and (outside Toledo) by Hermann of Carinthia in *De essentiis* (see V, pp. 259-267). Other works that bear the subscription “et Limiensis” or indicate that they were translated “in Limia” are al-Farghānī’s *Liber in scientia astrorum* (dated in 1135), Māshā’allāh *De rebus eclipsium* and ‘Umar b. Farrukhān’s *Liber universus*.

All the aforementioned information seems to locate the activity of the translator called Johannes Hispalensis [et Limiensis] ca. 1120-1135. He never mentions a collaborator, which implies that he was fluent in Arabic, and only on one occasion is he called “magister”. As regards Johannes Hispalensis, without any reference to Limia, Burnett establishes that he translated two important astrological works (al-Qabīṣī’s *Liber introductorius* and Abū Ma’shar’s *De magnis coniunctionibus*) as well as other less significant ones (Māshā’allāh’s *De interrogatōnibus*, Abū Ma’shar’s *Liber experimentorum* and *Flores astrologiae* and a text on the construction of the astrolabe).

Johannes Hispanus seems to be a different case and Burnett does not reach any clear conclusion regarding his identification with Johannes Hispalensis [et Limiensis]. First of all he is frequently called “magister” and, at least on one occasion, he worked together with Dominicus Gundissalinus (fl. 1162-1181) with whom most of his extant works have a certain connection. His catalogue is composed by seven works, some of which are original: they include the *Liber Algorismi*, *De differentiis tabularum* and, possibly, the *Liber Mahamelet*. They seem to have been written ca. 1145-1160 and it is possible, therefore, to consider that the two Johns are the same person who worked as a translator in an early stage of his life (ca. 1120-1135) dedicating his main

activity later (ca. 1145-1160) to the compilation of original works. He could, in that case, be identified with the Johannes Astronomicus mentioned (without dates) in the obituary of the Cathedral of Toledo. The adjective Hispanus (most unusual for somebody who lived in Spain) could be the result of copyists’ errors given the fact that some twenty manuscripts of al-Qabīṣī’s *Introductorius* replace *Hispalensis* by *Hispaniensis*. He could also be identified with the John David of Toledo to whom both Plato of Tivoli (fl. 1132-1146) and Rudolph of Bruges, a disciple of Hermann of Carinthia, dedicated books on the use of the astrolabe.

There is, however, another possibility raised by the obvious connections between Johannes Hispanus and Dominicus Gundissalinus: he could have been the Johannes who replaced Gundissalinus as archdeacon of Cuéllar in 1193 and died in 1215. In that case, for chronological reasons, he could not be the same Johannes Hispalensis et Limiensis.

Paper VII (“The Coherence of the Arabic-Latin Translation Program in Toledo in the Twelfth Century”) takes us to Toledo which becomes the main centre of translation from ca. 1150, although we have the earlier (ca. 1130) dedication of John of Seville’s translation of *De differentia* to Archbishop Raymond. Burnett underlines the connections of several translators (Gerard of Cremona, Gundissalinus, Mark of

Toledo and Michael Scott) with the Cathedral of which they became canons or where they had other kinds of jobs. This was probably the way in which the archbishops exerted their patronage of translations. In fact such a connection with the church seems to be a constant in the history of Spanish translations from the late 10th c. onwards, when we see Lupitus Barchinonensis/ Seniofredus as archdeacon of the Cathedral of Barcelona; during the first half of the 12th c. Hugh of Sanctalla worked for Michael, bishop of Tarazona, and I have always wondered whether the other translators working in the Ebro valley (Hermann of Carinthia, Robert of Ketton) also had some kind of connection with the same bishop. In Toledo, the relation to the Cathedral remained until the second half of the 13th c. in which we have the beginning of royal patronage with Alfonso X.

Burnett analyses the Toledan program of translations in relation to the works of Gerard of Cremona, clearly documented in the *Commemoratio librorum*, which contains a list of 71 works translated by Gerard and compiled by his *socii*; in Appendix I (pp. 273-287) Burnett gives a critical edition and annotated translation of this list, together with the *Vita* and the *Eulogium*. It seems clear that this program was determined by the requirements of the new European universities and Burnett shows that Gerard's choice of the works to be

translated is probably the result of his following al-Fārābī's *Classification of the Sciences* (translated by Gerard) and that it comprises a selection of works related to three of the seven liberal arts (Dialectics, Geometry, Astronomy) to which he adds Natural Philosophy and Medicine. One of the apparent anomalies of the list is that it lacks references to Astrology, in spite of the fact that it contains translations of works on other kinds of divination. This can be justified by the existence of an important corpus of astrological translations made by John of Seville and by the fact that, according to Richard Lemay and Burnett himself, Gerard probably revised John's translations of Abū Ma'shar's *Great Introduction* and *Great Conjunctions*. It is also interesting to see, mainly in relation to the transmission of Aristotle, that Gerard is particularly concerned with Greek works and their Arabic commentaries, which suggest a different point of view from that of Dominicus Gundissalinus who translates the works of Ibn Sīnā and seems to be attracted by the mixture of Aristotelian and Neoplatonic elements in Arabic Philosophy.

With papers VIII ("Michael Scott and the transmission of scientific culture") and IX ("Master Theodor, Frederick II's philosopher") we again move to a different location, in the 13th c.: that of the Sicily of Frederick II Hohenstaufen (1194-1250) in which we find two important characters who represent two different kinds of input. On the

one side we have the figure of Michael Scott, who represents the connection between Toledo and Sicily. He probably arrived in Toledo ca. 1200 and became the successor to Gundissalinus, Gerard of Cremona and John of Seville, completing his translation of al-Bīṭrījī's *De motibus caelorum* in 1217 and Aristotle's *De animalibus* in 1220. We know that, in 1215, he accompanied Archbishop Rodrigo Jiménez de Rada to Rome for the 4th Lateran Council but he probably returned to Toledo. In 1220 he moved definitively to Italy where he stayed in Rome, Bologna and Pisa and, finally, became the astrologer of Frederick II in Palermo. In this second stage of his life he wrote original works: the *Liber quatuor distinctionum* and the *Liber particularis* (probably written in Palermo). Both books present many parallels with the works of Bartholomew of Parma which raises the question of the intervention of this latter author in the final recension of these works. In any case it is clear that the sources used by Michael Scott for the compilation of his original books are Toledan translations. In an appendix (pp. 121-126) Burnett edits a series of quotations from the third *distinctio* of the *Liber quatuor distinctionum* with identification of its sources.

In the last paper (IX) of the book Burnett studies the figure of Theodor, the Emperor's philosopher, identified with Theodor of Antioch, a Jacobite Christian, who

represents the introduction in Sicily of new Eastern Arabic scientific materials. The Syriac bishop Barhebraeus gives information on his life in his *Mukhtaṣar ta'rīkh al-duwal*: Theodor was the disciple of Kamāl al-Dīn ibn Yūnus in Mosul and, later, studied Medicine in Baghdad. He lived in Armenia and, at least from 1238 onwards he was in Sicily in the service of Frederick II. Burnett remarks that Sicily was a centre in which works of Aristotle, Ibn Sīnā and Ibn Rushd were being translated from Arabic into Latin and Hebrew. Theodor had an active part in this program and translated the *Moamin*, a book on falconry, and, probably, another book on the same subject entitled *Ghatrif*, as well as the *Proemium* of Ibn Rushd's long commentary on Aristotle's *Physics*. In two appendixes (pp. 255-285) Burnett reproduces passages related to Theodor in edited Latin and Arabic sources and edits and translates his letters to Pier della Vigna, a letter of regimen for Frederick II, and the short and long prologues to the *Moamin*.

Julio Samsó

Julio Samsó, *Astronomy and Astrology in al-Andalus and the Maghrib*. Variorum Collected Studies Series CS887. Aldershot &c.: Variorum, 2007. XIV + 366 pp.

This collection of papers by Julio Samsó is a sequel to the volume