The Tanbîh al-anām ʿalā mā yaḥduthu fī ayyām al-ʿām (Warning to humanity about what happens during the days of the year) by ʿAbdu l-Raḥmān al-Jādirī (777/1375–818/1416)\(^1\)

EMILIA CALVO
University of Barcelona
ecalvo@ub.edu
ORCID: 0000-0002-7536-762X

MONTSE DÍAZ-FAJARDO
University of Barcelona
mdiazfajardo@ub.edu
ORCID: 0000-0002-4732-5924

Abstract: The article studies, translates, and edits a calendar entitled Tanbîh al-anām ʿalā mā yaḥduthu fī ayyām al-ʿām (Warning to humanity about what happens during the days of the year), written by al-Jādirī (777/1375-ca. 818/1416). The author is a well-known muwaqqit who worked in Fes. The book was written at the request of an unknown scholar who asked al-Jādirī to adapt to the latitude of Fes a calendar written by the mathematician and astronomer Ibn al-Bannāʾ (654/1256–721/1321) for the latitude of Marrakesh. Al-Jādirī calls this calendar Taqyīd ʿī l-shuhūr al-ʿajamīya wa-mā yaḥduthu fī-hā. Even though there is no known reference to this Taqyīd in the bibliography about Ibn al-Bannāʾ, al-Jādirī’s Tanbîh most closely resembles his Risāla ʿī l-anwāʾ. This latter work was strongly influenced by the well-known Kitāb al-anwāʾ written by ʿArīb b. Saʿīd (d. 370/980–981). Al-Jādirī knew ʿArīb’s work and probably employed it in order to complete the calendar written by Ibn al-Bannāʾ, to which he added materials borrowed from other sources. This represents thus a revival of the Andalusi tradition of calendars and treatises about Arabic folk astronomy in the early 9th/15th century.

Keywords: astronomy, calendars, tanbîh, mīqāt, Maghrib, al-Andalus.

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1. This article has been written within the research project Aspectos sociales en fuentes astroológicas árabes medievales: herencias y discontinuidades respecto a la tradición griega / Social aspects in medieval Arabic astrological sources: their legacy and discontinuity in the Greek tradition, PID2021-126415NB-I00, MCIN /AEI /10.13039/501100011033/FEDER.UE. We want to thank the referees of this paper for their invaluable contributions.

Paraules clau: astronomia, calendaris, Tanbīh, mīqāt, Magrib, al-Andalus.

1. Introducció

Abū Zayd ‘Abd al-Raḥmān ibn Muḥammad al-Jādirī was born in Meknes in 777/1375 and died in Fes, probably in 818/1416. He was a muwaqqit of the al-Qarawīyīn mosque and wrote astronomical works, as well as treatises on religion and the Arabic language. Among his works, he is the author of a calendar entitled Tanbīh al-anām ‘ala mā yahduthu fī ayyām al-‘ām, which could be translated as Warning to humanity about what happens during the days of the year. The work was written on 801/1399.2 According to the author, the Tanbīh is an adaptation to

2. According to D. Lamrabet, Introduction, 204, there is only one manuscript of al-Jādirī’s Tanbīh, no. D2023 of the Bibliothèque Nationale du Royaume du Maroc (BNRM). However, a partial copy of this calendar is preserved in Ms 80 of the Zāwiya Ḥamzawiyya, ff. 174–184; see Alkuwaiﬁ and Rius, «Descripción del MS. 80», 455–456. This manuscript is incomplete since the part corresponding to the period between the end of February and mid-June (almost ﬁve months, which represents almost half of the calendar) is missing. Based on this manuscript, Amal Boujenna prepared a working edition of the calendar for her DEA («Diploma of Advanced Studies», Department of Arabic and Islamic Studies, University of Barcelona). Some of the data furnished by this edition were studied by J. Sam-só, in «Lunar Mansions and Timekeeping». Even though we lack a full list of the extant manuscripts of the Tanbīh, there are at least two others: National Library of Tunis no. 3617 (available online at http://192.168.3.10:81/Manuscrits/Man.pdf/03617.pdf); al-Qāsimiyya University of Sharja, Islamic Manuscripts House, majmū’ 374, Id 20190659. Our edition is based on MS D2023 (Morocco) and MS
The latitude of Fes of the calendar written by Ibn al-Bannāʾ for the latitude of Marrakesh. Therefore, it follows the usual pattern of Andalusi calendars: a brief introduction followed by the monthly calendar in which the author provides information on the characteristics of each month, as well as astronomical and meteorological data, agricultural and zoological information, medical data and dietary advice. As we will see, al-Jādirī is one link in a chain of treatises that goes back to 10th-century Cordoba. The Tanbīh provides helpful insights into the dissemination of scientific knowledge and the role that popular astronomy played in the societies of Western Islam, especially from the 13th century onwards.

2. The development of calendars in the Andalusi tradition

2.1 Calendars and kutub al-anwāʾ in Arabic culture

After the rise of Islam, the Indian concept of the lunar zodiac was combined with native Arabic meteorological folklore on the so-called anwāʾ stars to compose a formal system of «lunar stations or mansions» (manāzil al-qamar). These stations constituted an extended zodiac along the ecliptic, defined in this case by the moon rather than the sun. From the medieval Islamic perspective, there were twenty-eight lunar stations distributed in the zodiacal constellations. Although each station was identified with specific stars, for convenience, each station represented 12° 51′ of the arc, much like each zodiacal sign extended 30° along the ecliptic. The anwāʾ system is a kind of rudimentary solar calendar. The heliacal ascent of one of these stars, or asterisms, coincides with the acronychal setting of another. Between the coincidence of sunrise and sunset with one pair of asterisms and the next, there is a period of thirteen days, and, taking into account that there will be twenty-eight coincidences,

3617 (Tunis). Manuscript 3617 contains a colophon stating that, on the one hand, the copyist wrote the text on Thursday 1st Dhu l-Qaʻda 1137 (Thursday, 12th July 1725), and on the other, that the text was copied from a manuscript written by al-Jādirī on mid-Jumada II 801 (February 1399). MS 80 Zāwiya Ḥamzawiyya reproduces partially this colophon and seems to be a manuscript derived from MS 3617 (Tunis). MS D2023 lacks the colophon and differs somewhat from MS 3617 and MS 80. The text of the edition has been checked against MS 80 (hereinafter, MSZ). Unfortunately, we have been unable to consult the manuscript of al-Qāsimiyya University. However, the two manuscripts employed here provide enough basis for editing and studying the Tanbīh.

the solar year can be divided by twenty-seven periods of thirteen days, and one of fourteen, to reach the total amount of the 365 days of the solar year:

\[ 27 \cdot 13 + 14 = 365 \]

The *anwāʾ* system generated a very rich literature of popular and oral tradition including sayings and proverbs in rhyming prose on the stars, the rains, the cycles of grazing, etc. The genre of *anwāʾ* books was created mainly by the great philologists from the 3rd/8th century onwards, who devoted themselves to collecting the lexicographical and literary materials associated with this astrometeorological tradition in monographic treatises, with the titles of *kutub al-anwāʾ* and *kutub al-azmina*. As well as these authors, there was a second generation who unified the two genres and produced general treatises. Two of these authors were Ibn Qutayba (213–828/276–889) and Abū Hanīfa al-Dīnawarī (d. 282/895–6), who wrote the two most important books on *anwāʾ* from a historical point of view. In the classical tradition of the Greco-Roman world, there is a long tradition of calendars and *parapegma* (calendars organised around the annual cycle of visibility of certain stars) which was known and adapted in the Arab world. This second type of *anwāʾ* books includes one by Sinān ibn Thābit (d. 331/943), who translated Ptolemy’s work on *parapegma* entitled *Phāseis*. Within this group of works, there are almanacs that, besides the cycles of the stars, contain various materials of a meteorological, medical, agronomical and administrative nature. One example is the *Kitāb al-azmina* of Ibn Māsawayh (d. 243/857), particularly interested in health, which became Arabised by taking the *anwāʾ* system from the Arab tradition.

2.2 Kutub al-anwāʾ and Andalusi calendars

"Abd al-Malik b. Habīb’s (d.238/852)5 «Treatise on the stars» (*Risāla fī l-nujūm*)6 asserts that al-Andalus had known the Arabic astrometeorological tradition from

5. See on him M. Fierro, HATA, Corán, Id 7, Hadiz, Id 6, Fiqh, Id 27, Mística, Id 3, Historia, Id 7, Poesía, Id 26, Adab, Id 5, Medicina, Id 2, Astronomía, Id 3, Filosofía, Id 2, Otros, Id 6; see moreover D. Serrano Niza, «Ibn Ḥabīb».
6. P. Kunitzsch has edited, translated into English and studied this text; cf. P. Kunitzsch, «'Abd al-Malik b. Habib's Book on the Stars». On the book and its context, see also M.G. Baltý-Guesdon,
earlier times, as well as its relationship with the classical tradition. This work describes the lawful use of astronomical material of popular origin and is opposed to astrology, which the author condemns. In this sense, there is some parallelism with al-Jādirī’s calendar. ‘Abd al-Malik b. Habīb’s work has little to do with the *kutub al-anwāʾ* and the almanacs produced in al-Andalus, the tradition of which begins in the middle of the 4th/10th century with the *Kitāb al-anwāʾ* written by ‘Arīb b. Saʾīd (d. 370/980–981).

‘Arīb’s treatise circulated widely and there are three main versions.7 The most famous of these is a treatise that its editors entitled *Calendar of Cordoba*. It is attributed to ‘Arīb b. Saʾīd in a Judeoarabic manuscript.8 The *Calendar* is a reduced version of ‘Arīb’s treatise, to which, basically, a list of saints from Spain9 has been added while elements of popular tradition and Arabic literature have been removed. In turn, a similar Arabic text has been the subject of two Latin translations: one, by an unknown translator, is entitled *Liber Regius*,10 while the other is attributed to the well-known translator Gerard of Cremona.11 According to Gerard’s Latin translation, the book can be jointly attributed to ‘Arīb b. Saʾīd and Rabī’ b. Zayd. The version that seems closer to the original text appears in the manuscript no. 2049 of the Millī Malik Library in Tehran, which is attributed to a certain «Kātib al-Andalusī», who is most probably ‘Arīb b. Saʾīd; this text is summarised in MS no. 2918 of the Baladiyya Library in Alexandria.12 A third version is contained in MS 6699 of Hasaniyya library in Rabat.13 It is an anonymous treatise entitled *Risāla fī awqāt al-sana*.

Around the same time, there are two sources of the same kind: the first is the *Kitāb al-anwāʾ* by Ahmad b. Fāris, including astrological content that shows some influence from ‘Arīb b. Saʾīd’s *Kitāb al-anwāʾ*;14 the second is the *Kitāb al-anwāʾ* Médecins et hommes de science, 135–139 and M. Forcada, «Astronomy, Astrology», 48–57.

7. For a general approach to this work, see M. Forcada, «Calendar of Cordoba».
9. Most of them are from Cordoba.
10. Edited and studied by J. Martínez Gázquez and J. Samsó, «Una nueva traducción latina».
12. Both manuscripts have been edited, studied and translated into Spanish by A. Alkuwaifi, *El Kitāb al-anwāʾ del Kātib ‘Arīb ibn Saʾīd*; see also M. Forcada, «Kitāb al-anwāʾ» of ‘Arīb b. Saʾīd».
14. Edited and studied by M. Forcada, «Astrology and Folk Astronomy».
wa-l-azmina by Ibn ʿĀsim al-Ghurbālī (d. 403/1013), which is a book of anwāʾ in the Arabic tradition, based on the works of Ibn Qutayba and Abū Ḥanīfa al-Dīnawarī, to which certain materials appearing in ʿArīb b. Saʿīd’s Kitāb al-anwāʾ are added. The work is a faithful reflection of the oriental anwāʾ books introduced into al-Andalus but also an indication of the importance assumed by the local tradition.

Two centuries later, the al-Mustawʾīb al-kāfī of Ibn Khalaf al-Umawī al-Qurtubī (d. 602/1206) was written, taking Ibn ʿĀsim’s book as a basis, to which mīqāt material has been added. Moreover, he took from ʿArīb b. Saʿīd’s treatise some astronomical data that Ibn ʿĀsim does not mention, such as the length of the day, the altitude of the sun, the date of the equinoxes and solstices, etc.

Finally, we find the Risāla fī-l-anwāʾ of Ibn al-Bannāʾ al-Marrākushī (654/1256–721/1321), who, although born in Morocco, had Andalusi origins. His calendar is based, the author tells us, on the works of anwāʾ of ʿArīb b. Saʿīd, Ibn ʿĀsim and al-Umawī al-Qurtubī, in addition to an unspecified Kitāb al-Filāha, and the «Book of Plants» (Kitāb al-Nabāṭ) of Abū Ḥanīfa al-Dīnawarī. Ibn al-Bannāʾ gives some astronomical data, taken from ʿArīb b. Saʿīd, such as sunrise and sunset hours, lunar mansions and anwāʾ duration. He also copies day and night duration values that are calculated for the latitude of Cordoba, approximately, and, therefore, not applicable to Marrakech. From Ibn ʿĀsim, he takes certain meteorological data and, finally, he borrows from Ibn ʿĀsim some passages from The Nabataean Agriculture. Moreover, he copied from al-Umawī al-Qurtubī the calculations of the shadows to determine the times of the prayer. Some decades later, the astronomer and muwaqqit al-Jādirī wrote his Tanbīḥ al-anām on the basis of Ibn al-Bannāʾ’s works.


16. Edited by Y. Samadī. On the author and his works, see Fierro, HATA, Corán, Id 915, Fiqh, Id 930, Mística, Id 476, Poesía, Id 1201, Adab, Id 502, Astronomía, Id 110, Otros, Id 542; on al-Mustawʾīb al-kāfī, see R. Puig, «Le Kitāb al-mustawʾīb al-kāfī».

17. Edited, translated into French and studied by H.P.J. Renaud, Le calendrier d’Ibn al-Bannāʾ; see also M. Forcada, «Les sources». 
3. Al-Jādirī and the *Tanbīh al-anām* ‘alā mā yaḥduthu fī ayyām al-ʿām

3.1 The author

Abū Zayd ‘Abd al-Raḥmān Muḥammad b. Abī Ghālib al-Jādirī al-Muwaqqit was born in Meknes in 777/1375 and died in Fes, probably in 818/1416. He was a *muwaqqit* of the *al-Qarawiyyīn* Mosque. We know that he wrote other works of an astronomical nature, as well as treatises on religion and language, including:

- *Rawḍat al-azhār fi ʿilm al-layl wa-l-nahār*: a treatise on the measurement of time and *miqāt* containing 26 chapters and 335 verses, compiled in 793/1391.
- *Iqtiṭāf al-anwār min rawḍat al-azhār*, a commentary on the *Rawḍa*.
- *Mukhtaṣar al-iqtitāf*, a summary of the *Rawḍa*.
- *Sharḥ* (Commentary) from the *Urjūza* of Abū Miqra’, presumably a commentary of the famous *urjūza* on the calendar and the determination of time written by this important *muwaqqit* of his time.
- *Kitāb al-Jadwal*, a treatise on the use of astronomical instruments containing 42 chapters.
- *al-Nāfiʿ fī aṣl ḥarf nāfiʿ*: a commentary on the Koran.
- *al-Mudḥakkar wa-l-muʿannath*: a grammatical work.

3.2 The *Tanbīh al-anām*

This study is based in the text of the treatise contained in two manuscripts: MS D2023 of the BNRM and MS 3617 of the BNT. In the following we give the codicological description of the two manuscripts.

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20. It is known that Abū Miqra’ was active in 730/1330.
3.2.1 Codicological description of MS D2023 of the BNRM

The copy of the treatise is found on pages 512 to 528 of the manuscript. The numbering is modern Western, in pencil, inscribed in the upper corner alternately on the right and left. There are catchwords, in the same hand as the text, in the left corner of the bottom margin of each verso leaf to indicate the word with which the next page begins. There are 22 lines per page. The writing is large and clear Maghribi style and it seems to be written by the same hand. The ink used is black except for some parts written in red ink: the titles of the months, the numbering in abjad (that is to say, in alphanumeric notation), two brief quotations from poems of Abū Nuwās in March (about spring) and in September and the word faṣl which serves to introduce a section at the end of each month. In addition, the place of the title of the book is indicated in blue ink on the left margin on the second page. After the basmala, we find the name of the author as Abū Zayd ʻAbd al-Raḥmān ibn Muḥammad al-Jādirī who is described as shaykh (master) and faqīh (expert in religious law):

Incipit (512):

الحمد لله水稻 الاقير والمؤلم للليل في النهار وصلن الله على سيدنا محمد المختار وآله
وجمله (....)[21] ...

(Al-ḥamdu li-Llāhi mudīru al-falak al-dawwāri wa-mūliju al-layli  wa-
ṣallā Allahu ʻalā sayyidinā Muḥammadin al-mukhtāri wa-ālihi wa-aṣḥābihi (...) al-
akhyāri mā najama ft l-ufuq najmun aw ghaba aw ʻāra wa-afṣaḥa al-ṭayru wa-aw-
raqat al-ashjāru)

Glory be to God, he who moves the rotating sphere, he who brings night into day, God bless our lord Muḥammad, his chosen prophet, his family and his selected companions (...), as long as a star rises in the horizon and then disappears or wanders, the birds chirp and the trees put on leaves.

Title:

تنبيه الأئمة على ما يحدث في أيام العام:
Tanbīhu al-anāmi ʻalā mā yaḥduthu ft ayyāmi al-ʻāmi.
Warning to humanity about what happens in the days of the year.

21. Word that may be read as ما لم يثبت المثبت or المثبت المثبت. Since the first alif bears a waṣla or a madda, it might be an abbreviation.
The Tanbīh al-anām ‘alā mā yaḥduthu fī ayyām al-῾ām

Explicit (528):

ونهذا في آخر ما قسننا ذكره وهو جهد المقل المجتهد ولا تجود يد إلا ما تجد والحمد لله رب العالمين وصلى الله على سيدنا محمد خاتم النبين وإمام المرسلاين انتهت.


This is the last thing we wanted to mention. It is the great effort of one who does not have much property, because a hand only gives what finds. Praised be God, lord of the worlds. God bless our lord Muḥammad, the last prophet and imam of the envoys. The end.

The content of the treatise is structured into a brief introduction and 12 chapters, which correspond to the 12 months of the Julian calendar, from January to December, adopting the non-Arabic terminology of the month as the title of the chapter. To represent the numbers, he uses the abjad system or the Hindu figures indiscriminately. Digits are always used to introduce the day of the month and, also, for the value of the uss. In contrast, he systematically uses the abjad system to give the degrees of the signs. However, he uses both at the same time to give the value of the day arc or the value of the altitude of the sun at noon, or the value in feet of this altitude, since he usually uses the abjad system for the integer part and Hindu numbers for the fractional value. The hour value appears sometimes in abjad and sometimes in numbers. We must also say that, as expected, the copyist usually uses the Maghribi variant of the abjad system in which, for example, to represent the value of 60, he uses the letter sād instead of the sīn. The text of the treatise presents five corrections in the margin, one in the month of March, another in May, another in June, another on August 15th, the last on September 27th. All of them are a misspelled word corrected in the margin except in one of the cases, when the copyist forgot a preposition that he adds in the margin.

3.2.2 Codicological description of Ms. 3617 of the BNT

The copy of the treatise is found in folios 1r to 8r of the manuscript. The numbering is in modern Western notation, written in pencil and inscribed in the centre at the top of the page. There are catchwords in the same hand as the text, in the left corner
of the bottom margin of each verso to indicate the word with which the next page begins. There are 25 lines per page. The writing is large and clear Maghribi style and it seems written by the same hand. The ink used is black except for some parts written in red ink: the incipit giving the name of the author, the word *sammaytuhu* («I called it») introducing the title of the treatise, the titles of the months, the numbers usually written in *abjad* for the numerical values given, almost all the conjunctions *wa* (and) introducing the items given for every day mentioned each month, and the word *fasl* (section) which serves to introduce a section at the end of each month. There are three annotations in the margins from the same hand aiming at correcting some words in the text in fols. 4r, 4v and 6v. After the *basmala* we find the name of the author as Abū Zayd ʿAbd al-Raḥmān ibn Muḥammad al-Jādirī.

**Incipit (1r):**

الحمد لله مُدير الفلك الدَوَار ومُولِج الليل في النهار وصول الله على سيَّدنا محمد نبيه المختار وآله وأصحابه الأخيّار ما نجم في الأفق نجم أو عار وأفصح الطر وأورقت الأشجار.


Glory be to God, he who moves the rotating sphere, he who brings night into day, God bless our lord Muḥammad, his chosen prophet, his family and his fine companions, as long as a star rises in the horizon or wanders, the birds chirp, and the trees put on leaves.

**Title:**

تنبيه الأئمَّة على ما يحدث في أيام العام

*Tanbīh al-anām ‘alā mā yaḥduthu fī ayyām al-ʿām.*

Warning to humanity about what happens in the days of the year.

**Explicit (7v-8r):**

وهذا آخر ما قدمنا ذكره وهو جهد العلل المتجه ولا تجود يد إلا ما تجد والحمد لله رب العالمين

وصلى الله على سيَّدنا محمد خاتم النبيين وله وسلم كثيراً.

*(Wa-hadhā ākhiru mā qaṣadnā dhikrahu wa-huwa juhdu al-ʿilali al-mujtahīdu wa-la tajādu yadun ilā bi-mā tajid wa-l-hamd li-Llāhī rabbī al-ʿalāmin wa-salla Allāhu ʿalā sayyidinā Muḥammadin khāṭamī al-nabiyyīn wa-ālihi wa-sallama kāthīrān)*

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And this is the last thing we intended to mention, which is the painstaking effort put forth [to find] the causes, and no hand is generous except with what it finds. Praise be to God, Lord of the worlds. May God bless our lord Muḥammad, the Seal of the Prophets, and his family and peace in abundance.

3.2.3 General characteristics

The only information the author gives in the introduction is that one of his professors, whom he defines as a «jurist, learned and judicious», shared with him a brief treatise (taqyīd) attributed to Ibn al-Bannāʾ, who is described as a Sunni imam. He also says that, in that treatise, the non-Arabic months are reported and, also, what happens in them with respect to the coming of the seasons, the increase and decrease in the length of the day and the meridian shadow measured in feet. He also tells us that Ibn al-Bannāʾ had composed it for the city of Marrakech but that his teacher
asked him to adapt it to the latitude of Fes and that this is his reason for writing this treatise. The author does not specify the value of the latitude that he attributes to the city of Fes but it can be inferred from the data he offers, namely the information on the different months of the year and, especially, the value of the solar altitude at noon at the equinoxes (March 14th and September 15th). The value given is 56°;20’. Therefore, we can apply the well-known formula that equals the value of the meridian altitude to the complementary of the latitude plus (or minus) the declination:

\[ h_m = (90 - \phi) \pm \delta \]

Taking into account that, at the equinox, the declination is non-existent, we can deduce that the value ascribed by the author to the latitude of Fes will be the complement of this meridian altitude, that is to say 33°;40’. The author also says that he added what suits the inhabitants of the countryside and the city: the entry of the Sun into the lunar mansions, but specifying their positions in the months and not according to their division by zodiacal signs. He refers to the fact that he has already mentioned this information in another of his books, although he does not specify which book it is. Then, he gives the title: *Tanbîh al-anâm ʿalâ mâ yahduthu fî ayyām al-ʿām*: «Warning to humanity about what happens during the days of the year». In Arabic scientific literature, there is a genre of treatises characterised by brevity and conciseness, which includes the term *tanbîh* in the title as a common characteristic. It means literally «warning», but it could be translated as «notes» or «annotations». It presents similarities with other treaties that have in their titles the word *taqyîd* (summary, overview). 23

The text of the months follows the same tripartite structure as the calendars of ’Arîb and Ibn al-Bannā’:

1. Introduction about the general characteristics of the month. In the entry of the first day, the author gives more information of this kind.
2. Information attributed to a specific day that forms the calendar as such.
3. Information not attributed to a specific day.

The first part contains the following data:

The Tanbīh al-anām ‘alā mā yaḥduthu fī ayyām al-ʿām

• Name of the month according to non-Arabs and the number of days.
• Its zodiac sign and nature.
• The ʿuss (root, exponent or epact).
• The lunar mansion with which the Arabic month begins.
• The longitude of the sun.
• The arc of the day.
• The duration of dusk and dawn.
• The altitude of the sun at noon measured in degrees and the equivalent shadow measured in feet.
• The value that must be added to the meridian shadow (at noon) each day to obtain the altitude of the sun at the time of the ʿzuhr and ʿaṣr prayers.

The second part contains data on several topics\(^{24}\) that occur in each month. The third part is a paragraph introduced by the word faṣl (section) in which the author offers materials not assigned to a specific day\(^{25}\) As in most sources of this kind, the author gives the names of the months with the Roman nomenclature attributed to the non-Arabs (ʿajam) of al-Andalus (the Christians),\(^{26}\) and he also gives the Syriac and Coptic names.

3.3 Al-Jādirī’s calendar in the Andalusi tradition of calendars and kutub al-anwāʾ

As we have seen above, al-Jādirī says in the introduction that he adapts a «taqyīd» attributed to Ibn al-Bannāʾ, in which the latter «mentioned the non-Arabic months (al-shuhūr al-ʿajamīya) and what happens in them (wa-mā yaḥduthu fī-hā) respecting the entrance of the seasons, the waxing and waning of the day, and the feet [of a

\(^{24}\) Meteorology, agriculture, zoology, medicine, dietary advice, ephemerides, celebrations, religion.

\(^{25}\) In ʿArīb’s calendar, this section is preceded by a sentence that, in most cases, reads as mā lam yunẓam ʿalā al-jadwal wa-lam yunḍamm fī thiqāf al-ayyām. Although the translation of thiqāf is dubious (cf. R. Dozy, Supplément, s.v.), the sentence may be translated as «what is not included in neither the table nor the entries of each day». Al-Jādirī gives instead of this sentence the term faṣl for designating this miscellaneous paragraph.

\(^{26}\) Most obviously, this is an echo of the time in which ʿArīb’s K. al-Anwāʾ, when the Christians formed a substantial part of Andalusi population. During the Naṣrid dynasty, the Christians were a tiny minority.
gnomon’s shadow] at noon».  

It is doubtful that Ibn al-Bannāʾ ever wrote a treatise entitled Taqyīd al-shuhūr al-ʿajamīya wa-mā yahduthu fī-hā. The sentence seems to be more a description of contents than a title, or else a generic title that can be given to any calendar.  

Even though a more thorough study of Ibn al-Bannāʾ’s bibliography and the calendars of the Maghrib would possibly shed more light on the issue, it is indubitable that Tanbīḥ bears a strong resemblance to Ibn al-Bannāʾ’s Risāla fī l-anwāʾ. Al-Jādirī’s calendar may be conceptualised as another element of the Andalusi tradition that stems from ʿArīb’s K. al-Anwāʾ and one of the last testimonies. Through the calendar of Ibn al-Bannāʾ, the knowledge of nearly five centuries of existence is reflected and updated and, at the same time, made available to a new society. Although the author says that he is modifying a work by Ibn al-Bannāʾ, what he actually does is write another calendar. Al-Jādirī keeps the general usual structure of many works of the Andalusi tradition, including Risāla fī l-anwāʾ, but changes most of the contents. Perhaps because al-Jādirī knows that most astronomical data of Ibn al-Bannāʾ’s Risāla are borrowed from other sources, al-Jādirī gives his own data, which coincide with the place where the Tanbīḥ was conceived (Fes). Even though he reproduces most of the information of Ibn al-Bannāʾ’s Risāla, he omits some of it and gives information from ʿArīb’s K. al-Anwāʾ instead, which is explicitly mentioned in the entry of February 7th. The most salient materials borrowed from this source are the following: firstly, the usṣ of the month;  

secondly, two poems by Abū Nuwās;  

and, thirdly, several ephemerides of important figures of Islam. This subject seems to interest al-Jādirī because he borrows from several historians and religious scholars additional information on personages of Islam that does not feature in

27. Lamrabet, Introduction, 168, no. 30, abridges these words and says that Ibn al-Bannāʾ possibly wrote a treatise entitled «Taqyīd fī l-shuhūr al-ʿajamīya wa-mā yahduthu fī-hā», which al-Jādirī mentioned in his Tanbīḥ.


29. See below § 4.1.2.

30. Entries of March 15th and final section of September.

31. Dates mentioned by ʿArīb but not by Ibn al-Bannāʾ: February 7th, the Prophet was sent; March 26th, the table was sent down to Jesus; April 10th, Jesus spoke in the cradle; May 10th, Jesus returned to heaven; May 18th, John the Baptist was killed; May 25th, Muhammad passed away; June 7th, killing of ʿUthmān ibn ʿAffān and the caliphate of ʿAlī; June 19th, caliphate of ʿUmar; August 11th, Abū Bakr passed away and ʿUmar became caliph; September 24th, John the Baptist was killed; November 5th, Muʿāwiya became caliph; November 8th, ʿUmar was killed.
either Arīb’s *K. al-Anwā*’ or Ibn al-Bānā’*s *Risāla.* Al-Jādirī suppresses all magical and divinatory materials that Ibn al-Bānā’ includes in his calendar taken from ’Arīb b. Sa’īd’s *Kitāb al-Anwā*. As far as the religious context is concerned, it is worth noting that al-Jādirī’s calendar is surprising because it introduces a significant change: although it is probably based on an *anwā*’ work and uses the lunar mansions, it completely omits any reference to the *anwā*’ and their astrometeorological implications. This is the same phenomenon observed in the «Treatise on the stars» (*Risāla fi-l-nujūm*) by ’Abd al-Malik b. Ḥabīb, the oldest work of its kind written in al-Andalus, in which all the elements of the system, with the exception of the *anwā*’, are mentioned. The reason in both cases may be the same, the condemnation of the belief in *anwā*’ as the cause of the rain that appears directly in the *Muwaṭṭa*’. In the case of ’Abd al-Malik ibn Ḥabīb, the socio-religious context of his time seems to have contributed to this elimination of *anwā*’ in his treatise. Other features related to the religious background are the omission of the Jewish feasts mentioned by ’Arīb and Ibn al-Bānā’ and the scorn that al-Jādirī’s pours on Christians. Although further research is needed, it seems that the social context was decisive for al-Jādirī, who turned his back on anything that could defy religious orthodoxy.

4. Contents of the treatise

Obviously, there are many points of contact between al-Jādirī’s poem on the measurement of time on the *mīqāt*, the *Rawda* and the summary, the *Iqṭīṭāf*, on the one hand and this calendar, the *Tanbīḥ*, on the other. The most obvious difference between them is that, in the poem (and in the summaries such as the *Iqṭīṭāf*), the author describes how to calculate different parameters: longitude or declination of the sun, ascensions (right and oblique), the solar longitude and latitude, the altitude, the corresponding shadow, etc. In the calendar, though, the author offers these values for


34. On June 24th, al-Jādirī says «may God destroy them»; on September 1st, «may God confuse them!».
the latitude of Fes for different days throughout the months of the year right away, sparing the users from having to make these calculations.

The content of the calendar is composed of abundant and varied information on different aspects of daily life that we could classify under the following headings:

- Characteristics of the month.
- Astronomical and meteorological data.
- Muslim, Christian (and other) religious celebrations and ephemerides.
- Agricultural and zoological information.
- Medicine and dietary advice.

4.1 Presentation of the months

Each chapter begins with the name of the month according to non-Arab Andalusians, the equivalence in Syriac, the number of days it contains, the sign of the zodiac that corresponds to it, its nature\(^{35}\) and its \textit{epact} (\textit{al-uss}: the base, the exponent). Then, he gives the lunar mansion with which the lunar month begins. Next, the longitude of the sun, the length of the day arc, the duration of twilight and dawn, the altitude of the sun at noon in degrees and the equivalence in shadows measured in feet, the value for the shadow at noon and for evening prayer. It also gives the Arabic version of the Coptic name of the month given in ’Arīb’s calendar with a detailed explanation of its vocalisation. This information does not appear at the beginning, but at the date corresponding to the beginning of the Coptic month, which is the main difference from the previous sources.

4.1.1 Nature of the months

At the beginning of each month, and after having given its name in Syriac, the number of days and the sign of the zodiac, he describes the humour and the nature that characterises each month:

\(^{35}\) According to al-Jādirī, «nature» (\textit{ṭabī῾a}) includes two different concepts mentioned by ’Arīb’s \textit{K. al-Anwā῾}: one hand, the prevailing humour; on the other, the quality of being cold, hot, wet or dry.
January: cold and wet.
February and March: phlegm.
April: sanguine: hot and humid.
May: sanguine. He says that this month is a mixture of spring and summer: its nature is a balance between hot and dry.
June: blood.
July: bilious (yellow bile): hot and dry.
August and September: bilious (yellow bile).
October: black bile: cold and drought
November and December: black bile

4.1.2 The *uss* values

The *uss* is a numerical value assigned to each month. In the case of January, its value is one. Taking as a starting point the day of the week on which the month of January of the year in question begins, and counting from this day as much as the radical value attributed to the successive months, the day of the week with which each of the following months will begin can be determined. Al-Jādirī names these values with the word «*uss*», which can mean «exponent of a power». The list of these values is as follows:

<table>
<thead>
<tr>
<th>Month</th>
<th>Value</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>1</td>
<td>+3</td>
</tr>
<tr>
<td>February</td>
<td>4</td>
<td>+3</td>
</tr>
<tr>
<td>March</td>
<td>4</td>
<td>–</td>
</tr>
<tr>
<td>April</td>
<td>7</td>
<td>+3</td>
</tr>
<tr>
<td>May</td>
<td>2</td>
<td>+2</td>
</tr>
<tr>
<td>June</td>
<td>5</td>
<td>+3</td>
</tr>
<tr>
<td>July</td>
<td>7</td>
<td>+2</td>
</tr>
<tr>
<td>August</td>
<td>3</td>
<td>+3</td>
</tr>
<tr>
<td>September</td>
<td>6</td>
<td>+3</td>
</tr>
<tr>
<td>October</td>
<td>8 (1 in MS Z)</td>
<td>+2</td>
</tr>
<tr>
<td>November</td>
<td>4</td>
<td>+3</td>
</tr>
<tr>
<td>December</td>
<td>6</td>
<td>+2</td>
</tr>
</tbody>
</table>
This equivalence is derived from the structure of the months of the solar calendar: when the month has 31 days, the difference is 3 since it is the difference between 31 and (7 x 4); when the months have 30 days, the difference will be 2; and for February, which has 28 days, the difference is 0. The ultimate source of these values is ʿArīb’s K. al-Anwāʾ, who borrows from a mnemonic poem by the famous astronomer and astrologer al-Fazārī (fl. 2nd/8th century). These values obviously coincide with those that appear in other Andalusi calendar and similar works such as the Kitāb fī ʿilm al-awqāt bi-l-ḥisāb by Ibn al-Bannāʾ, in which we also find the value of 8 in the month of October. As Samsó mentions, Latin versions of the Calendar of Cordoba call this value epacta or regula. ʿArīb calls it āya, a term which corresponds to the term sennal that appears in an Alfonsine treatise, the Libro del astrolabio llano, in which the same procedure is explained and the values given are those of the Latin version of the Calendar of Cordoba.

4.1.3 Equivalence of the calendar with the Coptic months

The first equivalence with the Coptic calendar is introduced on January 26th. Then, the author describes the characteristics of this calendar saying that all Coptic months have 30 days except for the last month that has 35, with the exception of leap years, when it has 36. After introducing the name of each of the months, he gives a detailed description of its vocalisation, probably because, since these names are non-Arabic terms, they were unfamiliar to the users of the calendar.

<table>
<thead>
<tr>
<th>Month Entry</th>
<th>Month Name</th>
<th>Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 26th</td>
<td>Amshīr [Meshir]</td>
<td>6th</td>
</tr>
<tr>
<td>February 25th</td>
<td>Baramhān [Paremhat/Phamenoth]</td>
<td>7th</td>
</tr>
<tr>
<td>March 27th</td>
<td>Barmūda [Parmouti]</td>
<td>8th</td>
</tr>
<tr>
<td>April 26th</td>
<td>Bashans [Pashons]</td>
<td>9th</td>
</tr>
</tbody>
</table>


37. Al-Jādirī’s values are the same as the table Samsó gives from ʿArīb. It is worth noting that one manuscript gives for the month of October 1 instead of 8 but, ultimately, the two values are equivalent.
4.2 Astronomical and astrometeorological materials. Chronology and meteorology.

The astronomical section brings certain innovations compared to other works of this kind. This is also the main objective of this calendar, judging by the instructions received by the author: it was the adaptation of the astronomical materials of the calendar of Ibn al-Banna’ to the latitude of Fes. These data reflect the way of putting into practice the theory presented by the author himself in other treatises. The author’s knowledge in this area has been extensively studied previously in the *Iqtiṭāf al-Anwār*. In some cases, the data have been compared with those of ’Arīb and Ibn al-Banna’. This comparison seeks to highlight al-Jādirī’s contribution to the received tradition.

4.2.1 Entry of the sun into the signs

The values of the entry of the sun into the signs can be compared with the formulas for the equivalence of the degree of the sun and the day of the year found in the *Iqtiṭāf*, a formula which had also been used by Ibn al-Banna’.

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38. E. Calvo, «Two Treatises», 179 ff.
40. In his *Kitāb fi ’ilm al-awqāt bi-l-ḥisāb*, chapter 5; see E. Calvo, «Two Treatises», 172.
Degree of the sign = day of the month + 10 + tabulated value

When the result is more than 30, the rest belongs to the following month. By recalculating the dates according to this formula we obtain the following table in which the dates seem to correspond to the first degree of the sun in each sign.

<table>
<thead>
<tr>
<th>Date of entry</th>
<th>Sign</th>
<th>Constant</th>
<th>Recalculated values</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 14th</td>
<td>Aquarius</td>
<td>7</td>
<td>14 + 10 + 7 = 31 =&gt; Aquarius 1°</td>
</tr>
<tr>
<td>February 13th</td>
<td>Pisces</td>
<td>8</td>
<td>13 + 10 + 8 = 31 =&gt; Pisces 1°</td>
</tr>
<tr>
<td>March 15th</td>
<td>Aries</td>
<td>6</td>
<td>15 + 10 + 6 = 31 =&gt; Aries 1°</td>
</tr>
<tr>
<td>April 14th</td>
<td>Taurus</td>
<td>7</td>
<td>14 + 10 + 7 = 31 =&gt; Taurus 1°</td>
</tr>
<tr>
<td>May 15th</td>
<td>Gemini</td>
<td>6</td>
<td>15 + 10 + 6 = 31 =&gt; Gemini 1°</td>
</tr>
<tr>
<td>June 15th</td>
<td>Cancer</td>
<td>6</td>
<td>15 + 10 + 6 = 31 =&gt; Cancer 1°</td>
</tr>
<tr>
<td>July 15th</td>
<td>Leo</td>
<td>5</td>
<td>15 + 10 + 5 = 30 =&gt; Leo 0⁰⁴¹</td>
</tr>
<tr>
<td>August 16th</td>
<td>Virgo</td>
<td>5</td>
<td>16 + 10 + 5 = 31 =&gt; Virgo 1°</td>
</tr>
<tr>
<td>September 16th</td>
<td>Libra</td>
<td>4</td>
<td>16 + 10 + 4 = 30 =&gt; Libra 0⁰⁴²</td>
</tr>
<tr>
<td>October 17th</td>
<td>Scorpio</td>
<td>4</td>
<td>17 + 10 + 4 = 31 =&gt; Scorpio 1°</td>
</tr>
<tr>
<td>November 16th</td>
<td>Sagittarius</td>
<td>5</td>
<td>16 + 10 + 5 = 31 =&gt; Sagittarius 1°</td>
</tr>
<tr>
<td>December 15th</td>
<td>Capricorn</td>
<td>6</td>
<td>15 + 10 + 6 = 31 =&gt; Capricorn 1°</td>
</tr>
</tbody>
</table>

4.2.1.1 Longitude of the sun for the first day of each month

Al-Jādirī gives the value of the solar ecliptic longitude for the first day of each month. In the following table, these values are recorded together with the recalculated solar declination corresponding to each of these ecliptic longitude values.

<table>
<thead>
<tr>
<th>Month</th>
<th>Longitude (λ)</th>
<th>Recalculated declination (δ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>Capricorn 23°  (λ= 293)</td>
<td>-21° 32’</td>
</tr>
<tr>
<td>February</td>
<td>Aquarius 19°  (λ= 319)</td>
<td>-15° 09’</td>
</tr>
<tr>
<td>March</td>
<td>Pisces 17°    (λ= 347)</td>
<td>-5° 08’</td>
</tr>
<tr>
<td>April</td>
<td>Aries 13°     (λ= 13)</td>
<td>5° 08’</td>
</tr>
</tbody>
</table>

⁴¹ It should be 1°.
⁴² It should be 1°.
The Tanbīh al-anām ‘alā mā yahduthu fī ayyām al-ʿām

<table>
<thead>
<tr>
<th>Month</th>
<th>Longitude (λ)</th>
<th>Recalculated declination (δ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>Taurus 17º</td>
<td>16º 57’</td>
</tr>
<tr>
<td>June</td>
<td>Gemini 14º</td>
<td>22º 32’</td>
</tr>
<tr>
<td>July</td>
<td>Cancer 16º</td>
<td>22º 32’</td>
</tr>
<tr>
<td>August</td>
<td>Leo 16º</td>
<td>16º 04’</td>
</tr>
<tr>
<td>September</td>
<td>Virgo 16º</td>
<td>05º 32’</td>
</tr>
<tr>
<td>October</td>
<td>Libra 15º</td>
<td>-05º 55’</td>
</tr>
<tr>
<td>November</td>
<td>Scorpio 16º</td>
<td>-16º 40’</td>
</tr>
<tr>
<td>December</td>
<td>Sagittarius 17º</td>
<td>-22º 51’</td>
</tr>
</tbody>
</table>

4.2.1.2 Dates of the equinoxes and solstices

In the calendars of Ibn al-Bannāʾ and ‘Arīb and their different versions, the beginning of the seasons is determined according to several sources and methods. Even though this issue deserves further study, we can say that ‘Arīb and Ibn al-Bannāʾ follow two methods. The first is a «natural calendar» of Greek origin in which the seasons begin before the astronomical date because the effects of the seasons may be felt before the solstices and the equinoxes. ‘Arīb says that spring begins on February 15th according to ahl al-filāḥa («the farmers» or the «experts in agriculture»). Ibn al-Bannāʾ says that summer begins on May 16th according to the «physicians» (ḥukamāʾ), and autumn on August 15th, without mentioning the source. The second method is the astronomical. ‘Arīb mentions the date when the sun enters a sign according to the Sindhind and the Mumtaḥan tradition. Ibn al-Bannāʾ also mentions astronomically determined dates. In addition, ‘Arīb and Ibn al-Bannāʾ include dates borrowed from «physicians», «computists»

44. J. Samsó, «La tradición clásica», 179–182.
45. See the corresponding entries in KA.
46. See the corresponding entries in IB.
47. J. Samsó, On both Sides, 684–686; see also M. Viladrich, «The Mumtaḥan Tradition».
and «astronomers» which approximately coincide with the astronomical dates of solstices and equinoxes.  

Al-Jādirī systematizes these data according to two criteria. The first one is the natural calendar, which al-Jādirī calls «the method of the farmers» (madhhab al-fallāhīn).

The beginning of the seasons according to a natural calendar

<table>
<thead>
<tr>
<th>Season</th>
<th>al-Jādirī’s Tanbīḥ Date</th>
<th>‘Arīb’s K. al-Anwā’ Date</th>
<th>Ibn al-Bannā’s R. fi l-anwā’ Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td>February 15th (farmers)</td>
<td>February 15th (KA, farmers)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer</td>
<td>May 16th (farmers)</td>
<td>May 16th (KA, saying spring instead of summer; ḥukamā’)</td>
<td>May 16th («ḥukamā’»)</td>
</tr>
<tr>
<td>Autumn</td>
<td>August 16th (farmers)</td>
<td>–</td>
<td>August 15th (no source)</td>
</tr>
<tr>
<td>Winter</td>
<td>November 14th (farmers)</td>
<td>November 14th (CC, Hippocrates and Galen)</td>
<td>November 16th (Hippocrates and Galen)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>November 16th (KA/RAS Hippocrates and Galen)</td>
<td></td>
</tr>
</tbody>
</table>

48. For example, ‘Arīb says that spring begins on March 16th according to: madhhab al-qudamā’ min ahl al-ṭibb, wa-l-ḥisāb wa-l-ta’ādil, wa-madhhab Abuqrāṭ wa-Jālīnūs, wa-‘ulamā’ al-ṭibb qaṭibatan wa-l-falāsifa wa-l-munajjimīn min-hum. This sentence may be translated as the «method of the ancient physicians, computists and astronomers, and the method of Hippocrates and Galen and the experts in medicine in general, and of the philosophers and astrologers»; see KA on March 16th and CC/RAS on March 17th. Ibn al-Bannā’ mentions the beginning of spring according to the method of «the physicians, computists, and most astronomers» (madhhab ahl al-ṭibb wa-l-ḥisāb wa-akthar ahl al-ta’ādil), and the beginning of autumn according to Hippocrates and Galen; see IB on March 16th and September 16th.

49. This term may allude to either physicians or philosophers.

50. The entries of KA, CC, RAS and IB say «end of autumn and beginning of winter».
The second criterion is the astronomical determination of the dates. Al-Jādirī gives two sets of dates of solstices and equinoxes that are relatively accurate according to the date when the Tanbīḥ was written. On the one hand, four of them are attributed to «physicians and astronomers» (al-āṭibbāʾ wa-ahl al-ta'dīl); another two items (equinoxes of spring and autumn) are not attributed to any particular source. It is worth noting that the dates given by al-Jādirī coincide very exactly with the values of the entry of the sun into the signs analysed above (4.2.1). However, al-Jādirī’s values also coincide with some of the dates that appear in the calendars of 'Arīb and Ibn al-Bannā’.

Solstices and equinoxes according to astronomy

<table>
<thead>
<tr>
<th>al-Jādirī's Tanbīḥ</th>
<th>'Arīb’s K. al-Anwā’</th>
<th>Ibn al-Bannā’s R. fī l-anwā’</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spring Equinox</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>March 14th (no source)</td>
<td>March 16th (KA/CC/RAS, Mumtaḥan KA (also) ancient physicians, computists, astronomers, Hippocrates and Galen, experts in medicine in general, philosophers and astrologers)</td>
<td>March 13th («some authors»)</td>
</tr>
<tr>
<td>March 15th (physicians, astronomers)</td>
<td>March 17th (CC/RAS, computists, astronomers Hippocrates, Galen and other physicians) (KA, no source)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>March 20th (CC/RAS, Sinhind)</td>
<td></td>
</tr>
<tr>
<td><strong>Summer Solstice</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 15th (physicians, astronomers)</td>
<td>June 15th (RAS, no source)</td>
<td>June 15th (no source)</td>
</tr>
<tr>
<td></td>
<td>June 16th (CC, no source)</td>
<td>June 18th («method of the experts in this issue»)</td>
</tr>
<tr>
<td></td>
<td>(RAS, Mumtaḥan)</td>
<td></td>
</tr>
</tbody>
</table>

51. RAS: longest day of the year and shortest night.
52. CC: longest day of the year and shortest night.
53. CC: longest day of the year and shortest night.
## 4.2.2 Entry of the sun into the lunar mansions (*manāzil al-qamar*)

Al-Jādirī includes in each month the dates of the solar year in which the Sun enters every one of the lunar mansions without giving more information on them. In

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54. KA/CC: longest night of the year.
55. KA/CC: longest night of the year.
56. RAS: shortest day and longest night of the year.
a previous study, J. Samsó⁵⁷ reconstructed these values from the data given in the Rawda and the Tanbīh.⁵⁸ Almost all the values recalculated in that study coincide with the ones given in the manuscripts used in the present study.⁵⁹

<table>
<thead>
<tr>
<th>Order</th>
<th>Date</th>
<th>Mansion</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>January 8th</td>
<td>Sa’d al-dhābih</td>
</tr>
<tr>
<td>23</td>
<td>January 18th</td>
<td>Sa’d bula’</td>
</tr>
<tr>
<td>24</td>
<td>January 27th</td>
<td>Sa’d al-su‘ād</td>
</tr>
<tr>
<td>25</td>
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<td>Sa’d al-akhbiya</td>
</tr>
<tr>
<td>26</td>
<td>February 19th</td>
<td>al-Fargh al-muqaddam</td>
</tr>
<tr>
<td>27</td>
<td>March 8th</td>
<td>al-Fargh al-mu‘akkhar</td>
</tr>
<tr>
<td>28</td>
<td>March 24th</td>
<td>al-Rishā‘/Baṭn al-ḥūt</td>
</tr>
<tr>
<td>1</td>
<td>April 5th</td>
<td>al-Naṭḥ</td>
</tr>
<tr>
<td>2</td>
<td>April 20th</td>
<td>al-Buṭayn</td>
</tr>
<tr>
<td>3</td>
<td>May 4th</td>
<td>al-Thurayyā</td>
</tr>
<tr>
<td>4</td>
<td>May 17th</td>
<td>al-Dabarān</td>
</tr>
<tr>
<td>5</td>
<td>May 30th</td>
<td>al-Haqa‘</td>
</tr>
<tr>
<td>6</td>
<td>June 17th</td>
<td>al-Han‘a</td>
</tr>
<tr>
<td>7</td>
<td>June 30th</td>
<td>al-Dhirā‘</td>
</tr>
<tr>
<td>8</td>
<td>July 14th</td>
<td>al-Nathra</td>
</tr>
<tr>
<td>9</td>
<td>August 2nd</td>
<td>al-Tarf</td>
</tr>
<tr>
<td>10</td>
<td>August 6th</td>
<td>al-Jabha</td>
</tr>
<tr>
<td>12</td>
<td>September 3rd</td>
<td>al-Ṣarfa</td>
</tr>
<tr>
<td>13</td>
<td>September 20th</td>
<td>al-‘Awwā‘</td>
</tr>
<tr>
<td>14</td>
<td>October 1st</td>
<td>al-Simāk</td>
</tr>
<tr>
<td>15</td>
<td>October 17th</td>
<td>al-Ghafr</td>
</tr>
<tr>
<td>16</td>
<td>October 29th</td>
<td>al-Zubānā</td>
</tr>
<tr>
<td>17</td>
<td>November 10th</td>
<td>al-Iklīl</td>
</tr>
<tr>
<td>18</td>
<td>November 16th</td>
<td>al-Qalb</td>
</tr>
<tr>
<td>19</td>
<td>November 29th</td>
<td>al-Shawlah</td>
</tr>
<tr>
<td>20</td>
<td>December 10th</td>
<td>al-Na‘āim</td>
</tr>
<tr>
<td>21</td>
<td>December 23rd</td>
<td>al-Balda</td>
</tr>
</tbody>
</table>

⁵８. For this second treatise he used as his source the incomplete manuscript from the MZS, the only one available at that moment.
⁵⁹. For al-Muqaddam (26) the data proposed was February 13th and for al-Zubra (11) there is a variation in the data given in the manuscripts studied.
4.2.2.1 The mansion of the new moon (the beginning of the lunar month)

January: \( Sa'd \) al-su`ād
February: \( al-Farg \) al-muqaddam (occasionally: \( [al-Fargh] \) al-mu`akhkhar)
March: \( al-Naṭh \)
April: \( al-Thurayyā \)
May: \( al-Han'a \)
June: \( al-Dhira' \) (occasionally: \( al-Nathra \))
July: \( al-Ṭarf \)
August: \( al-Ṣarfa \)
September: \( al-Ghafr \)
October: \( al-Qalb \) (occasionally: \( al-Iklīl \))
November: \( al-Na`ā'im \)
December: \( Sa'd \) al-dhābiḥ

4.2.3 Arc and duration of day and night

Al-Jādirī gives different values for the day arc of the sun for the beginning and the middle of the month. On some occasions, he completes the data with an allusion to the fact that the night arc is the remainder up to 360° and, on one occasion (December 15th), he gives the values of the two arcs. He gives 18 values in total. In the following table, the values for the beginning of the month have been recalculated according to the longitude values given by the author for the first day of each month (4.2.1.1). The value for June 15th has been recalculated from the values of the latitude of Fes, 33;40°, and the obliquity of the ecliptic, 23;30°, adopted by al-Jādirī.

<table>
<thead>
<tr>
<th>Month</th>
<th>Day</th>
<th>Arc of the day (Recalculated)</th>
<th>Arc of the night</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan.</td>
<td>1st</td>
<td>148;12°</td>
<td>149;32°</td>
</tr>
<tr>
<td></td>
<td>14th</td>
<td>152°</td>
<td>–</td>
</tr>
<tr>
<td>Feb.</td>
<td>1st</td>
<td>159;10°</td>
<td>159;13°</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>Mar.</td>
<td>1st</td>
<td>173;06°</td>
<td>173;08°</td>
</tr>
<tr>
<td></td>
<td>15th</td>
<td>180°</td>
<td>180°</td>
</tr>
<tr>
<td>Apr.</td>
<td>1st</td>
<td>189;30°</td>
<td>186;51°</td>
</tr>
<tr>
<td>May</td>
<td>1st</td>
<td>203;30°</td>
<td>203;25°</td>
</tr>
<tr>
<td>June</td>
<td>1st</td>
<td>212;45°</td>
<td>212;04°</td>
</tr>
</tbody>
</table>
The above data is supplemented by numerous values on the duration of day and night, which refer to days other than those for which the value of the day arc was given (except September, 1st and December, 15th, for which both values are given), since knowledge of one datum implies knowledge of the other, if we take into account the equivalence 1 h = 15°. The author gives 23 values. It seems that some of the values have been rounded as well.

### 4.2.3.1 Duration of day and night

<table>
<thead>
<tr>
<th>Month</th>
<th>Day</th>
<th>Length of Day</th>
<th>–</th>
<th>Length of Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>8th</td>
<td>10 hours (150°)</td>
<td>–</td>
<td>14 hours</td>
</tr>
<tr>
<td></td>
<td>28th</td>
<td>10:30 (157:30°)</td>
<td>–</td>
<td>13:30</td>
</tr>
<tr>
<td>February</td>
<td>5th</td>
<td>10:45 (160°)</td>
<td>–</td>
<td>[13:15]</td>
</tr>
<tr>
<td></td>
<td>13th</td>
<td>11 (165°)</td>
<td>–</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>28th</td>
<td>11:30 (172:30°)</td>
<td>–</td>
<td>12:30</td>
</tr>
<tr>
<td>March</td>
<td>15th (equinox)</td>
<td>[12 (180°)]</td>
<td>–</td>
<td>[12]</td>
</tr>
<tr>
<td>April</td>
<td>1st</td>
<td>12:20 (186°)</td>
<td>–</td>
<td>[11:40]</td>
</tr>
<tr>
<td></td>
<td>28th</td>
<td>13:30 (202:30°)</td>
<td>–</td>
<td>10:30</td>
</tr>
<tr>
<td>May</td>
<td>19th</td>
<td>14 (210°)</td>
<td>–</td>
<td>10</td>
</tr>
</tbody>
</table>
### Table

<table>
<thead>
<tr>
<th>Month</th>
<th>Day</th>
<th>Length of Day</th>
<th>Length of Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>15th (solstice)</td>
<td>14:15 (213;45°)</td>
<td>9:45</td>
</tr>
<tr>
<td>July</td>
<td>10th</td>
<td>14 (210°)</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>30th</td>
<td>13;30 (202;30°)</td>
<td>10;30</td>
</tr>
<tr>
<td>August</td>
<td>16th</td>
<td>13 (195°)</td>
<td>11</td>
</tr>
<tr>
<td>September</td>
<td>1st</td>
<td>12;30 (187;30°)</td>
<td>11;30</td>
</tr>
<tr>
<td></td>
<td>15th (equinox)</td>
<td>12 (180°)</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>29th</td>
<td>11;30 (172;30°)</td>
<td>12;30</td>
</tr>
<tr>
<td>October</td>
<td>15th</td>
<td>11 (165°)</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>31th</td>
<td>10;30 (157;30°)</td>
<td>13;30</td>
</tr>
<tr>
<td>November</td>
<td>20th</td>
<td>10 (150°)</td>
<td>14</td>
</tr>
<tr>
<td>December</td>
<td>1st</td>
<td>9;48 (147°)</td>
<td>14;12</td>
</tr>
<tr>
<td></td>
<td>15th (solstice)</td>
<td>9;45 (146;25°)</td>
<td>14;15</td>
</tr>
</tbody>
</table>

### 4.2.4 Meridian altitude of the sun and the corresponding shadow

Al-Jādirī gives a great amount of data on the meridian altitude of the sun, around five values per month or once every week. This information is followed by the magnitude of the shadow cast by a gnomon. The reason he gives all these values is probably its importance in calculating the times of the zuhr and the 'aṣr prayers. But, unlike Ibn al-Bannā’s calendar, no table is given for these prayers. A general explanation of the times of these prayers is given instead in the entry for the first day of January. The formulae exposed are those that could be described as the standard ones, the ones that we find developed in al-Jādirī’s Iqtīṭāf: the zuhr prayer should be performed when the meridian shadow is increased by a quarter of the gnomon. The ‘aṣr prayer, when the meridian shadow is increased by the length of the gnomon and, finally, the end of the ‘aṣr prayer when the meridian shadow is increased twice the length of the gnomon.

The measurement of the gnomon used is given as equal to six feet and two thirds (6 2/3), which is equivalent to a qāma, «the height of a man».60 The extended shadow, as is known, corresponds to the cotangent of the meridian altitude.

---

60. See the entry of February 13th.
The following table presents the values of the meridian altitudes \( h_m \) mentioned in the text and the corresponding shadows. In some cases only the value of the shadow in feet is given, so the value of the corresponding altitude has been recalculated and, conversely, in some cases only the altitude is given. In these cases, the value of the shadow in feet has been recalculated from it.

The text gives a total of 52 values. From the recalculation of the values for the shadow it is quite clear that al-Jādirī gives always rounded values for the shadows much more convenient, probably, for the needs of his readers. For this reason, the recalculated values of the meridian altitude from the values given by al-Jādirī for the shadow may not be as accurate as they should be.

The last column gives the day of the year where the values of meridian altitude and shadow given coincide (i.e. they are symmetrical).

<table>
<thead>
<tr>
<th>Month</th>
<th>Day</th>
<th>( h_m )</th>
<th>[h_m \text{ recal.}]</th>
<th>Shadow</th>
<th>[Sh. \text{ recal.}]</th>
<th>[Equival.]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan.</td>
<td>1st</td>
<td>33:54°</td>
<td>10</td>
<td>9:55</td>
<td></td>
<td></td>
</tr>
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<td></td>
<td>8th</td>
<td>35°</td>
<td>9:30</td>
<td>9:31</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13th</td>
<td>36°</td>
<td>9</td>
<td>9:10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>21th</td>
<td>38°</td>
<td>8:30</td>
<td>8:32</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>28th</td>
<td>40°</td>
<td>8</td>
<td>7:57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Febr.</td>
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<td>41°</td>
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<td>7:40</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5th</td>
<td>42:20°</td>
<td>–</td>
<td>7:19</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8th</td>
<td>43:24°</td>
<td>7</td>
<td>7:03</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13th</td>
<td>45°</td>
<td>6:40 (qāma)</td>
<td>6:40</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>21th</td>
<td>48:06</td>
<td>6</td>
<td>5:59</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>27th</td>
<td>–</td>
<td>50:29</td>
<td>5:30</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>March</td>
<td>1st</td>
<td>[44:10°]</td>
<td>50:59</td>
<td>5:24</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6th</td>
<td>[43:10°]</td>
<td>53:08</td>
<td>5</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14th</td>
<td>56:20°</td>
<td>4:30</td>
<td>4:26</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19th</td>
<td>58:20°</td>
<td>4</td>
<td>4:06</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>28th</td>
<td>62°</td>
<td>3:30</td>
<td>3:33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April</td>
<td>1st</td>
<td>63:24°</td>
<td>3:20</td>
<td>3:20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8th</td>
<td>66°</td>
<td>3</td>
<td>2:58</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12th</td>
<td>67:30°</td>
<td>–</td>
<td>2:46</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18th</td>
<td>–</td>
<td>69:27</td>
<td>2:30</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19th</td>
<td>70°</td>
<td>–</td>
<td>2:25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Month</td>
<td>Day</td>
<td>$h^m$</td>
<td>$[h_{m \text{ recalc.}}]$</td>
<td>Shadow</td>
<td>$[\text{Sh. recalc.}]$</td>
<td>$[\text{[Equival.]}]$</td>
</tr>
<tr>
<td>----------</td>
<td>-----</td>
<td>-------</td>
<td>--------------------------</td>
<td>--------</td>
<td>-------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>May</td>
<td>1st</td>
<td>73:20°</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16th</td>
<td>77°</td>
<td>1:30</td>
<td>1:32</td>
<td></td>
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</tr>
<tr>
<td>June</td>
<td>1st</td>
<td>79:15°</td>
<td>1:15</td>
<td>1:16</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>15th</td>
<td>79:50°</td>
<td>1:12</td>
<td>1:12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July</td>
<td>1st</td>
<td>79°</td>
<td>1:20</td>
<td>1:18</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13th</td>
<td>77°</td>
<td>1:30</td>
<td>1:32</td>
<td></td>
<td>[May 16th]</td>
</tr>
<tr>
<td></td>
<td>15th</td>
<td>76:20°</td>
<td>–</td>
<td></td>
<td></td>
<td>[May 16th]</td>
</tr>
<tr>
<td></td>
<td>28th</td>
<td>73:20°</td>
<td>2</td>
<td>2</td>
<td></td>
<td>[May 1st]</td>
</tr>
<tr>
<td></td>
<td>29th</td>
<td>73°</td>
<td>–</td>
<td></td>
<td></td>
<td>2:02</td>
</tr>
<tr>
<td>Aug.</td>
<td>1st</td>
<td>72:30°</td>
<td>2:15</td>
<td>2:06</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>70°</td>
<td>–</td>
<td>2:25</td>
<td></td>
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<td></td>
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<td>–</td>
<td>69:27</td>
<td>2:30</td>
<td>–</td>
<td>[April 18th]</td>
</tr>
<tr>
<td></td>
<td>16th</td>
<td>67:30°</td>
<td>2:45</td>
<td>2:46</td>
<td></td>
<td>[April 12th]</td>
</tr>
<tr>
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<td>20th</td>
<td>66°</td>
<td>3</td>
<td>2:58</td>
<td></td>
<td>[April 8th]</td>
</tr>
<tr>
<td>Sept.</td>
<td>1st</td>
<td>62°</td>
<td>3:30</td>
<td>3:33</td>
<td></td>
<td>[March 28th]</td>
</tr>
<tr>
<td></td>
<td>10th</td>
<td>58:20°</td>
<td>4</td>
<td>4:06</td>
<td></td>
<td>[March 19th]</td>
</tr>
<tr>
<td></td>
<td>15th</td>
<td>56:20°</td>
<td>4:30</td>
<td>4:26</td>
<td></td>
<td>[March 14th]</td>
</tr>
<tr>
<td></td>
<td>23th</td>
<td>53°</td>
<td>5</td>
<td>5:01</td>
<td></td>
<td>[March 6th]</td>
</tr>
<tr>
<td>Oct.</td>
<td>1st</td>
<td>50:24°</td>
<td>5:30</td>
<td>5:31</td>
<td></td>
<td></td>
</tr>
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<td>48:06°</td>
<td>6</td>
<td>5:59</td>
<td></td>
<td>[Feb. 21th]</td>
</tr>
<tr>
<td></td>
<td>15th</td>
<td>45°</td>
<td>6:40 (qāma)</td>
<td>6:40</td>
<td></td>
<td>[Feb. 13th]</td>
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<tr>
<td></td>
<td>20th</td>
<td>43:24°</td>
<td>7</td>
<td>7:03</td>
<td></td>
<td>[Feb. 8th]</td>
</tr>
<tr>
<td></td>
<td>29th</td>
<td>40:30°</td>
<td>7:48</td>
<td>7:48</td>
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<td></td>
</tr>
<tr>
<td>Nov.</td>
<td>1st</td>
<td>39:40°</td>
<td>8</td>
<td>8:02</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10th</td>
<td>37:15°</td>
<td>8:40</td>
<td>8:46</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15th</td>
<td>36°</td>
<td>9</td>
<td>9:10</td>
<td></td>
<td>[January 13th]</td>
</tr>
<tr>
<td></td>
<td>20th</td>
<td>35°</td>
<td>9:30</td>
<td>9:31</td>
<td></td>
<td>[January 8th]</td>
</tr>
<tr>
<td></td>
<td>28th</td>
<td>33:45°</td>
<td>10</td>
<td>9:59</td>
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<tr>
<td>Dec.</td>
<td>1st</td>
<td>33:20°</td>
<td>10:06</td>
<td>10:08</td>
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<td></td>
<td>15th</td>
<td>32:50°</td>
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<td></td>
<td>22th</td>
<td>–</td>
<td>33:02°</td>
<td>10:15</td>
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</tbody>
</table>
From the value of the meridian altitude at the spring equinox of March 14th and the autumnal equinox of September 15th, where the altitude of the sun at noon is, according to the author, 56°20”, the value that the author attributes to the latitude of Fes can be determined by means of the aforementioned formula: \( h_m = (90 - \phi) + \delta \). As mentioned earlier, the value obtained is \( \phi = 33°40' \).61

In the same way, taking into account that the author considers June 15th as the day of the solstice, and that the altitude of the sun at noon given for that day is 79°50”, by using the same formula, the value of the maximum declination can be obtained:

\[
\varepsilon (\delta_{\text{max.}}) = 79°50' - 90 + 33°40' = 23°30'.
\]

In the same way, we can verify it using the value given to the solar altitude for the winter solstice, on December 15th, which is 32°50”. The maximum declination obtained from it will again be \( \varepsilon = 23°30' \). The author gives another piece of information for May 22nd and July 7th, as he says that, in Mecca, there is no shadow there at that moment. This implies that the altitude of the sun at noon is 90° and, therefore, that the declination of the Sun on that day coincides with the latitude of this city. Since he does not give the declination for these two days, we cannot determine the exact value for the latitude he ascribes to Mecca.

4.2.5 Duration of morning and evening twilight

Al-Jādirī gives values for the duration of morning and evening twilight, twice for the months of April, May, June, August and September, namely for the beginning and middle of each. He gives one value for January, July and December, while, for February, March and mid-October, he says that the value is «as mentioned» (kamā taqaddama). For the first of July the text says that it decreases about half a degree. No value is given for November and for the first of October and December.

The data are mostly given in degrees with the indication that this number must be divided by 15 in order to obtain the equivalent number of hours. On other occasions, he gives the values directly in hours and fractions of hours. The values

61. The modern value for the latitude of Fes is of 34° approximately.
vary between an hour and a half at the winter solstice and almost two hours at the summer solstice (since one hour equals $15^\circ$, it implies that each degree of arc equals 4 minutes of hour).

The recalculated values are given in square brackets.

<table>
<thead>
<tr>
<th>Date</th>
<th>Duration of morning and evening twilight</th>
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<tr>
<td></td>
<td>degrees</td>
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<tr>
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<td>[22;30°]</td>
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<tr>
<td>February 1st</td>
<td>As mentioned</td>
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<tr>
<td>March 1st</td>
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<td>April 1st</td>
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<td>April 14th</td>
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<td>May 1st</td>
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<td>May 15th</td>
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<td>June 1st</td>
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<td>June 15th</td>
<td>[27°]</td>
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<td>July 1st</td>
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<td>July 15th</td>
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<td>August 1st</td>
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<td>August 16th</td>
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<td>November 1st</td>
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<td>December 1st</td>
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<tr>
<td>December 15th</td>
<td>23°</td>
</tr>
</tbody>
</table>

4.3. Other information

Throughout the text, the author gives information related to meteorology, agronomy and zoology, as well as medical and dietary facts. Finally, he adds some Islamic and Christian (and other) religious ephemerides. As mentioned earlier, a
small part of this information is specific to al-Jādirī and although most of it can be found in earlier calendars.\footnote{62. More insights will be given in the apparatus of the translation.}

4.3.1 Meteorology\footnote{63. About the materials on weather, see M. Forcada, \textit{Ibn Ἅṣim}, 146–154 and D.M. Varisco, \textit{Medieval Agriculture}, 105–127.}

January
According to the author, this is the best time for sea navigation. This statement can be found in earlier calendars. On the 20th of this month, the dark nights come out. They are characterised by the excessive cold.

February
On the 7th, it is the month the first of the three jamarat starts, although, according to al-Jādirī, ’Arīf said that it starts on the 8th and is that of water. Between each jamra, there are seven days. Therefore, the second starts on the 14th and is that of earth, and the third is the one of wood and starts on the 21st. The heat increases and the cold decreases. The heat comes out of the ground: the camel, the horse and the bull feel it in their hoofs. On the 9th, the days called al-bulq (white and black, «variegated») begin. On the 25th, the first of the fateful days (ayyām al-ḥasūm) unfolds: there are seven nights and eight days known as «the nights of the old woman» (layal al-῾ajūz) and «the nights of the shepherd» (layal al-ra῾ī). The first of these nights is the night of the 26th. The cold intensifies during these nights while it reaches its end: it resembles the lamp when its light intensifies before going out and the patient when he improves a little before dying. Al-Jādirī offers a poem about them that appears in many sources.

March
The first day of this month is also the first day of the period known as makhnīṭsāt, which are seven weeks in which «no one dares enter the sea». By the 4th, the days of the old woman’s nights are ending and, on the 15th, which the author considers the Spring equinox, a poem by Abū Nuwās about spring is included. The author
also says that this month is called «the harmful» \( (al-dārr) \) because, in it, one should take refuge from thunderbolt.

April
On the 18th, the seven \( makhnīṭisāt \) end and, on the 27th, the Nīsān rains begin. They last for seven days. The author also says that this month is the one with the most moderate weather according to the inhabitants of all countries.

May
By the 3rd of this month the rainy days of Nīsān end and, on the 6th, the winds that carry epidemics and diseases start. On the 15th, the abundance of heat begins. This month is considered a mixture of spring and summer as its nature is a balance between hot and dry.

July
Sometimes a wind will blow in on the 4th of this month that can damage the eyes. On the 12th, the simoom begins and last 40 days, 20 in this month and 20 in the following one.

September
This month is temperate. The author gives a poem by Abū Nuwās about this month.

November
On the 22nd, the black and white days come in. They last 20 days, called black nights, and another 20 after them.

December
On the 3rd, the steam starts coming out of people’s mouths and it is cold. On the 9th, the water is getting cold and, on the 12th, the dark nights begin: they are the simoom of winter. There are twenty such nights in this month and twenty in the next one. If it rains heavily in the seven days between Christmas and \( hājūz \), it will also rain during the year. If these days are clear, the year will be dry. If it rains on the first of these days, it will rain at the beginning of the year and also in the middle and at the end.
4.3.2 Agronomic and zoological information

The author offers information each month regarding agricultural and zoological activity, explaining the plants that are cultivated in each period of the year and the animals that proliferate.

January
On the 27th, ploughing time ends. During this month, the almond trees bloom, grapefruit and sugar cane ripen, and grapefruit jam is prepared. The sap runs down the trunk of the tree. The heat is felt. The birds are calm and mate. Trunks of pomegranates and olive trees are planted. Fruits and cuttings such as apple and quince are planted. The vines are pruned. Wood that is cut this month stays in good condition for longer, but only if cut on a clear day and with a waning moon.

February
On the 6th, snakes open their eyes. The winds begin to pollinate. On the 14th, it is said that no animal stays in its burrow, but rather they are active. During this month, roses and jasmine are planted and all aromatic trees are transformed. The birds sing and the swallows and the white stork approach the towns. Marine animals are launched. Most trees are flowering. The kite and the crow have chicks, ants appear and silkworms make silk in some countries. Summer vegetables are sown, the almonds are beaten, beans grow. At the end of the month, there are roses. The cats are restless. In the following months, the parturition of female camels increases.

March
The 1st is the first day of the makhnīftsāt. They are seven weeks during which the sea is closed. The bee-eater appears. On the 15th, the fish spawn. The author includes a poem by Abū Nuwās about spring.

April
It is said that if dough is kneaded on the 27th, it rises without yeast. On this day, the substance condenses and seeding is completed. In this month, palm trees are pruned, cucumbers flourish and appear, olive trees bloom, figs pile up, crops are sown, barley is full, roses abound, and with them, water of cologne, juice, jam and ointment, also with violets. [The infusion of] fumitory is drunk. The trunks of grapefruit, jasmine and bitter orange are planted. The first grapes are piling up.
May
In this month, the wheat is threshed. Olives and grapes pile up. Honey is made from bees. Summer fruits appear. Nut, jam and apple juice are made. The linen is torn. Chamomile and other seeds are sold; with them, ointments are made. Beans and barley are harvested. Vipers are hunted to make antidotes.

June
On the 4th, women and all animals desire to have sex. On the 8th, men and all animals love the females. On the 13th, stallions are isolated from breeding mares after pregnancy. The mares remain isolated until farrowing. The duration of the pregnancy is 11 months. On the 24th, the crops harvested there are not neglected. Whoever sprinkles the figs on that day with soil, none of his fruits will fall, even if they do not pick them up. In this month there are the first grapes and figs. Nuts and watermelon stack. Blackberries are ripe. The parts of the cut branches of the planting that are one year old are cut by hand, not with iron, in this way they take root. The wheat harvest is over. Honey is extracted.

July
In this month, the hype begins. The vines and all the fruit are ripe. Partridge chicks fly and chase each other. The dates are ripe and bright. At the end of the month, the planting of winter vegetables begins for those who have water. Thyme and other herbs are harvested.

August
Experienced people affirm that the wood that is cut on day 3 or the day before does not rot. During this month, autumn beans are sown in the orchards. Blue wallflower, turnips, carrots and cabbages are planted. Acorns pile up. The logs and cuttings planted at the end of the month are growing well. The mule goes from the sea to the rivers. Sardines abound. The wood cut this month does not rot. Each crop is watered in the early afternoon so that it grows more (and in the same way the previous month) because this irrigation takes away from the crop the heat accumulated during the day. Grapefruits flower and throng at the end of the month. The sindī, i.e. the watermelon, is ripe.

September
It is said that, on the 27th day, the fruits that must be kept until winter, are harvested. In this month, sowing and ploughing begin in the cold mountains. The
nuts are collected. Henna and vegetables are cut. The salt condenses. Some olives turn black. Chestnuts and acorns appear. Fig and almond trees are planted. Pomegranate and fruit juices are made.

October
On the 2nd, the Nile recedes and the people of Egypt begin planting. On the 17th, the sowing of the land arrives since it was the beginning of Adam’s tillage. During the month the olives are collected. The sheep give birth and there is milk. Lettuce, anise, fennel and onion are planted. At the end of the month, the leaves fall from the trees, the ants take refuge in their anthills and the sea is rough, so no ship sails through it.

November
During this month, most of the planting is completed. The vines are planted and grow rapidly. The olives are planted. The oil is expelled. The leaves of the fruit trees are falling. The sugar cane is harvested. Fall beans are piling up. The turnip is planted. Acorns, chestnuts and seeds of myrtle are harvested and their juice is made. The vegetable is covered so that the ice does not damage it. Any boneless animal dies. Snakes close their eyes.

December
In this month, the early almond trees bloom. The first grapefruits are ripe. Rainwater is stored in this month and in the following one because it is not spoiled. The palm piths are ripped out, the springs sprout, pepper blooms. Pumpkin, eggplant, garlic and opium poppy are planted.

4.3.3 Medical and dietary information

January
On the 26th, drinking running water before eating preserves health. During this month, the nature of women desires offspring.

February
During this month, the blood test and the taking of medication apply.
March
On the 11th, the proverb says: «if the child is weaned on that day, he will not ask for more milk». The beginning of this month is happy because it is the winter regime while the end of the month is a mixture because there is heat and humidity. Therefore, it is time to eat moderately, as well as having moderation in housing and clothing.

April
On the 26th, the blood stirs and bleeds with the bloodletting.

June
On the 24th, it is said that no woman on the face of the earth becomes pregnant. During this month it is better to use cooling, soft foods, drinks, clothes and clothing that regulate the body and lower its degree of humidity and avoid the affliction of hunger and thirst.

July
During this month, vomiting and excessive movement should be avoided, as well as fullness of food, so it should be divided into two or three meals.

August
On the 9th, anyone who is stung by a scorpion on this day dies within an hour. During this month it is recommended to completely avoid sweets, fats and salts. In addition, cupping, sexual intercourse and exhaustion are forbidden.

September
During this month it is appropriate to eat and drink sweets but to avoid all salty foods, watermelon and beef.

October
During this month, people switch from white clothes to dyed and thick ones. The sheep give birth and there is milk. Lettuce, anise, fennel and onion are planted. At the end of the month, the leaves fall from the trees, the ants take refuge in their anthills and the sea is rough so no ship sails through it. It is better to use cool and warm food, drinks and rooms. In this month, cow meat and its derivatives are avoided and navigation and intercourse are reduced. The bath must be brief and fat and salty foods are taken.
November
At the end of the month, it is unpleasant to go to the baths for fear of catching a cold, as well as to drink water in the evening for fear of dropsy. In this month, foods, drinks and parts that moisten and heat are used, such as honey, butter, meat with bread and garlic soup, etc., as well as vegetables stew such as carrots. Rub with clove oil or something similar, take whatever scent you like. The use of vomiting and intercourse is suggested because it is said that, during this month, sex in moderation is good.

December
This month is not the time to take medicine or draw blood.

4.3.4 Ephemerides

The calendar includes some interfaith religious holidays and also some biblical and Koranic characters.

4.3.4.1 Islamic Ephemerides

January
On the 20th, ʿAlī was killed.
On the 21st, David, Joshua, Jeremiah and Shuʿayb passed away.

February
On the 7th, the Prophet was sent.

April
On the 20th, the Prophet was born. It was mentioned by al-ʿAbd al-Wādī.

May
On the 25th, the Prophet Muḥammad is said to have passed away.

June
On the 7th, the massacre of ʿUthmān ibn ʿAffān and the caliphate of ʿAlī took place.
On the 19th, the Caliphate of ʿUmar was started.

July
On the 13th, the Prophet emigrated.
On the 29th, Moses was born.
It was the destruction of al-Bayt al-Maqdīs, according to some historians.

August
On the 11th, it was the death of Abū Bakr and the caliphate of Omar, may God be pleased with them both, and it was said in June.
On the 24th, Mary passed away.
On the 26th, the revolution was Overthrown.

September
On the 24th, John, son of Zechariah was killed

October
On the 1st, God created Adam.
On the 2nd, Eve was created.
On the 8th, Isaac was shot.

November
On the 5th, Muʿāwiya sat for the caliphate.
On the 8th, the death of ʿUmar is said to have taken place. He was killed by Abū Luʿluʿa, the servant of al-Mughīra ibn Shuʿba.

4.3.4.2 Ephemerides from Christianity and other religions

January
On the 1st, nayrūz, which is the seventh of Christ and the day and night of his circumcision. It is called the night of hajūz.

February
On the 27th, it is said that Moses passed away.
It is said that, in this month, David founded Jerusalem and the children of Israel carried the body of Joseph from the Nile.

March
On the 15th, according to al-Jawharī, on a day like this, Noah sheltered the ship and the flood did not cease.
On the 22nd, it is said that Mary became pregnant with Jesus.
On the 26th, Communion would have been revealed to Jesus, son of Mary.

April
On the 2nd, it is said that God created Adam, although it is also said that this took place in the beginning of October.
On the 10th, it is said that Adam passed away and Jesus, son of Mary, spoke in the cradle.

May
On the 10th, Jesus is said to have returned.
On the 13th, God split the sea for Moses and the sea remained calm during that day.
On the 18th, it is said that John, son of Zechariah, was killed.

June
On the 24th, the sun was blocked for Joshua son of Nūn, for a period of one day for the conquest of Ashkelon in the Levant.
And the feast day for Christians: the day of Pentecost, which is John’s birthday.

August
On the 29th, nayrūz will be in Egypt.

September
On the 1st, Christians claim that Joshua, son of Nūn died.

December
On the 25th, Jesus was born. Al-Jādirī says that this was mentioned by Ibn al-Bannā’, al-Wādī and others and that al-Ṣanhāji added that the birth was at noon, while Abū al-Qāsim (disciple of Abū Bakr al-Ṭarābulusī) said that the birth was
on the 24th day and the night was the 25th day because that day precedes night among non-Arabs, contrary to what happens among Arabs.

Moreover, Ibn Hishām mentioned the Hāshimiyya commentator and added that Jesus was born on Wednesday and God raised him [to Heaven] when he was thirty-three years old.

5. Concluding remarks

Probably the most relevant characteristic of this work is the fact that it combines elements that, on the one hand, go back to the oriental tradition of the anwāʾ books and, on the other, that it represents the continuation of the Andalusi tradition elaborated from oriental materials and autochthonous elements, among which ephemerides found in Christian liturgical books are included. This type of literature reflects the assimilating character of the Arab-Islamic civilisation in a very clear way, it shares a very conservative character and makes it possible to establish the contributions of the different cultures that integrated it. Some clear examples are, for instance, the dates of navigation in the Mediterranean, which continued from Hesiod to the 19th century and, in the same way, we find the survival of the Hippocratic medicine. Here, we add a third example, namely the preservation of the calendar system when it no longer has any function and to which, in addition to the Julian calendar, the feasts of the Christian saints were superimposed. This type of literature is not at all specific to the Arab-Islamic or Maghribī world, since exactly the same phenomena are preserved in the calendars published in the peninsula until the 20th century, some of which are still being published. In this respect, our contribution is the description of one of these calendars which bear witness to this conservative trend, as the calendar of al-Jādirī is adapted mainly from the one by Ibn al-Bannāʾ al-Marrākushī, and it provides this interreligious scientific character given by individuals cultured in the different affiliations to different religions. Perhaps one of the most remarkable elements of this calendar is the fact that it completely avoids recourse to the pre-Islamic system of anwāʾ asterisms, despite the fact that it systematically uses the lunar mansions, a system which seems to be useless when the authors living in North Africa and in al-Andalus adopted the Julian calendar, which was more precise for the requirements of agricultural activity and animal husbandry with the breeding of domestic animals. To be sure, the tradition and the association be-
between certain phenomena and the agricultural cycle which makes it a system is preserved in the Calendar of Cordoba and in the calendar of Ibn al-Bannā’. Beyond any doubt, this work of al-Jādirī’s confirms the existence of a calendar tradition on both sides of the Strait of Gibraltar.

**Translation**

[1] In the name of God, the merciful, the compassionate, God bless our lord Muḥammad and his family. The teacher, the faqīh, Abū Zayd ‘Abd al-Raḥmān b. Muḥammad al-Jādirī, may God, may he be exalted, have him in his glory, be pleased with him and honour him, said:

[2] Glory be to God, he who moves the rotating sphere, he who brings night into day, God bless our lord Muhammad, his chosen prophet, his family and his selected companions (...), as a long as a star rises in the horizon and then disappears or wanders, the birds chirp and the trees put on leaves.

[3] One of our learned and judicious jurist teachers informed me of a short treatise (taqyīd) attributed to the Sunni Imam Abū al-‘Abbās al-Azdī [Ibn al-Bannā’] in which he mentioned the non-Arabian months and what happens in them with respect to the entrance of the seasons, the waxing and waning of the day, and the feet [of a gnomon’s shadow] at noon. Ibn al-Bannā’ had composed it for the precious Marrakech, but our teacher wanted to adapt it to the latitude of Fes, so he asked me to make that foundation.

[4] So, I proceeded to what he wanted and mentioned it in this part to the fullest extent, and added to it what happens in the months over the course of the ages in a way that befits this summary and what the Bedouin and urban people desire. I referred to the entry of the sun into the lunar mansions, not according to what requires its division by zodiacal signs, but specifying the positions of the asterisms in the months, as we mentioned in another book. This is, God willing, the

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64. The division into paragraphs of the edition and translation has been made by the authors of this article. As for the abbreviations, see note 43 above.

65. See above, note 21.
right thing to do. I called it *Warning (Tanbīh) to humanity about what happens during the days of the year.* I ask God for help because He is the best provider.

[5] **JANUARY**

It is the first month for non-Arab Andalusians. In Syriac, it is called *Kānūn al-ākhir*. It is thirty-one days long, its sign is Capricorn, its nature is cold and wet, and its *epact* is 1. In the month of January, the Arabian month [determined by the visibility of the new moon] begins at *Sa’d al-su‘ūd*. 66

[6] **FIRST DAY.** The *nayrūz* occurs, which is the seventh day from the [birth] of Jesus Christ, upon him be peace, and the day of his circumcision. Its night is called the night of the *ḥājūz* because this night separates one year from another. 67

[7] The sun is at 23 [degrees] of Capricorn according to the tropic position. Its day arc is 148 degrees and one fifth. The duration of twilight and dawn is one and a half equal hours.

[8] The meridian altitude is 34 degrees minus one tenth. It is ten feet. For the evening prayer (*al-‘asr*), always add to the noon a *qāma*, which is 6 feet and 2 thirds. For the noon prayer (*al-ẓuhr*), add a quarter of that measure, i.e. 1 foot and 2 thirds. You must know that a foot has fifteen fingers.

[9] **EIGHTH DAY.** The sun enters *Sa’d al-dhābih*. 68 The altitude of midday is 35 69 degrees. It is nine and a half feet. The day has ten equal hours and is increased by a quarter of an hour [from its minimum length]. The night has 14 hours and decreases a quarter of an hour with respect to its maximum duration.

[10] **DAY THIRTEEN.** The meridian altitude is 36 [degrees] and it is 9 feet.

66. The 24th lunar mansion.
67. KA, same day. About the «night of the *ḥajūz*», which one should no confuse with the *lāyyālī al-‘ajūz*, see KA, 1: 63 and 2: 19–20.
68. The 22nd lunar mansion.
69. Figure borrowed from MSZ.
Day Fourteen. The sun enters the sign of Aquarius. The day arc is 152 degrees.

Day Eighteen. The sun enters Sa’d bula’.70

Twentieth Day. Dark nights that bring intense cold appear. It is said that, on such a day as this, ‘Alī [Ibn Abī Ṭālib] was killed, God have him in his glory.

Twenty-One Day. The meridian altitude is 38 degrees. It is 8 and a half feet. On such a day, David, Joshua, Jeremiah and Shu’ayb perished, upon them be peace.

Day Twenty-Six. Amshīr begins,71 a Coptic month, which is written with fatḥa on the hamza, although some say with kasra, sukūn above the mīm and kasra below the shīn followed by a yā’ and lastly a rā’. It is the sixth month. All Coptic months have 30 days, except the twelfth, which has 35 and 36 in the leap year. Drinking plain water before eating is said to preserve health.

Day Twenty-Seven. The sun enters Sa’d al-su’ūd.72 Farming time ends.

Day Twenty-Eight. The meridian altitude is 40 degrees. It is 8 feet. The day lasts ten and a half hours and the night, 13 and a half hours.

Section

In this month, the almond tree blossoms, grapefruit and sugar cane ripen, and grapefruit jam is made. The sap runs down the trunk of the tree. The heat is felt.73 The birds are calm and mate. Pomegranate and olive tree trunks are planted. Fruits and cuttings such as apple and quince are planted. The vines are pruned. The wood that is cut in this month prolongs its good condition, but only if it is done on a clear day and with a waning moon. Try, in this month, to have a child

70. The 23rd lunar mansion.
71. The 6th, Meshir.
72. The 24th lunar mansion.
73. According to IB, Arabic text, 3, the sentence would be: «there is warm wàter in the rivers».
because the nature of women, in this month, desires offspring, with God’s permission. It is the best time for maritime navigation. God is the wisest.

[1] February

In Syriac, it is called Subāṭ, with ḏamma on the sīn, although it is also said with shīn [Shubāṭ]. It has 28 days and, in the leap year of the Syriac calendar, 29. However, we do not follow this practice at home. Its sign is Aquarius, its nature is phlegmatic, and its epact is 4. The new moon occurs in al-Farg al-muqaddam, although it sometimes takes place in [al-Farg] al-mu’akhkhar.

[2] First Day. The sun is 19 [degrees] in Aquarius. The day arc is 159 [degrees] and one sixth. The altitude of noon is 41 [degrees]. It is 7 feet and two thirds. Evening twilight and morning twilight is as mentioned before.

[3] Fifth Day. For [the length of] the day, add one hour to the setback and get 10 and three-quarter hours. For the night, the same value is subtracted. The altitude of noon is 42 degrees and a third.

[4] Sixth Day. It is said that the snakes open their eyes\(^{75}\) and the pollinating winds begin.

[5] Seventh Day. One of the three jamarāt\(^{76}\) occurs, although ‘Arīb [ibn Sa’īd] said that it happens on the eighth day.\(^{77}\) Between each jamra, 7 days pass and then the heat rises from the earth, the camel, the horse and the bull feel it on their hoof. The first [jamra] is said to correspond to water, the second to earth, and the third to wood.\(^{78}\) On this day, the Prophet (God bless him and save him), was sent, according to the chroniclers.

\(^{74}\) The 26th lunar mansion.
\(^{75}\) February 1st in IB, KA and RAS.
\(^{76}\) «Embers», periods of intense cold.
\(^{77}\) 7th day, according to KA and IB; RAS mentions the 7th day for the first jamra; RAS and CC say that the three jamarāt begin on the 8th day.
\(^{78}\) Explanation not extant in KA, CC, RAS and IB.
[6] Eighth Day. The sun enters Sa’id al-akhbiya.\textsuperscript{79} The height at noon is 43 [degrees] and two fifths. It is 7 feet.


[8] Day Thirteenth. The sun enters the sign of Pisces. The day has 11 hours and the night has 13. The meridian altitude is 45 degrees. The shadow of everything at noon is the same as the [size] of the thing [that projects it] and is equivalent to a \textit{qāma}.\textsuperscript{81}

[9] Day Fourteenth. The second \textit{jamra} appears. It is said that no animal remains in its burrow, but rather they are active.

[10] Day Fifteenth. The season of spring is coming according to the opinion of the farmers.

[11] Day Nineteen. The sun enters \textit{al-Farg al-muqaddam}. It is said that, in this month, roses and jasmine are planted and all aromatic trees are transformed.

[12] Twenty-First Day. The third \textit{jamra} appears. Heat increases and cold decreases. The meridian altitude is 48;10 [degrees]. It is 6 feet.

[13] Day Twenty-Five. The Coptic month \textit{Baramhān}\textsuperscript{82} enters. It is pronounced with \textit{fatḥa} at the beginning and on the \textit{rā’} and \textit{sukūn} on the \textit{mīm} and no vowel the \textit{ḥā’}. The first of the \textit{ayyām al-ḥasūm}\textsuperscript{83} takes place, which encompass 7 nights and

\textsuperscript{79} The 25th lunar mansion.
\textsuperscript{80} «Black and white days». The same sentence in CC, same day. CC says that these days begin on November 22nd, whereas IB and KA say January 21st.
\textsuperscript{81} Height of a man.
\textsuperscript{82} 7th month, Paremhat or Phamenoth.
\textsuperscript{83} «Consecutive days». The expression \textit{ayyām al-ḥasūm} is only mentioned in one manuscript of IB, on the same day. According to R. Dozy, \textit{Suplément}, s.v., \textit{ḥasūm} also means «fateful nights». These days are the well-known \textit{ayyām al-῾ajūz}, «days of the old woman»; see on them P. Galland-Pernet, «La vieille et les jours d’emprunt» and D.M. Varisco, \textit{Medieval Agriculture}, 124–126.
8 days. They are called layyāl al-‘ajāz, layyāl šiyān84 and layyāl al-rāʾī.85 The first of them is the 26th night.

[14] About them, the poet said mentioning the name of these nights:86

There are still seven [cold] days of winter left87 // the days of our cunning old woman of the month
And when her days are done and gone // ṣinn and ṣinnabr with wabr,
And āmir and his little brother mu’tamar // and mu’allil with muṭfī‘ al-jamr
Then the winter runs away// and burning hot [days] will come to you.88

The cold intensifies on those nights because it is ending; it resembles the lamp when it accentuates its light before going out and the patient when he improves a little before dying.

[15] Day Twenty-Seven. Moses, upon him be peace, is said to have passed away on this day. At midday, it is 5 and a half feet.

[16] Day Twenty-Eight. The day has 11 and a half hours and the night, 12 and a half hours.

84. Sic. It is a most unusual expression. Since šiyyān means, according to E.W. Lane, *Lexicon*, s.v., «receptacle used as a repository for a garment», and since these days are cold, one might imagine that the Bedouin must pick up more clothes.

85. KA and RAS, same day, say that February 25th is ṣinn, the first day «of the old woman» and the first of the naw of the shepherd (al-rā’ī). It is worth noting that al-Jādirī gives layyāl al-rā’ī instead of naw al-rā’ī, possibly because of his refusal of anwā’ mentioned in the study. Al-Jādirī also says that the «days of old woman» are «nights».

86. Poem about the «days of the old woman» mentioned in several lexicons and sources of Arabic folk astronomy (see, for instance, al-Marzūqī, *Kitāb al-azmina*, 202 and KA, same day). According to Ibn Ma nzūr, *Lisān al-῾Arab*, s.v. kasa‘a, the author is Abū Shibl al-῾Arābī.

87. Or. kusi’a al-shīta’u bi-sab’atīn ghubri: the author of the poem seems to rewrite the Bedouin expression kasa‘a al-nāqata bi-ghubrihā, that, according to A.B. Kazimirski, *Dictionnaire*, s.v. kasa‘a, means: «il a refoulé le lait de la chamelle»: the shepherd leaves some milk in the she-camel’s teat in order to strengthen it. In this context, the hemistich would mean that, at the end of the winter, when the days are warmer, seven days of intense cold arrive.

88. The last verse follows the version of KA, same day. However, the three precedent verses are similar to those given by Ibn Ma nzūr and al-Marzūqī.
In this month, birds sing and swallows and white storks approach the cities. The marine animals are launched. Most of the trees bloom. The kite and the raven have chicks. The ants appear. Silkworms make silk in some countries. Summer vegetables are sown. In our land, we have almond grits. The beans grow. At the end of the month, there are roses. The cats are restless. In the following months, the parturition of female camels increases. Blood drawing and medication taking apply. It is said that, in this month, David, peace be upon him, founded Jerusalem and that the Israelites took the body of Joseph, peace be upon him, out of the Nile.  

In Syriac, it is called Ādhar with a vowel fatha long at the beginning and dhāl with diacritical points without a long vowel. It is 31 days long. Its sign is Pisces. Its epact is 4. The new moon takes place in al-Naṭḥ.  

The sun is in Pisces 17 degrees. The day arc is 173;10 degrees. The night arc is the rest of the rotation. The altitude of noon is 44 degrees and a sixth. It is 5 and two-fifth feet. The duration of evening twilight (the shafaq) and dawn (the fajr) is as mentioned above. This day is the first of the makhnīṭisāt: they are seven weeks without entering the sea. It is said that, in them, the bee-eater appears: a bird that feeds on bees.  

The days of the nights of the old woman end.
[4] **SIXTH DAY.** The altitude of noon is 43 degrees and a sixth. It is five feet.


[6] **DAY ELEVEN.** It is said «if the child is weaned on this day, he will not ask for more milk».

[7] **DAY FOURTEEN.** The [length of] night and day is equal and is known as the vernal equinox. The altitude of noon is 46 degrees and a third. It is four and a half feet.

[8] **DAY FIFTEEN.** The sun enters Aries. It is the beginning of the spring season for doctors and for astronomers. Al-Jawhari reported that, on a day like this, Noah, peace be upon him, sheltered the ship and the flood did not stop. On this day, the fish spawn.

Abū Nuwās said about spring:

Do you not see the sun descending on Aries // and the weight of time has risen, so it is equal?
And the birds sang after their astonishment // and the wine was filled around it completely.

[9] The entry of the sun into Aries is the beginning of [astronomical] time and of the anniversary of the years of the world. As for the right interpretation of what our Prophet Muḥammad, God bless and save him, said in the sermon given the tenth year on the feast of sacrifice: «Time has completed its cycle and is as it was on the day that God created the heavens and earth». The day in which he said this coi-

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92. IB, March 16th.
93. Possibly the lexicographer Abū Naṣr al-Jawhari (d. early 11th century).
94. RAS, March 17th.
95. A longer version of this poem (four verses) appears in KA, May 17th; see, on this point, the apparatus of the edition and translation of KA. Ibn Qutayba, *K. al-Anwār*, 19, and al-Marzuqi, *Kitāb al-azmina*, 120, quote these two verses.
96. The well-known «farewell sermon», pronounced in the «farewell pilgrimage».
97. The sentence appears in several sources that narrate the «farewell pilgrimage». See, for instance, Ibn Ishāq, *Sīrat Rasūl Allāh*. We borrow the translation from the version of Ibn Ishāq’s *Sīra* by A. Guillaume, *The Life of Muhammad*, 651.
98. The usually accepted data of the sermon is 9th Dhū l-Hijja, 10/6th March 632.
cided with the entry of the sun in Aries. Blessed be he whose knowledge is the equivalent to the knowledge of ancient and modern authors! If there had been no other miracle of his, God bless and save him, but his insights about the time in which the [sun] performs its cycle without knowing astronomical computus, his saying would be enough testimony of his mission. The refutation of al-Māzarī and the Qādī ʿIyāḍ99 of al-Khwārizmī claiming that this100 was investigated and was not found [true] is unclear, because I investigated and found it [true] as I have mentioned.101

[10] Day Nineteen. The meridian altitude is 58 and a third. It is 4 feet.

[11] Day Twenty-Two. It is said that Mary became pregnant with Jesus, upon him be peace.102

[12] Day Twenty-Four. It is said about the days after and around the twenty-fourth day that the sun enters al-Rishāʾ, also called Baṭn al-ḥūt.103

[13] Day Twenty-Six. The table was sent down to Jesus,104 son of Mary, upon him be peace.

99. As is well known, al-Māzarī (453/1061–536/1141) and the Qādī ʿIyāḍ (476/1083–544/1149) were two of the most outstanding legal scholars of the Maliki school in the Maghrib. The second was a disciple of the first.

100. The coincidence of the Sun in Aries, the «farewell pilgrimage» and the creation of the heavens.

101. Some keys for understanding the preceding paragraph are given by Qādī ʿIyāḍ, Ikmāl al-μuˈlˈiˈm, 5: 470–471, and al-Qurṭubī, who quotes al-Māzarī in al-Jāmīʿ li-ahkām, 10: 203. According to Qādī ʿIyāḍ, «al-Imām», seemingly his teacher al-Māzarī, consulted what the most famous astronomer and mathematician al-Khwārizmī (d. ca. 232/850) mentioned about the interpretation of the Prophet’s saying and found that al-Khwārizmī believed that the date of the sermon coincided with the time of the creation of the heavens. It must be understood that the time of the creation of the heavens and the time of the entrance of the Sun in Aries are one and the same. Al-Qāḍī ʿIyāḍ goes on saying that the «imam» mentions that he checked the data and concluded that, on the 9th of Dhū l-Hijja of year 10, the sun was at 20° of Pisces but that, on the 9th of Dhū l-Hijja of year 9, the sun was at the beginning of Aries; al-Khwārizmī had mistaken the dates. Qādī ʿIyāḍ says that both were mistaken because the sermon was given on the 10th of Dhū l-Hijja. We thank M. Forcada for his help in interpreting this paragraph.

102. Only mentioned in KA, same day.

103. The 28th lunar mansion.

104. Koran, 3: 112–113. Also mentioned in KA and RAS, same day.
[14] **Day Twenty-Seven.** *Barmūda* begins, a Coptic month.\(^{105}\) It is written with *fatḥa* on the *bā*’ and on the *dāl* without diacritical points.

[15] **Day Twenty-Eight.** The length of the day increases by half an hour from the equinox: it is 12 and a half hours. The length of the night decreases the same. The altitude of midday is 62 degrees. It is 3 and a half feet.

[16] **Section**

In this month, cucumbers, cotton, sugar cane, grapefruit, marjoram, mint, roses and lily are planted. Olives are also planted. The fish go from the sea to the rivers. Silkworms reproduce. The autumnal bean appears. The regime of the first part of the month is the same as that of winter but, in the second part of the month, the mixture is heat and humidity.\(^{106}\) Therefore, it is a time for temperate eating, housing and clothing. It is said that this month is known as «the harmful one» because, in it, one has to protect himself from thunderbolts. One *ḥadīth* says about it: «whoever (...) escapes from harm, gets half a dinar or (...) paradise».\(^{107}\)

[1] **April**

In Syriac, it is *Nīsān* with a *kasra* on the consonant *nūn*; sometimes the *nūn* is pronounced with *fatḥa* [but al-Tūzirī told that only with *kasra*].\(^{108}\) It has 30 days. Its sign is Aries. Its nature is sanguine, warm and moist. Its *epact* is 7. The new moon takes place in the Pleiades.

[2] **First Day.** The sun is in Aries 13 degrees. The day arc is 119 and a half degrees and has 12 and a third hours. The altitude of noon is 63 degrees and two fifths. It is 3 and a third feet. The duration of evening twilight and morning twilight is 23 degrees. Divide it by 15 and you get the equal hours.

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\(^{105}\) Parmouti, 8th month.

\(^{106}\) According to KA, 1: 179 and 2: 64: the regime of the first part of the month is the same as the regime in winter but, because Spring starts in the second part of the month, end of the month, the complexion of the month becomes hot and humid and so the regime must change.

\(^{107}\) Distorted sentence that does not seem correspond to any prophetic hadith known.

\(^{108}\) Unclear sentence that seems a quote from an author named al-Tūzirī (a man from Tozeur, Tunisia).
[3] Second Day. It is said that God, may He be exalted, created Adam, peace be upon him, although it is said also that it was at the beginning of October. God is wiser.


[5] Eighth Day. The altitude of noon is 66 degrees. It is 3 feet.

[6] Tenth Day. It is said that Adam, peace be upon him, passed away and that Jesus son of Mary, peace be upon him, spoke in the cradle.

[7] Day Twelve. The day has 13 hours. The altitude at midday is 67 and a half degrees.


[9] Day Eighteen. It is two and a half feet at midday. It is the last day of the seven makhnīṭisat.\textsuperscript{110}


[11] Twentieth Day. The sun enters al-Butayn.\textsuperscript{111} On this day, the prophet, God bless and save him, was born, according to al-῾Abd al-Wādī.\textsuperscript{112}

[12] Day Twenty Six. Bashans\textsuperscript{113} enters. It is pronounced with fatha on the bā‘ and on the sīn with diacritical dots and with sukūn on the nūn and on the sīn without diacritical dots. It is a Coptic month. In this month, the blood is agitated and bloodletting is practised.

\textsuperscript{109} The First lunar mansion.

\textsuperscript{110} According to KA, the 5th bakhnīs occurs on April 17th.

\textsuperscript{111} The 2nd lunar mansion.

\textsuperscript{112} He may be the Zayyanīd king of Tlemecen and man of letters Abū Ḥammū II (723/1323–790/1398), also known as Abū Ḥammū al-Zayyānī al-῾Abd al-Wādī al-Tilimsānī.

\textsuperscript{113} Pashons, the 9th month.
[13] **Day Twenty-Seven.** It is the beginning of the rains of the month of ṅīṣān, which last seven days. It is said that, dough is kneaded on this day, it rises without yeast. On this day, the substance condenses and the seeding is completed.

[14] **Day Twenty-Eight.** The day has 13 and a half hours and the night has 10 and a half.

[15] **Section**

In this month, the palm trees are pruned, the cucumbers prosper and appear, the olive trees bloom, the figs accumulate, the crops are sown, the barley is complete, the roses abound and, with them and, also with violets, cologne, juice, jam and ointment are made. [Infusion of] fumitory is drunk. The trunks of grapefruit, jasmine and bitter orange trees are planted. Early grapes accumulate. This month is the one with the most moderate weather according to all people in all countries.

[1] **May**

In Syriac, it is said ṁyār with a fatha at the beginning and sukān on the consonant jīm, with two diacritical dots below on the yāʾ; some omit the jīm. It has 30 days. Its sign is Taurus. Its nature is sanguine. Its epact is 2. The new moon takes place in al-Hanʿā.

[2] **First Day.** The sun is in Taurus 17 degrees. The day arc is 203 and a half degrees. The night arc is the rest of the rotation. The altitude at midday is 73 degrees and a third. It is 2 feet. The duration of morning and evening twilight is one equal hour and two-thirds.

[3] **Third Day.** The days of the month of ṅīṣān end.

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114. Fumarica species are sometimes used in herbal medicine. Some varieties may have anti-inflammatory and analgesic potential.

115. Both manuscripts give this most unusual form of Ayyār.

116. The 6th lunar mansion.

117. This may refer to the rains of ṅīṣān, which end on May 3rd according to CC and RA, and on May 5th, according to KA and IB.
[4] **Fourth Day.** The sun enters the Pleiades.

[5] **Sixth Day.** On this day, one wards off a wind that brings epidemics and diseases.

[6] **Tenth Day.** It is said that Jesus, peace be upon him, returned to heaven.\(^{118}\)

[7] **Day Thirteen.** God split the sea for Moses, peace be upon him, and the sea remained calm during this day.

[8] **Day Fifteen.** The sun enters Gemini. The duration of evening and morning twilight is 26 degrees. On this day, the abundance of heat begins.

[9] **Day Sixteen.** The summer season (ṣayf) begins according to the method of the farmers.\(^{119}\) The altitude of midday is 77 degrees. It is one and a half feet.

[10] **Day Seventeen.** The sun enters Aldebaran.

[11] **Day Eighteen.** It is said that, on this day, John, son of Zechariah, peace be upon them, was killed.

[12] **Day Nineteen.** The day lengthens one hour because it has 14 hours. The night has 10.

[13] **Day Twenty-Two.** The sun is at the zenith at noon, in the centre, at the Zemzem well and at all the wells of Mecca, God Almighty honours it.\(^{120}\) A standing person does not have a shadow, as the sun is at the zenith.\(^{121}\) Then, it goes down to the north.

[14] **Day Twenty-Five.** It is said that our prophet, Muḥammad, God bless and save him, passed away.

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118. The same day in RAS; May 11th, according to KA.
119. According to the «doctors» (ḥukamā’) in KA and IB, the same day.
120. May 17th, according to KA, RAS and IB.
121. That is, at 90° of altitude.
Day Twenty-Six. Ba’una enters, with fatḥa on the bā’ and ḍamma on the hamza and fatḥa on the nūn. Some omit the hamza and pronounce ḍamma on the bā’. It is a Coptic month.

Day Thirty. The sun enters al-Haq’a.

Section

In this month, one finds freekeh, olives and grapes are being formed, bees make honey and summer fruits appear. Walnut jam and apple juice are made. The flax is uprooted. Chamomile and other seeds are sold; with them, ointments are made. Broad beans and barley are harvested. Vipers are hunted to make the theriaca. This month is a mixture of spring and summer because its nature is a balance of hot and dry.

June

In Syriac, it is said Hazīrān with a fatḥa on the ḥā’ without diacritical points, a kasra on the zāy and fatḥa on the rā’. It has 30 days. Its sign is Gemini. Its nature is sanguine. Its epact is 5. The new moon occurs in al-Dhirā and sometimes in al-Nathra.

First Day. The sun is in Gemini 14 degrees. The day arc is 212 degrees and three quarters. The night arc is the rest of the rotation. The altitude at midday is 79 degrees and a quarter. It is one and a quarter feet. The duration of the twilight, evening and morning, is 26 degrees and a half.

Fourth Day. It is said that, on this day women, and all animals desire intercourse.

123. 10th month: Paoni.
124. The 5th lunar mansion.
125. The 7th lunar mansion.
126. The 8th lunar mansion.
[4] **Seventh Day.** It is said that, on this day, the killing took place of Ûthmân ibn Ûffân, God be pleased with him, and the caliphate of Ûlî, God be pleased with him.

[5] **Eighth Day.** It is said that, on this day, also men and all animals love women.

[6] **Day Thirteen.** Stud horses are isolated from breeding mares after they become pregnant. The mares remain isolated until they give birth. The duration of pregnancy is 11 months.

[7] **Day Fifteen.** The sun enters the head of Cancer. It is the summer solstice. It is the beginning of the summer season according to the doctors’ calendar. The day arc is 213 degrees and four fifths. The day has 14 and a quarter hours: it is the longest day of the year. The night lasts 9 and three-quarter hours: it is the shortest night of the year. Then, the night begins to lengthen and the day to shorten. The altitude at noon is 80 degrees minus one sixth: it is the maximum altitude of the sun in our area. It is one and a fifth feet: the minimum shadow in our area. The duration of the evening and morning twilight is one hour and four fifths: the maximum duration in our area, according to what is obtained with the precise instrument. The sun returns from north to south.

[8] **Seventeenth Day.** The sun enters al-Han’a.127

[9] **Day Nineteen.** The caliphate of Ûmar, may God be pleased with him, is said to have taken place.

[10] **Day Twenty-Four.** It is the day of the Anṣara and the birth of John, upon him be peace, a day of celebration for Christians, may God destroy them! Experienced people claim that the crop which is harvested on this day is not eaten by worms. It is said that, on this day, the sun stood still for Joshua, son of Nûn, upon him be peace, for a day in the conquest of Ûsqalân in Syria. It is said that, if fig trees are covered with dust on this day, no fruit will fall even if the trees are not pruned. It is said that, on this day, no female on the face of the earth becomes pregnant.

127. The 6th lunar mansion.
[11] Day Twenty-Five. Abīb enters, pronounced with fatḥa on the hamza and kasra on the bā’; it is a Coptic month.\textsuperscript{128}

[12] Day Thirty. The sun enters al-Dhirā’.\textsuperscript{129}

[13] Section

In this month, there are the first grapes and figs. Walnuts and watermelon are being formed. The blackberries are ripe. The ends of the branches that are one year old are pruned by hand, not with iron tools, so that the roots get stronger. The wheat harvest is complete. Honey is extracted. In this month, it is better to use foods, drinks, rooms and clothes that are refreshing, soft, regulate the bodies and decrease the degree of humidity in them, as well as avoiding the affliction of hunger and thirst.

[1] July

In Syriac, it is called Tammūz: it is pronounced with a fatḥa in the consonant tā’ that bears two diacritical points above and with a ẓāy. It is 31 days long. Its sign is Cancer. Its nature is bilious, hot and dry. Its epact is 7. The new moon occurs in al-Ṭarf\textsuperscript{130} and sometimes in al-Jabha.\textsuperscript{131}

[2] First Day. The sun is in Cancer 16 degrees. The day arc is 212 degrees and a fifth. The altitude of midday is 79 degrees. It is 1 and a third feet, minus half a finger. The duration of twilight, evening and morning, decreases by about half a degree.

[3] Fourth Day. It is said that the fleas go away and that, perhaps, on this day, a wind will blow that will make you fear for your eyes.

\textsuperscript{128} The 11th month: Epip.
\textsuperscript{129} The 7th lunar mansion.
\textsuperscript{130} The 9th lunar mansion.
\textsuperscript{131} The 10th lunar mansion.
[4] **Seventh Day.** The sun is at the zenith, in the centre of the Zemzem well and of all the wells of Mecca. There is no shade for a person on foot. Then, [the sun] returns descending to the south.

[5] **Tenth Day.** The day decreases a quarter of an hour since it has 14 hours. The night lengthens a quarter of an hour as well because it has 10 hours.

[6] **Day Twelve.** The simoom of summer begins: they last forty days, twenty in this month and twenty in the following month.

[7] **Day Thirteen.** The altitude [of the sun] at noon is 77 degrees. It is 1 and a half feet.

[8] **Day Fourteen.** The sun enters al-Nathra. It is said that, on this day, the Hijra of the prophet, God bless him and save him, took place.

[9] **Day Fifteen.** The sun enters Leo. The altitude [of the sun] at noon is 76 degrees and a third. The duration of evening and morning twilight is 26 degrees.

[10] **Day Twenty-Five.** The Coptic month Musra begins. It is pronounced with đamma in the mīm, with sukūn in the sīn with no diacritical dots and with fatha or kasra on the rā’. It is the twelfth month and it is the leap month. It has 35 days and, in a leap year, 36.

[11] **Day Twenty-Eight.** The altitude [of the sun] at noon is 73 degrees and a third. It is 2 feet.

[12] **Day Twenty-Nine.** The altitude [of the sun at noon] is 73 degrees. It is said that, on this day, Moses, peace be upon him, was born and that the destruction of Jerusalem took place, as mentioned by historians.

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132. The same situation as on May 22nd.
133. July 11th, according to CC and RAS. The simoom are periods of hot weather; see CC, note 4.
134. The 8th lunar mansion.
135. The 12th month: Mesori.
[13] Day Thirty. The day has 13 and a half hours and the night 10 and a half hours.

[14] Section

In this month, the threshing begins. The vines and all the fruits are ripe. Partridge chicks fly and are hunted. The dates are ripe and radiant. At the end of the month, the planting of winter vegetables begins for those who have water. Thyme and other herbs are harvested. In this month, vomiting and excessive movement should be avoided, as well as fullness of food, so it should be divided into two or three meals.

[1] August

In Syriac, it is called Āb, with fatḥa on the prolonged hamza, and after it bāʾ with a single diacritical dot below. It is 31 days long. Its sign is Leo. Its nature is bilious. Its epact is 3. The altitude [of the sun] at noon is 76 degrees and a third. The duration of evening and morning twilight is 26 degrees. The new moon occurs in al-Ṣarfa.\textsuperscript{136}

[2] First Day. The sun is in Leo 16 degrees. The day arc is 202 degrees and a quarter. The night arc is the rest of the rotation. The height [of the sun] at noon is 72 and a half degrees. It is 2 and a quarter feet. The duration of evening and morning twilight is 1 equal hour and two-thirds.

[3] Second Day. The sun enters al-Ṭarf.\textsuperscript{137}

[4] Third Day. Experienced people affirm that the wood that is cut on this day or the day before is not eaten by worms.

[5] Sixth Day. The sun enters al-Jabha.\textsuperscript{138}

[6] Ninth Day. The altitude at noon is 70 degrees. It is said that whoever is stung by a scorpion on this day dies within an hour.

\textsuperscript{136}. The 12th lunar mansion.  
\textsuperscript{137}. The 9th lunar mansion.  
\textsuperscript{138}. The 10th lunar mansion.
[7] **Tenth Day.** At noon, it is 2 and a half feet.

[8] **Day Eleven.** It is said that Abū Bakr passed away on this day and that ʿUmar became the caliph, God be pleased with them both, although it is [also] said [that it was] in June as said before.

[9] **Day Sixteen.** The sun enters Virgo. It is the beginning of autumn for farmers.\(^{139}\) The day has 13 hours and the night has 11 hours. The duration of evening and morning twilight is 24 degrees. The height [of the sun] at noon is 67 and a half degrees.\(^{140}\) It is 2 and three quarters feet.

[10] **Day Twenty.** The scorching simoom stop. The altitude [of the sun] at noon is 66 degrees. It is 3 feet.

[11] **Day Twenty-One.**\(^{141}\) The sun enters al-Zubra.\(^{142}\)

[12] **Day Twenty-Five.** Mary, peace be upon her, died.

[13] **Day Twenty-Six.** The *Torah* was revealed on this day.

[14] **Day Twenty-Nine.** The month *Tawt*\(^{143}\) enters, with *fatḥa* in the first of the two *tā′*, which can also be pronounced with *damma* [tūt]. It is the first month of the Coptic calendar and, in it, the *nayrāz* is celebrated in Egypt.

[15] **Section**

In this month, the autumn beans are sown in the orchards. The blue wallflower, turnips, carrots and cabbages are planted. Acorns pile up. Logs and cuttings planted at the end of the month grow well. The mullet goes from the sea to the rivers. Sardines abound. The wood cut in this month does not rot. In this month, each

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139. Same date in KA and RAS, but August 16th in IB; see IB, 47, note 4 of the French translation, where Renaud remarks that the date should be September 16th.

140. MS Z gives a different value.

141. MS Z says day 23.

142. The 11th lunar mansion.

143. The 1st Coptic month: Thout.
crop is irrigated at the beginning of the afternoon so that it grows more and in the same way as in the previous month, because this irrigation eliminates the heat accumulated during the day from the crop. Grapefruits flower and accumulate at the end of the month. The sindī, meaning the watermelon, is ripe. In this month, sweet, fat and salty foods should be avoided entirely. In addition, cupping, sexual intercourse, and exhaustion are forbidden.

[1] September

In Syriac, it is called Aylūl. It is pronounced with fathā at the beginning and with sukūn in the yā’ that has two diacritical points below it. It is 30 days long. Its sign is Virgo. Its nature is bilious. Its epact is 6. The new moon occurs in al-Ghafr\(^\text{144}\) and sometimes in al-Simāk.\(^\text{145}\)

[2] First Day. The Christians, may God confuse them!, claim that, on this day, Joshua son of Nūn, peace be upon him, died. The sun is in Virgo 16 degrees. The day arc is 187 degrees and a half and the night arc is the rest of the rotation. The day has 12 equal hours and a half and the night has 11 and a half. The height of the [sun] at noon is 62 degrees. It is 3 and a half feet. The duration of evening and morning twilight is 23 degrees.

[3] Third Day. The sun enters al-Ṣarfa.\(^\text{146}\)

[4] Day Ten. The altitude [of the sun] at noon is 58 degrees and a third.\(^\text{147}\) It is 4 feet.

[5] Day Fifteen. Night and day are the same, as it is the autumnal equinox, and both have 12 hours. The altitude [of the sun] at noon is 56 degrees and a third. It is 4 and a half feet.

\(^{144}\) The 15th lunar mansion.
\(^{145}\) The 14th lunar mansion.
\(^{146}\) The 12th lunar mansion.
\(^{147}\) MS Z gives a different value.
[6] **Day Sixteen.** The sun enters Libra. It is the beginning of autumn according to the procedure of Hippocrates, Galen and other doctors and astronomers. The duration of evening and morning twilight is 1 equal hour and a half.

[7] **Day Twenty.** The sun enters al-῾Awā’.

[8] **Day Twenty-Three.** The altitude [of the sun] at noon is 33 degrees. It is 5 feet.

[9] **Day Twenty-Four.** It is said that, on this day, John son of Zachary, peace be upon him, was killed.

[10] **Day Twenty-Seven.** It is said that, on this day, the fruits that are to be stored until winter are collected.

[11] **Day Twenty-Eight.** Bābah enters, with fatḥa on both bā’ and sometimes with ḍamma on the second bā’; it is a Coptic month.

[12] **Day Twenty-Nine.** The day has 11 and a half hours and the night 12 and a half hours.

[13] **Section**

In this month, sowing and ploughing begin in the cold mountains. The nuts are collected. Henna and vegetables are cut. The salt condenses. Some olives turn black. Chestnuts and acorns appear. Figs and almond trees are planted. Pomegranate and fruit juice are made. This month has moderate temperature. In it, black bile churns. The fish appear. It is good to take sweet things, in solid and liquid form, but avoid taking everything salty, melon and beef.

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148. KA, RAS and CC omit «astronomers»; IB, Hippocrates and Galen.
149. The 13th lunar mansion.
150. 2nd month, Paopi.
Abū Nuwās said about this month:¹⁵¹

September has arrived and heat has disappeared // because Sirius extinguished its fire [You two,] get up and mix up water and wine // because the result of their union is joy.

[1] October

In Syriac, it is called Tishrīn al-awwal. It is pronounced with fatḥa on the tā' which has two diacritical points above it and with sukūn on the shīn with diacritical dots. It is 31 days long. Its sign is Libra. Its nature is black [bile], cold and dryness. Its epact is 8.¹⁵² The new moon occurs in al-Qalb¹⁵³ and sometimes in al-Iklīl.¹⁵⁴

[2] First Day. The sun is in 15 degrees of Libra. The day arc is 172 degrees and the night arc is the rest of the rotation. The altitude [of the sun] at noon is 50 degrees and two fifths. It is 5 and a half feet. It is the first day of Alexander’s era and the new year for the Syrians. On this day, the sun enters al-Simāk.¹⁵⁵ It is said that, on this day, God created Adam, upon him be peace.

[3] Second Day. The Nile in Egypt recedes and the people of Egypt begin planting. It is said that, on this day, Eve was created.

[4] Seventh Day. The height [of the sun] at noon is 48 degrees and a tenth. It is 6 feet.

[5] Eighth Day. The sacrifice of Isaac, upon him be peace, is said to have taken place.

¹⁵¹. The poem appears in KA in the entry of September 28th; see the apparatus of the edition and the translation of KA.
¹⁵². MS Z gives a different value.
¹⁵³. The 18th lunar mansion.
¹⁵⁴. The 17th lunar mansion.
¹⁵⁵. The 14th lunar mansion.
[6] **Day Fifteen.** The altitude [of the sun] at noon is 45°. The shadow of all things is equal to its height.\(^{156}\) It is 6 and two-third feet. The day has 11 hours and the night, 13.

[7] **Day Seventeenth.** The sun enters Scorpio and *al-Ghafr.*\(^{157}\) The duration of evening twilight and morning twilight is as advanced. On this day, [the time for] the sowing of the land arrives since it was the beginning of Adam’s tillage, upon him be peace.\(^{158}\)

[8] **Day Twenty.** The altitude [of the sun] at noon is 43 degrees and two fifths. It is 7 feet.

[9] **Day Twenty-Eight.** *Hatūr* enters, with *fatḥa* on the *ḥāʾ* and *damma* on the *tāʾ* which carries two diacritical points above, although it is said with *hamza* instead of *ḥāʾ*. It is a Coptic month.\(^{159}\)

[10] **Day Twenty-Nine.** The altitude [of the sun] at noon is 40 and a half degrees. It is 7 and four-fifth feet. On this day, the sun enters *al-Zubānā*.\(^{160}\)

[11] **Day Thirty-One.** The day has 10 and a half hours and the night, 13 and a half hours.

**[12] Section**

In this month, the olives are collected. People change the white garment for the coloured one and for thick clothes. Sheep give birth and there is milk. Lettuce, anise, fennel and onion are planted. At the end of the month, the leaves fall from the trees, the ants take refuge in their anthills and the sea is rough so no ship sails through it. It is better to use cool and warm food, drinks and places to live. In this month, cow

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\(^{156}\) When the altitude of the sun is 45°, the shadow cast by an object has the same value as the height of that object.

\(^{157}\) The 15th lunar mansion.

\(^{158}\) September 15th according to KA.

\(^{159}\) The 3rd, Hathor.

\(^{160}\) The 16th lunar mansion.
meat and its derivatives are avoided, and navigation and intercourse are reduced. Also in this month, the bath must be brief, and fat and salty things are taken.

[1] November

In Syriac, it is called Tishrīn al-thānī. It has 30 days. Its sign is Scorpio. Its nature is black [bile]. Its epact is 4. The new moon occurs in al-Naʿāʾim.¹⁶¹

[2] First Day. The sun is in Scorpio 16 degrees. The day arc is 157 degrees. The altitude [of the sun] at noon is 39 and two-thirds degrees. It is 8 feet.


[4] Fifth Day. Muʿāwiya, may God be pleased with him, is said to have seized the caliphate.

[5] Eighth Day. The passing of ʿUmar, may God be pleased with him, is said to have taken place. Abū Luʿluʿa, servant of al-Mughīra Ibn Shuʿba, killed him¹⁶².


[7] Day Fifteen. It is the beginning of winter according to the farmers’ system. The altitude [of the sun] at noon is 36 degrees. It is 9 feet.

[8] Day Sixteen. The sun enters Sagittarius and Qalb al-ʿaqrab.¹⁶⁴ The day arc is 151 degrees and a fifth and the night arc is the rest of the rotation.

[9] Day Twenty. The day has 10 hours and the night has 14 hours. The altitude [of the sun] at noon is 35 degrees. It is 9 and a half feet.

¹⁶¹. The 20th lunar mansion.
¹⁶². Same day in KA and RAS but both sources omit the name of the assassin.
¹⁶³. The 17th lunar mansion.
¹⁶⁴. The 18th lunar mansion.
[10] Day Twenty-Two. The black and white days enter: there are twenty days called the black nights and another twenty after them.

[11] Day Twenty-Seven. Kahayk [enters], with fat ha on the kāf and on the hāʾ, although it is also said by prefixing the yāʾ to the hāʾ [kayhak]. It is a Coptic month. 165

[12] Day Twenty-Eight. The height [of the sun] at noon is 33 and three quarter degrees. It is 10 feet.


[14] Section

In this month, most of the planting is done. The vines are planted and grow quickly. The olive trees are planted. The oil is squeezed out. The leaves of fruit trees fall. Sugar cane is harvested. Autumn beans pile up. The turnip is planted. Acorns, chestnuts and myrtle seeds, that is, the myrtle, are collected and their juice is made. The vegetable is covered so that the ice does not damage it. At the end of the month, it is unpleasant to go into the baths for fear of catching a cold, as well as to drink water at night for fear of dropsy. Every animal without bones dies. The snakes close their eyes. In this month, foods, drinks, and rooms that moisten and heat are used, such as honey, butter, meat with bread and garlic soup, and the like, as well as stewing vegetables such as carrots. Rub yourself with wallflower oil or something similar, take whatever perfume you like. Use vomiting and intercourse because they say that, in this month, intercourse in moderation is good. God is wiser.

[1] December

In Syriac, it is called Kānūn al-awwal. It has 31 days and, in the leap year for the non-Arabs of al-Andalus, it has 32. We follow this calendar. Its sign is Sagittarius. Its epact is 6. The new moon occurs in Saʾd al-dhābih. 167

165. The 4th, Koiak.
166. The 19th lunar mansion.
167. The 22nd lunar mansion.
[2] **First Day.** The sun is in Sagittarius 17 degrees. The day arc is 147 degrees and a quarter and the night arc is the rest of the rotation. The day has 9 and four-fifth hours and the night has 14 and a fifth hours. The altitude [of the sun] at noon is 33 degrees and a third. It is 10 and a tenth feet.

[3] **Third Day.** It is said that steam begins to come out of people’s mouths because the cold is getting worse.

[4] **Ninth Day.** The cold of the water and the rigour of winter intensify.

[5] **Tenth Day.** The sun enters *al-Na‘ā’im*.¹⁶⁸

[6] **Day Twelve.** The black nights appear: they are the simoom of winter, twenty nights in this month and twenty in the following.

[7] **Day Fifteen.** The sun enters the beginning of Capricorn. It is the winter solstice and the beginning of winter according to the doctors’ system. The day arc is 146 degrees and a fifth. The day has 9 hours and three quarters, it is the shortest day of the year. The night arc is 213 degrees and four fifths. The night has 14 hours and a quarter, it is the longest night of the year. Then the day begins to lengthen and the night to shorten. The altitude [of the sun] at noon is 33 degrees minus one sixth, it is the minimum height in our country. It is 10 and a third feet, it is the maximum extent of shade at noon. The duration of evening and morning twilight is 23 degrees.

<Day Twenty-Two. The altitude [of the sun] at noon is [...]. It is 10 and a quarter feet>¹⁶⁹

[8] **Day Twenty-Three.** The sun enters *al-Balda*.¹⁷⁰

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¹⁶⁸ The 20th lunar mansion.
¹⁶⁹ This sentence only appears in MSZ, 183.
¹⁷⁰ The 21st lunar mansion.
[9] Day Twenty Five. Jesus was born, peace be upon him. This was mentioned by Ibn al-Bannā’,171 al-῾Abd al-Wādī172 and others. Al-Ṣanhājī173 added that the birth was at noon while Abū al-Qāsim Khalaf Abī Bakr al-Ṭarābulusī174 said that the birth was on the twenty-fourth day and the night was on the twenty-fifth day because day precedes night among non-Arabs, contrary to what happens among Arabs. In this respect, Ibn Hishām, the commentator of the Hāshimiyya,175 added that Jesus was born on Wednesday and that God raised him [to heaven] when he was thirty-three years old. If, in the seven days between Christmas and ḥājūz, it rains abundantly, it will also rain during the year. If those days are clear, the year will be dry. If it rains on the first of those days, it will rain at the beginning of the year and also in the middle and at the end. This is the experience of those who investigate.

[10] Day Twenty-Seven. Tūba enters, with damma in the ʿāʾ without diacritical dots and bāʾ bearing a diacritical dot below. It is a Coptic month,176 which is called Tūbī with yāʾ after the bāʾ.

[11] Section

In this month, the early almond trees bloom. The first grapefruits are ripe. Rainwater is stored in this month and the following one because it is not spoiled. The palm piths are ripped out. In this month, the springs sprout. Pepper blooms. Pumpkin, eggplant, garlic and opium poppy are planted. This month is not the time to take medicine or draw bloodletting.

This is the last thing we wanted to mention. It is the great effort of one who does not have much property, because a hand only gives what finds. Praised be God, lord of the worlds. God bless our lord Muḥammad, the last prophet and imam of the envoys. The end.

171. Not extant in IB.
172. See above no. 43.
173. Unidentified author.
175. Unidentified author and work. It is unlikely that he is the famous Ibn Hishām (d. 218/833) who wrote the biography of Muḥammad.
176. The fifth, Tobi.
The extraction of this blessed collection ended in the middle of Jumādā al-ākhar in the year 801 by the hand of its author 'Abd al-Raḥmān ibn Muḥammad al-Jādirī, may God Almighty bless him with his grace. This is what he said in the copy from which I copied, and this copy was complete on the evening of the first Thursday of Dhū-l-qa’dā in the year 1137. May God make us aware of his goodness and protect us from his evil. Amen.

Bibliography


BALTY-GUESDON, M.G. (1992), Médecins et hommes de science en Espagne Musulmane (11e/11te-ve/xie s.), Ph.D. dissertation (Université de la Sorbonne Nouvelle), Lille.


DOZY, R. (1927), Supplément aux dictionnaires arabes, Leiden.


— (2005), «Astronomy, Astrology and the Sciences of the Ancients in Early al-Andalus (2nd/8th-3rd/9th centuries)», Zeitschrift für Geschichte der arabisch-islamischen Wissenschaften, 1–74

Ibn Manẓūr (2014), Lisān al-‘Arab, Beirut
Kazimirs, A.B. (1875), Dictionnaire arabe-français, Cairo.


The Tanbīh al-anām ‘alā mā yahduthu fī ayyām al-`ām


APPENDIX: ARABIC TEXT

Edition of the text

Symbols used to identify the manuscripts in the edition: National Library of Tunis, manuscript 3617 [ت]; National Library of Morocco, manuscript D2023 [و]. The orthography of hamza and alif maṣūra and the representation of dagger alif have been regularized. The form of the ordinals from twenty to thirty has been kept in the edition.

[تنبيه الأنام على ما يحدث في أيام العام للجادری]

[و. 512] [ت. ظ]

1 [بسَم اللَّه الرَّحْمَان الرَّحِيم وَصْلِي اللَّه عَلَى سَيْدَنا مُحَمَّد وَآلِهُ]. قال الشيخ الفقيه أبو زيد عبد الرحمن بن محمد الجادری رحمه الله تعالى ورضي عنه وكرمه. 

2 [الحمد لله مُديِّر الفَلَک الدُوَّار وَمُولِّج اللَّيل فِي النِّهَار]. وصلِي اللَّه عَلَى سَيْدَنا مُحَمَّد نِبِيّ الْمُخْتَار وَآلهَ وَأَصْحَابِهِ ظُلِّمَت الأَخْيَار مَا نَجِم فِي الأَفْق نَجِمٌ غَايَةٌ أَوْ عَارٍ وَأَفْضِح الْطِيْر وَأَورَقت الأَشْجَر أَمَا بَعْد.

3 [فَإِنَّ بَعْضِ شِيْخْنَا الْفَقِهَاءِ الْعَلِيمَاءِ الأَذْكَى أَطْلَعْنَى عَلَى تَقْيِيدٍ مَنْسَوبِ لِالإِمَامِ السَّنِّي أَيْ العِبَاس الأَزْدِي ذَكَرَهُ فِي جُمُعَةِ الشَّهُور وَمَا يَحْدِثُ فِيهَا مِنْ دَخُولِ الْفَصُوْلِ وَزِيَادَةِ الْنِّهَارِ وَنَقْصَاهُ وَأَقْدَامِهِ وَكَانَ وَضْعَهُ اِبْنُ الْبَنِّاء۝ مَرَاكِشِ الْغَرَاءْ أَفَّارَدَ شَيْخُنَا أَنْ يَكُونَ ذَلِكِ عَلَى عَرْضٍ فَاسٍ وَطَلِبُ مَنْيُ بِيْنَ ذَلِكَ الأَسْبَاسِ.

The Tanbîh al-anām ‘alā mā yaḥduthu fī ayyām al-῾ām


[7] والشمس فيه على كج 197 من الجدي بالوضع الطبيعي وقوس نهاره قمح وخمس درجة ومدّة الشفق والفجر فيه ساعة معتادة ونصف ساعة.


186. أكمل: [و] الكمل.
187. مكّ: [و] ما.
188. ما: [و] مكّ.
189. منها: [و] ينير.
190. وهو: [و] ينير.
192. الآخر: [و] الآخر.
193. أحد: [و] إحدى.
194. ويستهل: [و] يستهل.
195. ينير: [و] في سعد.
196. ليلة: سقطت من [و].
197. ينير: [ت] بح.
198. درجات: [و] درجة.
199. وثلث: [و] وثلث.


[14] وفي الحادي وعشرين منه ارتفاع الزوال لح وأقدامه ح ونصف قدم وفيه توقي داود عليه السلام 207 وإرميا ويوشع يشع وشيمب.


[16] وفي السابع وعشرين منه تحل الشمس بسعد 209 السعود ويخرج زمان الحرف.

118
التانبيح الإنانم على ما يحدث فيه الأيوام

وفي الثامن وعشرين من ارتفاع الزوال و أقدامه ح ويكون النهار من عشر ساعات ونصف والليل من يه ساعة ونصف.

فصل

وفي هذا الشهر ينور اللوز ويطيب الأجر وقصب السكر ويعمل مربات الأجر ويجري الماء في العود ويوجد الدفء وتهدا الطير وتتسافد و تضرب أوتاد الرمان والريتون و يغرس النوى كلته والبلوه كالفتاح والسفرج وتزبر الكروم وما قطع فيه من الخشب تفادت صحته لكن الأولي في يوم صحو والقرمر أفل واطلب فيه الولد فإن طيائل النساء في هذا الشهر تشتهي الولد بذن الله وهو أحسن الأوقات لركوب البحر والله أعلم.

شهر فبرير

ويقال له بالسريانية سبأط بضم السين المهملة وقيل المعجمة وأيامه ثمانية وعشرون يوما وفي السنة الكبسة عند السريانيين من كت يوما وليس عليه العمل عائدا وبالله ويرجع الدلو وطبيعته البلد وآية أربعة والاستهلال فيه بالفرغ المقدم وقد يكون بالمؤخر.

في فايول الأول منه الشمس فيه على بط من الدلو وقوس النهار فنق وسدن وارتفاع الزوال ما وأقدامه ز وثلاثان والشفق والفجر فيه كما تقدم.

وفي الخامس منه يزداد في النهار ساعة على الرجوع فيكون من عشر ساعات ما.

دو ظ وثلاثة أرباع ساعة وينقص الليل كذلك وارتفاع الزوال مب وثلا ث درجة.


[13] وفي الخامس وعشرين منه يدخل شهر برـمـهـان الـقـبـت بفتـح أـولـي ويبنـج الـرـاء وسـكون الـلـيـم وـبـالـهـاء وـفـيه أوـل آيـام الـحـسوـم وـهي سبع ليـل وثـمانـية آيـام وـيـقال لـهـا لـيـال العـجوز وـليال صيان وليالي الراعي وأوـل لـيالـها لـيلة العاصِد والسادس والعشرين.

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221. تقع: [و] تقع في.
222. ز: [أت] سبعة.
223. لا تبقى دابة: [و] لا دابة.
224. ليل صيان: كذا في [أ] سقطت من [و].
The Tanbīh al-anām ‘alā mā yaḥduthu fī ayyām al-῾ām

[14] وقال فيها الشاعر وذكر أسماء لياليها:

كسع الشتاء بسبيعة غرايّ 225 / أيام 226 262 من الشهر
فإذا اannya زمة وماضت / من وصْب مع الوبير
وأمام وأخته مؤرخ / ومعلل وطعن الجنر
ولِّي الشتاء مبادرا هريبا 238 / وأتكت واقدة 239 من الحرّ

والبرد يشتدّ فيها لانصرافه ويشبه بالسراج يشتدّ ضوءه قبل أن يطفئ والعليل يقوى
شيئاً قبل أن يموت.


[16] وفي الثامن والعشرين منه النهار فيه من يّ ساعة ونصف والليل من يّ 230 ساعة

ونصف

[17] فصل

وفي هذا الشهر يفصح الطير وتقلب الخطاف والبلارج إلى الحواضر وترزّح دواب // [و. 516]
البحر وتؤزّق 231 أكثر الأشجار وترفرخ الحادة والغرب ويظهر النمل وترحض دود الحرير //
ت.3 و في بعض البلاد وتزرع بقول الصيف ويوجد عندنا فريك اللوز ويكر القول ويوجد
في آخره العود وفيه تتيح القطن وفي أشهر الذي يرد به تكثير نتاج الإبل ويطلق إخراج الدم
وشرب الدواء وقيل فيه بني داود عليه السلام بيت المقدس وأخرجت بنو إسرائيل جسد
 يوسف عليه السلام من النيل.

[1] شهر مارس

225. غراي: [و] غر منه.
226. / أيام: [ات] وآيام.
238. مو. 262. شهالها.
239. شهالها: [و] شهالها.
231. في آخره: [و] في آخر.
233. واللسان مبادرا هريبا: [و] واللسان مبادرا هريبا: [ات] ولي الشتاء مهاربا، الصواب ووفقا لعريب، كتب
الأنواع، ث. الكويي، 163.
229. واقدة: [ات] واقدة.
232.
ويقال له بالسريانية آذَر يفتح أوله والنذال المعجمة با مد وأيامه أخذ 232 وثلاثون يوما

وبرجه الحوت وطبيعته البلغم واسمه أربعة والاستهلال فيه بالنطح.

2 [عليmiss: 223] فاليوم الأول منه الشمس فيه على يز من الحوت وقوس النهار قعج وعشر وقوس الليل

باقي الدور وارتفاع الزوال نا 233 ودس وأقدامه خمسة وخمسان ومدة الشفق والفجر كما

تقدّم وهذا اليوم أول المخنينسات وهي سبعة أسابيع لا يدخل البحر فيها وقيل فيها يظهر

اليامون وهو الطير الذي يأكل النحل.

3 وفي الرابع منه تخرج أيام ليال العجوز.

4 وفي السادس منه ارتفاع الزوال نج ودس وأقدامه خمسة.

5 وفي الثامن منه تحل الشمس بالفرغ المؤخر.

6 وفي الحادي عشر قبل إذا فطم فيه الصبي لم يكن يطلب اللبن.

7 وفي الرابع عشر منه يعتدل الليل و 234 النهار ويسّم بالاً عدال الربيعي وارتفاع الزوال

نو وثلاث درجة وأقدامه أربعة ونصف.

8 وفي الخامس عشر منه تحل الشمس بالحمل وهو أوّل فصل الربيع عند الأطباء وأهل

التعديل ونقل عن الوجهي أنّ في هذا اليوم دخل نوح عليه السلام السفينة وكبر الطوفان

وفي توالد الحيتان. وقال أبو نواس في فصل الربيع

أما تري و 235 الشمس حلّت الحملة / وطاب وزن الزمان واعتدل

وغلبت الطرى بعد عجمتها / واستوثفت الخمر حولها كملا / (و. 517).
[9] وحلول الشمس بالحمل هو ابتداء الزمان وتحويل سني العام في الصحيح عن نبيّنا محمد عليه وسلم في قال في خطة يوم البحر سنة عشر «الآن الزمان قد استدرا كهيئة يوم خلق الله السماوات والأرض» فكان ذلك اليوم الذي قال هذا فيه صادف حلول الشمس بالحمل فسحبان من علما علمه علم الأولين والآخرين لو لم تكن له صلّي الله عليه وسلم معجزة سوى أعلامه وقعت الاستدارة من غير أن يعلم تعديل الأزمان لكان قوله هذا شاهدا بالرسالة وليس رد الشابري والقاضي عياض عن الخوارزمي بأن هذا اختبر ولم يوجد كذلك بيبن فإنه قد اختبرت فوجدته كم ذكرت.

[10] وفي التاسع عشر منه ارتفاع الزوال نح وثالث وأقدامه أربعة // [ت.3 ظ]


[12] وقيل في الذي بعده وفي الرابع وعشرين منه تحل الشمس بالشرعة ويقال له بطن الحوت.


[14] وفي السابع وعشرين منه يدخل برمودة شهر قبيط وهو بفتح الباء والدال المهملة.


[16] فصل

في هذا الشهر تغرس الملقات والقطن وقصب السكار والترنجان والمردقوش والنعناع والورد والسوسان ويغرس الزيتون أيضًا ويخرج الحوت من البحر إلى الأنهار ويتوالد دود الحرير ويدخل الفول الخضيري وهذا الشهر أوله حكم الزنتاع وآخره مواجهة الحرارة.

236 وحلول: [ت] حلال.
237. محمّد: سقطت من [ت].
238. له صلّي الله عليه وسلم معجزة: [و] له معجزة صلّي الله عليه وسلم.
239. لكان قوله هذا شاهدا بالرسالة: [ت] لكان يقوله بالرسالة.
240. يدخل: [ت] يوجد.
والرطوبة فيوَر فيه البِلُغة المعتدلة وكذلك المساكين والملابس وقيل هذا الشهر يسمى بالضار ويَتَق في الصواعق وقيل في الحديث من بشر بخروج الضار فله نصف دينار أو ضُمْنُت له الجَنَّة.

[1] شهر أبريل

وهو بالسُريانية نـيـسـان بـكـر /و. 518] اللَّيْل وَقَد تَفْتَح و حـكـاء التوزوري 243 بالكسر لَا غَيْر وَأَيَاهُ ثلَاثون يوْمَا وَبِرْجِه الحَلَم وَطَبِيعَتِهِ الدِمِ وَالحِجْرَةِ الرَّطْوَةِ الرَّطْوَةِ وَأَشْه سَبْعَة

والاستهلال فيه بالثَّنَيّ.

[2] فَالْيُوْمُ الأَوْلِيَّ مَنَّ الْشَّمْسِ فِيهِ عَلَى يِج 244 مَنَّ الْحَلَم وَقَوْسَ النَّهْارِ قَفْط 245 وَنَصْفَ دَرْجَة

وَسَاعَتِهِ يِبَ وَقَلْث سَاعَةٍ وَارْتِفَاعُ الزَّوَال صَح 246 وَخَمْسَانَ وَأَقْدَامِهِ ثَلَاثَةَ وَثَلَث 247 وَمَدْهَ الشَّفْقَ وَالْحَجرُ ثَلَاثَ وَعَشْرُونَ دَرْجَةٍ فَاقِسَمَهَا عَلَى يَهُ تَخْرُجُ سَاعَاتٍ مَعَتْدَلَةٍ.


[6] وَفِي الْعَاَشِرِ مَنَّ قِيْل تَوْهِي آَدَمَ عَلَيْهِ السَّلَامُ وَتَكَلَّمَ فِي الْفَهْدِ عِيْسَى بْنَ مَرْيَمَ عَلَيْهِ السَّلَامُ.

[7] وَفِي الْثَّانِيِّ عَشرٍ كَيْنَ النَّهْارِ مِنْ يِج سَاعَةٍ وَاللِّيْلِ مِنْ يَأ سَاعَةٍ 248 وَارْتِفَاعُ الزَّوَال صُو

ونَصْفً.

241. فيه: سقطت من [و].
242. و: سقطت من [و].
243. التوزوري: [و] التوزوري.
244. يج: [و, ت] يج.
246. صح: [م] صح.
247. وأققدمه ثلاثة وثلاثين: [و] وأققدمه ثلاثة وثلاثين ساعه.
248. والليل من يا ساعه: سقطت من [و].
[8] وفي الرابع عشر تحل الشمس بالثور ومدة الشفق والفجر كد درجة.


العبد الوادي.

[12] وفي السادس والعشرين منه يدخل بشن بقلي الباء والسين المعجمة وسكون النون
والسين المهملة شهر قبطي وفيه يهيج الدم /[ت.م] [فاعل بالصد.

[13] وفي السابع والعشرين أول مطر النيسان وتمدته سبعة أيام وفيه إذا عجن به العجين
خمرا دون خمية وبه يعقد الجوهر ويتم الزرع.


[15] فصل

وفي هذا الشهر يقلل النخل ويزي ويبقى القنديل ويتم الزيتون ويعقد الدين ويسلب الزرع
ويتم الشعير ويكثر الورد ويعمل ماؤه وشرايه ومرثاه ودهنه وكد البنسج ويشرب
الشامرة وتضرب أوتاد الأذار والياسمين والنارنج ويتم العنب الكبير /[و.م] 519

وهذا الشهر أعدل الأزمان مباقو لكل إنسان في كل البلدان.

[1] شهر مايه

ويقال له بالسريانية اجبار يفتح ألاه وسكون الجيم وباليا باثين من أسفل وبعضهم
يسقط الجيم وأيامه أحد وثلاثون يوم وبرجه الثور وطبقته الدم وأسه اثنان والاستهلال
بالهدقة.

249. ويتمَّ [م] يسمر.
250. وتضرب: [و] يضرب.
251. والنارنج: [و] والنارنج.

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[8] وفي الخامس عشر تحل الشمس بالجوزاء ومدة الشفق والفجر كُو۵۲ درجة فيه أوّل وغرات۵۳ الكم.


[13] وفي الثاني والعشرين منه تسامت الشمس في الزوال وسط في زمزم وجميع آبار مكة شرفها الله تعالى۵۴ ولا يكون لشخص قائِم ظل‌بها إذ تكون الشمس على سمت الرؤوس ثم تهبط في الشمال.

252. كُو: [ت].
253. وَغرات: [و] وَغرات.
254. تعالى: سقطت من [ت].


[16] وفي ثلاثين منه تحل الشمس بالهقعة.

فصل

وفي هذا الشهر يوجد فريك الحنط ويعيد الزيتون والعنب ويعمل النحل العسل //ت.


[1] شهر يونيه

ويقال له بالسريانية حزيران يفتح الحاء المهملة وكسر الزاي وفتح الراء أيضا وأيامه ثلاثون يوما وبرجه الجووز وطبيعته الدم وأسّه خمسة والاستحلال فيه بالذراع وقد يكون بالنثرة.


255. محمد: سقطت من [ت].
256. تصاد: [و] يصاد.
257. كوت: [ت] وأ. كز.
258. فيه: سقطت من [و].


[10] وفي الرابع وعشرين منه يوم العنصرة وهو ميلاد يحيى عليه السلام ويوم المهرجان عند النصارى دمرهم الله ويزعم أهل التجربة أنّ ما حصل فيه من النزاع لا يرتبط وقيل فيه حبست الشمس على يوضع بن نون عليه السلام مقدار يوم على فتح عقلان بالشام وقيل إنّ من غيّر في ذلك اليوم التين بالتراب لا يسقط من غيرها شيء وإن لم تزرب وقيل لا تحمل فيه أنثى على وجه الأرض.


259. الصيف: [و] المصيف.
260. ساعتان: [و] ساعتان، وعلى الهاشم ساعة.
261. الشمالي: [ب] المشرق.
262. دمرهم الله: [ب] لعنهم الله.
263. تزرب: [ب] نوبر.
وفي هذا الشهر يوجد باكور العنب والتين \(^{264}\) ويعقد //\(^{265}\). وتتّويج وجسّل وطيب التوت \(^{266}\) وتفتت قطاعي الغرس \(^{267}\) الذي له سنة باليد ولا يوجد فيقوى أصله ويستوتي فيه حصاد القيمة وتبيض العسل وأفضل ما يستعمل فيه من المطاعم والمشرب والمساك والملابس ما يُبرد ولطف وعذال الأجسام وقُتل من تحليل رطوبتها واجتني فيه مصابة الجوع والعطش.

[1] شهر يوليه

ويفال له بالسِّرِينية مَرْزوز يفتح النَّا المصغَّاة من فوق وَضِع الْمِيم مَشِدَّة وبالزاي وإِيامه أحَد وثلاثون يوماً ووجه السِّرِتان وطبعه الصفارة الحرارة والليوسة وآسه سبعة والاستهلال فيه بالطرفة \(^{270}\) وقد يكون بالجهة.

[2] فاليوم الأول منه الشمس فيه على يو من السِّرِتان وقوس النهار فيه من ريب وخمس درجة وارتفاع الدوزات عط درجة وأقدامه قد وثلاث غير نصف إصبع ونقشت فيه ٢٧١ مِدَّة الشفق والفجر نحو نصف درجة //\(^{522}\).

[3] وفي الرابع منه قيل \(^{272}\) تذهب البراغيث وَرَمَا هيَّت فيه ريح يخاف منها على العينين.


\(^{264}\) والتين: [و] والجوز.
\(^{265}\) التوت: [ت] التوت.
\(^{266}\) الغرس: [و] الترس.
\(^{267}\) سنة باليد: [و] سيبس اليد.
\(^{268}\) المطاعم والمشرب: [و] الطعام والشراب.
\(^{269}\) أحد: [و] إحدى.
\(^{270}\) بالطرفة.
\(^{271}\) في: سقطت من [و].
\(^{272}\) قبل: سقطت من [و].
\(^{273}\) على العينين: سقطت من [و].
\(^{274}\) وجميع آبَار: [و] وسائر ديار.


[8] وفي الرابع عشر تحل الشمس بالنترة وقيل فيه كانت هجرة النبي صلى الله عليه وسلم.


[10] وفي الخامس عشر وعشرين منه يدخل 277 شهر مسر القبطي بضم الهيم وسكون السين المهملة وفتح الراة وقد تكسر وهو الشهر الثاني عشر من شهورهم وأيامه له يوما وفي السنة الكبيرة لو يوما 278.


[12] وفي التاسع وعشرين منه ارتفاعه عج وقيل فيه ولد موسى عليه السلام وفيه كان خراب بيت المقدّس على ما ذكر المؤرخون.


[14] فصل
وفي هذا الشهر يبدأ بالدرس في فراخ الحجل وتصاد، ويظهر الثمر ويَزِه. وفي آخره يبدأ بازدراف بقول الشتاء، بل عند الماء وجمع المعطر وغيره /ت.5/ من الأعراض ويحذر في الاستفراغ والحركة الزائدة والامتلاء من الطعام ويقسم على مرتين أو ثلاثة.

[1] شهر أَشْتَ مُحَدَدت [و. 252]


280. بالدرس: [و، ت] بالدراس.
281. وتظهر: [و، ت] وطار.
282. وتصاد: [و] وتصاد.
283. الثمر: [و] الثمر.
284. ويَزِه: [و، ت] ويَزِه.
286. أغْشَت: [و] أغْشَت.
287. ويقال: [و] يقال.
288. ويعدها: [و] يتعدها.
289. مؤخَّدة: [ت] يوامدة.
290. ياض في المخطاطين.
291. بالطرف: [و] بالطرف.
292. اليوم: [و] اليوم.
293. في السادس: [و] في السادس عشر.
وفي التاسع منه ارتفاع الزوال عَدَرجة وذكر أنً من لدغته فيه عَقَرب مات من ساعته.

وفي العاشر منه أقدام الزوال قدمان 294 ونصف.

وفي الحادي عشر قيل فيه كانت وفاة أبي بكر وخلافة عمر رضي الله عنهما وقيل في يونيه وقد تقدم 295.

وفي السادس عشر منه تحل الشمس بالعذراء وهو 296 أول فصل الخريف عند الفلاحين ويكون النهار من يَج ساعة والليل من يا ساعة ومذة الشفق والفجر كد درجة وارتفاع الزوال صو ونصف 297 درجة وأقدامه قدمان وثلاثة أربع قدم.

وفي العشرين منه تخرج 298 سمائم الحَر وارتفاع الزوال صو درجة وأقدامه ثلاثة.

وفي الحادي 299 والعشرين منه تحل الشمس بالزمرة.

وفي الخامس والعشرين منه 300 ماتت مريم عليها السلام.

وفي السادس والعشرين منه نزلت 301 فيه التوراة.

وفي التاسع والعشرين منه يدخل شهر 302 توت بفتح أول التأئين وقد تضم وهو أول شهر القبط وفيه يكون النيروز بمصر.

[فصل 15]
The Tanbîh al-anām 'alā mā yaḥduthu fī ayyām al-῾ām

وفي هذا الشهر يزروع الفول الخريفي في البدانين ويزرع الخير السماوي والفلت والجزر والكرنب ويعبة البلوط وما غرس في آخره من الأوتاد والملوخ نبت نباتا حسنا ويفتح الجحوت البري من البحر إلى الأنهار ويكتر السردب وما قطع فيه من الخشب لا يستاس وفيه ينضح النبات على كل غرس مضاف عند العشاء الأول حيث يعلو وكذلك في الشهر الذي قبله فإن ذلك النضح يفتح منه ما أصابه من حر //،[و. 524] النهار وفيه ينور الأطرج ويعد في آخره ويطيب السند هو الدلّاع ويجنِب فيه الحلاوة بالكلية والدم السائل والمالح وينهى فيه عن الجماعة والجماع والعب. 


ويقال له بالسريانية أيلول يفتح أوله وسكون الياء بائتين من أسفل وأيامه ثلاثون يوما ويرجع السنة وطبعته //،[ت.60] الصفراء وأسه ستة والاستهلال فيه بالغفر وقد يكون بالسمك.

[2] فاليوم الأول منه تزعم النصارى أخزاههم الله أن فيه قبض يوشع بن نون عليه السلام والشمس فيه على يو درجة من السنة وقوس النهار قفز ونصف درجة وقوس الليل بباقي الدور والساعات المتحددة للنهار يب ونصف ساعة والليل يا ونصف وارتفاع الروال صب درجة وأقدامه ثلاثة ونصف قدم ومدة الشفق والفجر كح درجة.


وفي الخامس عشر منه يستوي الليل والنهار وهو الاعتدال الخريفي ويكون في كل واحد
منهما اثنتة عشرة ساعة وارتفاع الزوال نو وثلاثة درجة وأقدامه أربعة ونصف.

وفي السادس عشر منه تحل الشمس بالبيزان وهو أول فصل الخريف على مذهب
أبقراط \(^{313}\) وجالينوس وغيرهما من الأطباء وأهل التعديل ومدّة الشفق والفجر ساعة معتدلة
ونصف ساعة.

وفي العشرين منه تحل الشمس بالعواء.

وفي الثالث وعشرين منه \(^{314}\) ارتفاع الزوال نج وأقدامه خمسة.

وفي الرابع وعشرين منه قيل قتل فيه يحيى بن زكرياء عليه السلام.

وفي السابع وعشرين منه قيل يجمع فيه من الثمار ما يراد خزنه إلى الشتاء.

وفي الثامن \(^{315}\) وعشرين منه يدخل بابه \(^{317}\) بفتح الباء وقد تضم الثانية شهر قبطي.

وفي التاسع وعشرين منه يكون النهار من يأ ونصف ساعة والليل من يب ونصف ساعة.

وفي هذا الشهر يبدأ بالزراعة والحرث في الجبال الباردة ويجمع الجوز ويقطع الحناء
والمحضر فيه يقعد الملح ويسود بعض الزيتون ويظهر القسطل والبلوط ويغرس فيه التين
واللوز ويعمل فيه \(^{320}\) شراب الرمانين \(^{321}\) وشراب الفاكهة وهذا الشهر معتدل في حرارته وفيه

\(^{313}\) أبقراط: [و] بقراط.
\(^{314}\) منه: سقطت من [ت].
\(^{315}\) الثامن: [ت] الثامن.
\(^{316}\) قبل قتل فيه يحيى بن زكرياء عليه السلام وفي السابع... وفي الثامن والعشرين منه: سقطت من [و].
\(^{317}\) بابه: [و] باب.
\(^{318}\) في: سقطت من [ت].
\(^{319}\) قطع [و] قطع.
\(^{320}\) فيه: سقطت من [ت].
\(^{321}\) الرجلان: [و] الرجلان.
The Tanbīh al-anām ‘alā mā yahduthu fī ayyām al-῾ām

يتحرك المرة السوداء وتظهر الحيتان //و. 525// ويصل أكل الحلاوات وشربها ويجتني

أكلَ مُلَاحٍ والبطيخ ولجوم البقر.
وقال أبو نواسٍ فيه

مضي أيلول وارتفع الحرور / وأخذت ناره الشعرى العبور
فقوما فألقحنا ماء بخمر / فإن نتاج بينهما السرور
[1] شهر أكتوبر

والسريانية تشرين الأول بفتح الثاء باثنين من فوق وسكون الشين المجمعة وأيامه
أحد وثلاثون يوما ويرجع اليناز وطبعه السوداء والبرودة والبيوسة وأشهُّماية
والاستهلان فيه بالقلب // [ت 67] وقد يكون بالإكيل.

[2] فاليوم الأول منه الشمس فيه على يه من اليناز وقوس النهار قعاب وقوس الليل باقي
الدور وارتفاع الزوال ن وخمسان وأقدامه خمسة ونصف وهذا اليوم أول يوم من سني
الإسكندر 328 ونفسل السنة عند السريان فيه تحت الشمس بالسمك 329 وقيل فيه خلق الله
آدم عليه السلام.


322. أكل: سقطت من (ت).
323. نواس: سقطت من [و].
324. وأختت نارها: [و] فأختت نارها.
325. هو: سقطت من [و].
326. والبرودة: [ت] ونحرة.
327. غالبانية: [ت] واحد.
328. الإسكندر: [و] إسكندر.
329. بالسماك: [و] بالسمك.
331. درجة: سقطت من [و].
332. قبل كان: سقطت من [و].
وفي الخامس عشر منه ارتفاع الزوال مه وظلَّ كل شيء مثله وأقدامه ستة وثلاثة
والنهار فيه من ياء ساعة والليل من ييج ساعة.

وفي السابع عشر منه تحل الشمس بالعقرب وبالغفر ومدة الشفق والفجر كما تقدِّم
وفي حلول الأرض للزراعة وهو مبدأ حرف آدم عليه السلام.

وفي العشرين منه ارتفاع الزوال فيه مج وخمسان وأقدامه سبعة.

وفي الثامن وعشرين منه يدخل هتور بفتحلهاء وضع النائمة من فوق وقيل
بالهمزة موضع الدهاء شهر قبطي.

وفي التاسع وعشرين منه ارتفاع الزوال م ونصف درجة وأقدامه سبعة وأربعة أخماس
قدم فيه تحل الشمس بالرباني.

وفي الواحد وثلاثين منه النهار من ي 38 ونصف ساعة والليل من ييج ونصف.

فصل

وفي هذا الشهر يجمع الزيتون وينتقل الناس من لباس البياض إلى المضبوغ وما خشين من
الثياب وتضع الغنم ويوجد اللبن ويزرع الحسن والأنيسون والرازيانيج 339 والبصل وفي آخره
يسقط ورق الشجر وتسكن النمل أجارها ويرتج البحر فلا //و. 526 تجري فيه جارية
وأفضل ما استعمل فيه من المطاعم والثمار والمساكن ما رطب وسخ واجتب فيه لحم
البكري وما في معناه وقال الناس 340 الركوب والجماع واستعمل فيه الحمّام من غير إطالة وأكل
الدم والجائع.

334. وبالغفر: سقطت من [و].
335. للزراعة: [ت] بالريعة.
336. العشرين: [ت] عشرين.
337. فيه: سقطت من [ت].
338. ي: [و] يا.
339. والرازيانيج: [و] والرازيانيج.
The Tanbīh al-anām ‘alā mā yahduthu fī ayyām al-῾ām

[1] شهر نونير

ويقال له بالسريانية تشرين الثاني وأيامه ثلاثون يوما ويرجه العقرب وطبيعته السوداء
واسمه أربعة والاستهلال فيه بالتعام.

[2] فاليوم الأول من الشمس فيه على يو من العقرب وقوس النهار حتى وارتفاع الزوال لط
وثليدي درجة وأقعاده ثمانية.


[5] وفي الثامن منه قيل كانت وفاة عمر رضي الله عنه قتله أبو // [ت.70]

لؤلؤة غلام المغيرة بن شعبة.

[6] وفي العاشر منه تحل الشمس بالإكليل وارتفاع الزوال لز وربع درجة وأقعاده ثمانية
وثليدان.

[7] وفي الخامس عشر أول فصل الشتاء على مذهب الفلاحين وارتفاع الزوال لو درجة
وأبادمه تسعة.

[8] وفي السادس عشر تحل الشمس بالقوس وبقلب العقرب وقوس النهار هنا وخمس
درجة وقوس الليل بباقي الدور.

[9] وفي العشرين منه يكون النهار من عشر ساعات والليل من يد ساعة وارتفاع الزوال له
وأبادمه تسعة ونصف.

[10] وفي الثاني والعشرين منه تدخل الأيام البلق وهي عشرون يوما قيل الليالي السود
وعشرون بعدها.

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وفي السبع وعشرين منه يدخل كهيك، يفتح الكاف والهاء وقيل بتقديم اليا على الهاء شهر قبطي.

وفي الثامن وعشرين منه ارتفاع الزوال لح وثلاثة أرباع درجة وأقدامه عشرة.

وفي التاسع وعشرين منه تحل الشمس بالشولة.

فصل

وفي هذا الشهر عموم الزريعة ويغرس الكرم فيسرع نباته ويغرس الزيتون ويحصر الزيت وتسقط أوراق النبات ويجمع قصب السكر ويعد الفول الخيري ويزرع اللفط ويجمع البلوط والقططل وحُبّ الأس وهو الريحان ويعمل شرابه وتغطي النهار لئلا يضر بها الجليد ويكره في آخره دخول الحمام خِفيفة الزكام وشرب الاء بالليل خِفيفة الاستفساء وتموت كل دابة [و. 257] ليس لها عظام وتغلق الجيّات عينيها واستعمل فيه من المطاعم والمشرّب والمصاكن ما حلّ ودขน كالعسل والسمان واللحم بالثيد وبالفوم وشبهه وأكل طبخ البقر كالجزر وادهن بدهن الحري ونحوه وخذ من الطيب ما شئت واستعمل القيء والنكاح فإنه ذكر أنّ النكاح في هذا الشهر صحة باعتدال [و. 257] والله أعلم.

[1] شهر دجنبر

ويقال له بالسريانية كاتنون الأول وأيامه أحد وثلاثون يوماً وثانيتها السنة الكبیسة عند عجم الأندلس اثنان وثلاثون وعليه عملنا وبرجه القوس وطبعه السوداء وأسه سنة والاستهلال فيه سبع الذئاب.

343. كهيك: [و] كهيك وعلى الهامش كهيك.
344. أثمار ويجمع قصب السكر... اللفط ويجمع: سقطت من [و].
345. لها: [و] بها.
346. عينها: [ت] أعينها.
347. والمشرّب والمصاكن: [و] الملابس والمشرّب.
348. وادهن: [و] بالدهن.
349. باعتدال: [و] باعتدال.
350. يوماً وفي السنة الكبیسة... اثنان وثلاثون: سقطت من [و].
The Tanbīh al-anām 'alā mā yaḥduthu fī ayyām al-῾ām


[3] وفي الثالث منه قبل بدأ البخار يخرج من أفواه الناس (ت.70) ويستد البرد.


[7] وفي الخامس عشر منه تحل الشمس برس الجدي وهو المنقلب الشتوي وأول فصل الشتاء على مذهب الأطباء وقوس نهاره قمو وخمس درجة وساعاته ثالثة أرباع ساعة وهو أقصر يوم في السنة وقوس الليل ريج وأربعة أخماس درجة وساعاته يد وربع ساعة وهي 355 أطول ليلة في الستة ثم يأخذ النهار في الزيادة والليل في النقصان وارتفاع الزوال فيه لج غير سدس درجة وهو أقل ما يكون بيلدننا وأقدامه عشرة وثلاث قدم وهو غاية امتداد الظل في الزوال ومدة الشفق والفجر كح درجة. 356

>وفي الثاني والعشرين منه ارتفاع الزوال [...] وأقدامه عشرة وربع. 357


351 ليلة: سقط من [و].
352 منه: سقطت من [و].
353 الليلات: سقطت من [ت].
354 سموم الشتاء: [و] ليلات الشتاء.
355 وهي: [و] وهو.
356 درجة: سقطت من [و].
357 وفي الثاني والعشرين منه وربع: سقطت من [و، ت]. إضافة وفقا لمخطوط حمزة.

وفي السبع والعشرين منه يدخل طوية بضم الطاء المهملة وبالياء بواحدة من أسفل شهر قبطي ويقال طويل بالياء بعد الباء.

[361] فصل

وفى هذا الشهر ينذر اللوز الكبير ويطلب أوز الأرتج ويدخر ماء المطر فيه، وفي الشهر الذي يبعده فلا يتغير ويلجع الجيّار وفيه تفور العيون وينور البهار ويجسر القرع والباحنجان والثوم والخشخاش ولهذا الشهر ليس بوقت للدواء ولا لإخراج الدم.

[362] وهذا في آخر ما قصدنا ذكره // [و. 8] وهو جهد المقلل امتهن ولا يجد يد إلا ما تجد والحمد لله رب العالمين وصلى الله على سيّدنا محمدٰ خاتم النبّيّين وإمام المرسلين أنتهى. [370]
انتهى استخراج هذا المجموع المبارك أواسط جمادى الآخر سنة إحدى وثمانية على يد مؤلفه عبد الرحمن بن محمد الجادري لطف الله تعالى به ممنه وفضله. هكذا قال في نسخة التي نسخت منها وكان ممام هذه النسخة عشية 373 يوم الخميس الأول من ذي القعدة عام 1137. عزفنا الله خيره وواقنا شره أمين.

372 بن: [ت] ابن.
373 عشية: [ت] غشية.