

He probably wrote in the first half of the eighth century—hardly before that, and surely not much later. The use of the abbreviation QNM = *quoniam*, the omission of *N* in the middle of a word in the middle of the line (RESPÖDIT, fol. 273<sup>v</sup>), the occasional use of i-longa initially (IUSTI, IUDAEL, IN, &c.), the fairly frequent separation of words, and the whole character of the script make a date anterior to the year 700 quite unlikely. On the other hand, the original scribe must ante-date the year 800 since the uncial additions on fol. 273<sup>v</sup> and the cursive insertion on fol. 92<sup>v</sup> are still of the eighth century.

The cursive script on the page containing the *Capitulare Evangelii* (Morin in *Rev. Bénéd.* xix 1 sqq.) possesses unmistakeable earmarks of North Italian notarial products. It is interesting to note that *ci* occurs often for assimilated *ti* (*abuminacionem*, *desolacionis*), a spelling which at that time must have been common in Aquileia, Ravenna, and neighbouring towns.

The corrector who made the extensive addition in uncials on fol. 273<sup>v</sup> and added *passim* the then modern punctuation, may reasonably be assigned to the latter part of the eighth century. Of palaeographical interest is his regular use of a line surmounted by a dot to indicate omitted *m*, and his employment of three dots (···) arranged in a triangle, with base atop, as the point of interrogation—a style of interrogation sign not peculiar to the corrector of our MS, for it is found in some other Italian MSS. The value of the three dots thus arranged—as will be shewn elsewhere—is precisely the same as that of the ordinary point of interrogation made of three strokes (or curves). Both signs indicate the modulation of voice required in an interrogative sentence, and signify an up, followed by a down, followed by an up again, so that ··· is the equivalent of  $\wedge$ .

E. A. LOEW.

## DATES IN THE ELEPHANTINE PAPYRI.

AN analysis of the double dates in the Aramaic Papyri edited by Dr Sayce and Dr Cowley<sup>1</sup> shewed that the Jewish months were counted

<sup>1</sup> *Aramaic Papyri discovered at Assuan* (1906). See my papers *Calendar Dates in the Aramaic Papyri from Assuan*, *Monthly Notices of the Royal Astronomical Society* lxi (1908) pp. 12–20; *Note on the Regnal Years in the Elephantine Papyri*,

from the mean sunset following mean new moon, and that with one exception the intercalation was so arranged that the new moon of Tishri fell not earlier than September 17 nor later than October 16. I have now applied this principle to the dates in the papyri edited by Professor Sachau,<sup>1</sup> and I tabulate the results of both investigations in the present paper, to which I append a note on M. Pognon's paper in the *Journal Asiatique* 10<sup>e</sup> Série xviii (1911), pp. 337-365, and a note on the Sabbath. A comparison of the dates of Papyri Sayce-Cowley B and D shews that there can have been no intercalation between 465 B.C. and 459 B.C., and the dates on Sachau's Papyrus 28 are most easily explicable on the theory that the Jewish months were still running early in 456 B.C. as a result of this temporary neglect of intercalation. Elsewhere I have assumed that the intercalation was normal. The double dates which occur on some of the Papyri disclose two errors on the part of the scribe in the day of the month and one in the year. Where the papyri give only Jewish or only Egyptian dates we have no check on their accuracy, and it is possible that they are in some instances misdated.

*Note on M. Pognon's Paper.*

M. Pognon proposes a series of amended readings in the Sayce-Cowley papyri in order to avoid the suppositions of misdatings and of irregular intercalation. In Papyrus D he proposes to read 21 Mesore for 1 Mesore, and thus obtains the equation: 21 Chisleu = 21 Mesore in Year 6 of Artaxerxes = 1 December 459 B.C. This gives the correct equation for the 6th year of Artaxerxes, but it makes Chisleu begin one day later than it should on my theory of the Jewish calendar. It also gets rid of the hypothesis that the calendar was running early at the date of this papyrus. In Papyrus E he wishes to read 2 Chisleu, 11 Mesore for 3 Chisleu, 10 Mesore. The amended reading would give November 18, 446 B.C., a date which would excellently suit my theory. In Papyrus G he proposes 27 Tishri for 26 Tishri, and places the papyrus in the 8th year of Artaxerxes in spite of the opinion of Dr Sayce and Dr Cowley that it cannot be earlier than the 19th. This would suit my theory, if, as I have suggested in *Monthly Notices* lxix pp. 18, 19, the Jews reckoned their mean new moons a few hours late. If, however, the 8th year of Artaxerxes is the true date, I should prefer to retain the reading 26 Tishri and to abandon my theory. The date would then be October 16, 457 B.C. I see, however, no sufficient

*ibid.* lxix (1909) pp. 446-448; errata, *ibid.* pp. 470, 542; *A reply to Professor Ginzell on the Calendar Dates in the Elephantine Papyrus*, *ibid.* lxxi (1911) pp. 661-663.

<sup>1</sup> *Aramäische Papyrus und Ostraka aus einer jüdischen Militär-Kolonie zu Elephantine* (1911).

## EXACT DATES OF POPYRI.

	RECORDED DATE.	B. C.	COMPUTED DATE.	
Sachau Pap. 30.	. 2 Epiphi in the Year 27 of King Darius	. 495	October 22 . . .	Wednesday Marheshwan 3.
" " 25.	. 28 Phaophi in the Year 2 (3?) of Xerxes	. 484	(483?) February 17 . . .	Monday (Tuesday?) Shebat 24 (Adar 5?).
Sayce-Cowley A	. 18 Elul, 28 Pachons in the Year 15 of Xerxes . . . . .	. 471	September 12 . . .	Sunday.
" " B	. 18 Chisleu, 17 (?) Thoth, 21 Xerxes, beginning of Artaxerxes . . . . .	. 464	January 2 . . .	Monday.
Sachau Pap. 27.	. 18 Phaophi in the Year 4 of Artaxerxes	. 461	February 2 . . .	Sunday Shebat 22.
<sup>1</sup> Sayce-Cowley C, D.	. 21 Chisleu, 1 Mesore, 6 of Artaxerxes	. 460	November 11 . . .	Thursday.
<sup>2</sup> Sachau Pap. 28	. 7 Chisleu, 4 Thoth, 9 of Artaxerxes	. 456	November 13 . . .	Thursday.
Sayce-Cowley G	. 26 Tishri, 6 Epiphi . . . . .	. 446	October 14 . . .	Sunday.
<sup>3</sup> Sayce-Cowley E	. 3 Chisleu, 10 Mesore, 19 Artaxerxes	. 446	November 17 or 19	Saturday or Monday.
Sayce-Cowley F	. 14 Ab, 19 Pachons, 25 Artaxerxes . . . . .	. 440	August 26 . . .	Monday.
Sachau Pap. 5 . . .	. 19 Marheshwan, 37 Artaxerxes . . . . .	. 428	November 15 or 16	Saturday or Sunday Mesore 13.
Sachau Pap. 18 . . .	. 3 Phamenoth, 5 (of Darius) . . . . .	. 419	June 6 . . . . .	Tuesday Shiwan 13.
Sayce-Cowley J	. 3 Chisleu, 8 Darius; 12 Thoth, 9 Darius	. 416	December 16 . . .	Wednesday.
Sachau Pap. 8 . . .	. 13 Tebeth, 12 Darius . . . . .	. 411	January 11 . . .	Saturday Phaophi 9.
Sayce-Cowley K	. 24 Shebat, 13 Darius; 9 Athyr, 14 Darius	. 410	February 10 . . .	Tuesday.
Sachau Pap. 1 . . .	. 20 Marheshwan, 17 Darius . . . . .	. 407	November 24 . . .	Saturday Mesore 27.
Sachau Pap. 35	. 23 (24?) Phamenoth, 5 Amyrtaeus . . . . .	. 400	June 21 (22?) . . .	Saturday (Sunday?) Shiwan 29 (28? 30?).

<sup>1</sup> The Jewish and Egyptian dates do not correspond, unless we assume that the papyrus belongs to the 5th, not to the 6th year of Artaxerxes.

<sup>2</sup> This seems the most probable date, but it involves the assumption that 4 Thoth is an error for 4 Mesore. 4 Thoth should be December 18, 457, or December 18, 456, which would be respectively the 2nd and 13th days of a lunar month.

<sup>3</sup> It is clear that either 3 Chisleu is an error for 1 Chisleu or else 10 Mesore is an error for 12 Mesore.

VAGUE DATES OF POPYRI AND OTHER DATES  
MENTIONED ON POPYRI.

RECORDED DATE.	COMPUTED DATE.
	B. C.
Sachau Pap. 7 . Year 24 to Year 31 . .	441-434
"    " 19 . Mechir   "    4 (Darius)	420 May 5-June 3.
Sayce-Cowley H. Elul, Payni   "    4   "    "	420 September.
Sachau Pap. 6 . 15-21 Nisan   "    5   "    "	419 April 10-16.
"    " 1 . Tammuz   "    14   "    "	410 July 14-August 11.
"    " 29 . Mesore   "    15 (?)   "    "	409 (?) October 29-November 27.
"    Tafel 60 . Year 18 of King Darius .	406-5 if reckoned from Nisan, 407-6 if reckoned from Thoth.
"    Pap. 35 . 30 Pharmuthi, 5 Amyrtaeus	400 July 28 Monday Ab 7 or 6.
"    " 16 . 27 Tybi . . . . .	End of April or beginning of May.
"    " 33 . 15 Phaophi . . . . .	End of January or beginning of February.
"    " 46 . Phamenoth, Year 13 . . . . .	June.
"    " 61 . Year 6 . . . . .	
"    " 61 . Epiphi, Year 13 . . . . .	October or November.
"    Tafel 60 . Tybi . . . . .	April or May.
5 P . . . . .	
Adar . . . . .	February, March, or April.

reason for abandoning either the *terminus a quo* for this papyrus as given by Dr Sayce and Dr Cowley, or my theory of the calendar which was based upon it.

The correctness or otherwise of M. Pognon's readings can only be determined by a reference to the papyri themselves, which neither M. Pognon nor I have seen. I have examined the disputed figures on the photographs and feel unable to express a judgement, but I feel that the readings given by the editors, who had the originals before them, are entitled to acceptance until doubts have been confirmed by an examination of the papyri, and I, therefore, adhere to the dates which I first published and to the theory by which I proposed to explain them.

M. Pognon holds, as does also Professor Eduard Meyer, that the lunar dates do not belong to a local Jewish calendar, but to an official calendar used throughout the Persian empire. I see no objection to this so long as it is recognized that this calendar reckons the months from the mean sunset following mean new moon and not, like the Babylonian, from the evening when the first appearance of the moon was due. This would afford an explanation of my suggestion that the mean new moons were reckoned an hour or two later than their correct dates as reduced to Elephantine time. Babylon time is forty-six minutes, and Susa time sixty-two minutes in advance of Elephantine time. The

dates of mean new moon would, therefore, seem on this assumption to have been exceedingly exact for the longitude for which they were calculated.

*Note on the Sabbath.*

The Sabbath must have fallen (*a*) every seventh day as at present, (*b*) on the 7th, 14th, 21st, and 28th days of the month as at Babylon, or (*c*) on the 1st, 8th, 15th, 22nd, and 29th days of the month, so that the new moons and great festivals should be sabbaths. (*a*) In 446 B.C. Mesore 10 is a Saturday, but there is clearly an error of two days either in the Jewish or in the Egyptian date, for the recorded synchronism agrees neither with the moon nor with the synchronism in Sayce-Cowley G. If we retain the Jewish date and read Mesore 12, the date falls on a Monday. In 428 B.C. Marheshwan 19 is either Saturday or Sunday according as the mean new moon was reckoned before or after sunset on October 27. Oppolzer's tables make it fall at 4.45 p.m. local mean time, but we cannot be sure that the Jews of Elephantine did not place it an hour or two later. Oppolzer would make the mean new moon of 410 B.C. January 16 fall at 5.9 p.m., but the date of Sayce-Cowley K shews that the Jews of Elephantine treated it as after mean sunset. If they did the same with the mean new moon in question, which fell 24 minutes earlier in the day, the date of the papyrus in question would fall on a Sunday, not a Saturday, but as the papyrus is a document sent by Achaemenes to Arsames, probably both heathens, there seems to be no objection to its belonging to a Saturday. 411 B.C. January 11 falls clearly on a Saturday. The document is a letter from Arsames to Apries, probably both heathens, and therefore lies outside Jewish religious scruples. The papyrus of 407 B.C. November 24 falls on a Saturday if the previous mean new moon, which according to Oppolzer's tables was at 3.40 p.m., was taken to be before mean sunset. To make it fall after sunset involves an error of over 2 hours, but this cannot be proved by these papyri to be impossible. It is therefore possible, though not probable, that this papyrus belongs to a Sunday. The papyrus consists of a letter to Bagohi from Jedoniah and his companions, the priests. The papyrus of 400 B.C. falls on a Saturday if the reading 23 Phamenoth, which Professor Sachau prefers, is correct, on a Sunday if 24 Phamenoth is correct. We thus have a series of Saturday dates which can all with more or less probability be corrected to other days except that of 411 B.C. January 11, which seems not to be affected by Jewish scruples about the Sabbath. It is, therefore, possible that the seven-day week was already in existence, and that the Sabbath was already regarded. (*b*) Sayce-Cowley C, D, F and Sachau Pap. 28, all business documents, are dated on days of the Jewish month divisible by 7. There can, therefore, have been no objection to executing

a document on such a day. (c) Sachau Pap. 27, a legal document, belongs to a date which is clearly equated with the 22nd of the lunar month, and Sachau Pap. 35 may belong to the 29th of a lunar month, but the figure on the papyrus is not quite clear, nor is it certain on which day this lunar month would begin. The former of these papyri proves, if the date is correct, that there was no objection to executing documents on days giving a remainder of 1 when divided by 7. The general conclusion from this discussion is that the papyri prove that if a scruple against executing documents on the Sabbath existed, the Sabbath must have been reckoned by the same rule as among later Jews, but they do not prove that such a scruple existed.

J. K. FOTHERINGHAM.

#### THE ASTRAL TERMS IN JOB IX 9, XXXVIII 31-32.

THE different interpretations of the astral terms in Job ix 9, xxxviii 31-32 are given by Dillmann in his *Hiob*, 2nd ed. 1891, and the suggestions which have been made since are ably summarized, explained, and illustrated by Maunder in his *Astronomy of the Bible*, 1908. Yet Bude's dictum that the problem is scarcely possible to solve (*Das Buch Hiob* xxxviii 31) still holds good. I should take this to mean that the solution can be final only when the terms are found to agree phonetically with, or to be translations of, certain names in astronomical lists contemporary with the author of the book of Job. The conviction that I have discovered such a solution is the best apology for my boldness in setting aside current theories. It is antecedently improbable that the Hebrews, whose political independence lasted but a few centuries, would have ventured to elaborate a new system of astronomy when their fellow-Semites, the Babylonians and the neighbouring Egyptians, already possessed very ancient systems. Again, the author's obvious acquaintance with Egypt makes it highly probable that he used Egyptian astronomical terms.

No disputed points in Egyptian astronomy are given in this note, and all that is here cited from Brugsch is accepted even by so great and recent an authority as Professor G. Foucart (see his article 'Calendar [Egyptian]' in *Encycl. of Relig. and Ethics*).