

ÖSTERREICHISCHE AKADEMIE DER WISSENSCHAFTEN
PHILOSOPHISCH-HISTORISCHE KLASSE
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ASTRONOMICAL
DIARIES AND RELATED TEXTS
FROM BABYLONIA

Volume V

Lunar and Planetary Texts

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VERLAG DER ÖSTERREICHISCHEN AKADEMIE DER WISSENSCHAFTEN
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Table of Eclipses

Text	Tablet	Lines	Date	Type	Record	Comments
2	BM 32238	Obv. I', 1'-3'	-730 Apr 9	Lunar	Prediction	
		Obv. II', 1'-3'	-712 Apr 19	Lunar	Observation	Wrongly filed?
		Obv. III', 1'-3'	-694 May 1	Lunar	Observation	
		Obv. IV', 1'	-676 May 11	Lunar	Prediction	
		Obv. 5', 1'-3'	-658 May 22	Lunar	Prediction	
		Rev. I', 1'-2'	-388 Oct 31	Lunar	Prediction	
		Rev. II', 1'-3'	-370 May 17	Lunar	Observation	
		Rev. II', 4'-14'	-370 Nov 11	Lunar	Observation	cf. BM 35333 (Diary)
		Rev. III', 1'	-352 May 28	Lunar	Prediction	
		Rev. III', 2'-10'	-352 Nov 22	Lunar	Observation	
		Rev. IV', 1'-2'	-334 Dec 3	Lunar	Prediction	
		Rev. V', 1'-4'	-316 Jun 18	Lunar	Observation	
		Rev V', 5'-12'	-316 Dec 13	Lunar	Observation	
3	BM 35115 + 35789 + 45640	Obv. I', 1'	-702 Sep 23	Lunar	Prediction	
		Obv. I', 2'-5'	-701 Mar 20	Lunar	Observation	
		Obv. II', 1-6	-685 Apr 22	Lunar	Observation	
		Obv. II', 8-9	-685 Oct 15	Lunar	Prediction	
		Obv. II', 1'-4'	-684 Oct 3	Lunar	Observation	
		Obv. II', 5'-6'	-683 Mar 30	Lunar	Prediction	
		Obv. III', 1-4	-667 May 2	Lunar	Prediction	
		Obv. III', 5-6	-667 Oct 23	Lunar	Prediction	
		Obv. III', 1'-3'	-666 Oct 15	Lunar	Observation	
		Obv. III', 4'-6'	-665 Apr 10	Lunar	Observation	
		Obv. IV', 1-4	-649 May 13	Lunar	Prediction	
		Obv. IV', 5-8	-649 Nov 6	Lunar	Observation	
		Obv. V', 1-6	-631 May 24	Lunar	Observation	
		Rev. I', 1'-2'	-414 Mar 26	Lunar	Prediction	
		Rev. I', 3'-8'	-414 Sep 19	Lunar	Observation	Wrongly filed?
		Rev. I', 9'-12'	-413 Mar 16	Lunar	Prediction	
		Rev. II', 1'	-397 Oct 12	Lunar	Prediction	
		Rev. II', 2'-8'	-396 Apr 5	Lunar	Observation	
		Rev. II', 9'-11'	-396 Sep 30	Lunar	Observation	Wrongly filed?
		Rev. II', 12'-13'	-395 Mar 26	Lunar	Prediction	
		Rev. II', 14'-15'	-395 Sep 13	Lunar	Unclear	
		Rev. III', 1'-2'	-379 Oct 24	Lunar	Prediction	
		Rev. III', 3'-9'	-378 Apr 17	Lunar	Observation	Wrongly filed?
		Rev. III', 10'-11'	-378 Oct 11	Lunar	Prediction	
		Rev. III', 12'-20'	-377 Apr 6	Lunar	Observation	
		Rev. III', 2'-5'	-359 Apr 17	Lunar	Observation	
		4	BM 32234	Obv. I', 1'-8'	-608 Sep 4	Lunar
Obv. II', 1'-2'	-590 Mar 22			Lunar	Observation	cf. BM 38462 (Eclipse Text)
Obv. II', 3'-5'	-590 Sep 15			Lunar	Prediction	cf. BM 38462 (Eclipse Text)
Obv. II', 6'-7'	-589 Mar 12			Lunar	Prediction	cf. BM 38462 (Eclipse Text)

Text	Tablet	Lines	Date	Type	Record	Comments
		Obv. III', 1'-8'	-572 Apr 2	Lunar	Observation	
		Obv. III', 9'-11'	-572 Sep 25	Lunar	Prediction	
		Obv. III', 12'-13'	-571 Mar 22	Lunar	Unclear	
		Obv. IV', 2'-8'	-554 Oct 6	Lunar	Observation	
		Obv. IV', 9'	-553 Apr 3	Lunar	Unclear	
		Obv. V', 1'-3'	-536 Apr 23	Lunar	Observation	
		Obv. V', 4'-10'	-536 Oct 17	Lunar	Observation	
		Rev. I', 1'-4'	-518 Oct 28	Lunar	Prediction	
		Rev. II', 1'-6'	-500 Nov 7	Lunar	Observation	
		Rev. III', 1'-6'	-482 Nov 19	Lunar	Observation	
		Rev. IV', 1'-3'	-464 Jun 5	Lunar	Observation	
		Rev. IV', 5'-9'	-464 Nov 29	Lunar	Observation	
		Rev. V', 1'-2'	-446 Dec 11	Lunar	Unclear	

No. 2

BM 32238 (= S+ 76-11-17.1965)

Listed as LBAT *1414

Photo: Pl. 1

Lunar eclipses and eclipse possibilities, arranged in 18-year groups. For a discussion, see Appendix, and C. B. F. Walker, in *Mesopotamia and Iran in the Persian Period: Conquest and Imperialism 539-331 BC*, ed. J. Curtis (London 1997) 17-25.

‘Obv.

1

1’ 1.50. Year 1 of Mukin-zeri.

2’ month 1. (eclipse) which was omitted.

3’ At 1.0° after sunrise.

II

- 1' (Year) 9. month II. the 15th. It rose eclipsed.
- 2' $\frac{1}{2}$ of the disk was covered.
- 3' At 20° before sunset.

III

- 1' (Year) 5 (of Aššur-nadin-šumi), month II. the 14th' [...]
- 2' total. It set eclipsed. At $30+[x]^\circ$
- 3' before sunrise.

IV

- 1'

V

- 1' I [...]
- 2' at' [...]
- 3' omitted' [...] [...]

Rev.'

- 1'
- 1' [... the 1]4th. (eclipse) which was omitted.
- 2' [At] after sunrise.
- 3' [...]
- 4' [...] intercalary'

II'

- 1' [...]
- 2' [...] the north wind blew.
- 3' [...] it became eclipsed. During the eclipse. Saturn stood above α Scorpii. At 1.6° after sunset.

-
- 4' Month VIII. the 15th. When it began on the north
 - 5' and east side. in 22° all was covered.
 - 6' 20° maximal phase. In 21° it cleared from
 - 7' east to between north and west.
 - 8' (When) 2° were left to clearing.
 - 9' Jupiter came out in Leo. 63° onset.
 - 10' maximal phase. and clearing. Its eclipse was red
 - 11' [...] in front' of ζ Tauri
 - 12' [it was eclipsed. The wind which was] slanted to the north blew.
 - 13' During its eclipse. lightning flashed. there was thunder.
 - 14' At 30° after sunset.

III'

- 1' [...] At 7°
-
- 2' Month VIII. the 14th. When it began on the south

3' and east side, in 23°
 4' all was covered. 18° maximal phase. In $6'$
 5' of night, one-fourth on the east side cleared;
 6' it set eclipsed. The eclipse was red. $1\frac{1}{2}$ cubits
 7' behind ζ Tauri it was eclipsed.
 8' During the eclipse Saturn stood there; the remainder of the planets
 9' did not stand there. The north wind which was slanted to the west blew.
 10' At 47° before sunrise.

IV'

1' Month IX, the 14th, (eclipse) which was omitted.
 2' At 60° before sunset.
 3' Month XII was intercalary.

V'

1' [...] [...]
 2' The west wind which was slanted to the north blew. $5'$ [cubits]
 3' in front of β Capricorni it was eclipsed. At 10°
 4' after sunset.

5' Month IX, the 15th. When it began on the south and east side,
 6' in 19° all was covered. 5° maximal phase.
 7' In 16° it cleared to between north and east.
 8' 40° onset, maximal phase, and clearing. During onset (and) maximal phase
 9' it was slow, during clearing fast.
 10' Its eclipse was red. $1\frac{1}{2}$ cubits
 11' in front of β Geminorum it was eclipsed. At 44° after sunset.
 12' Month IX, on the 27th. Pill[i-....]
 13' Year 2 of Antigonos.
 14'

Comments

For dates of the eclipses see Appendix.

Obv.

I 1': The significance of the number at the beginning of the line is obscure to me; for a suggestion of J. Steele, see p. 392. There are similar numbers in No. 1:1 and 3.

II 2': *a* is abbreviated from E-*a* = *uṣâ* "it came out". ½ HĀB fits the size of the lunar eclipse of -712 April 19, but the time does not fit; the moon had already risen when the eclipse began. Possibly *ana ŠÚ šamaš* "before sunset" is to be emended to GE₆ GIN "after sunset".

IV: According to the layout of the tablet, this should concern the eclipse of -676 May 11.

Rev.

II' 7': *bi* is an abbreviation of *birīt*.

III' 1': this eclipse should be of -352 May 28. The partial lunar eclipse on that date however began only after the moon had set. A reading ME NIM would be appropriate, but the remaining traces look at most like *ana ZÁLAG*. This could be taken as abbreviation of GE₆ *ana ZÁLAG*, but it still would have to be considered an error.

III' 8': ÍB is abbreviated from ÍB-TAG₄ = *rēhtu*.

V' 6': 19 looks more like 20, but 19 agrees with the total in line 8'.

V' 12': this could be a reference to the death of Philip Arrhidaeus. The only thing certain (or at least probable), however, is that Philip is mentioned here.

V' 14': the usual title of Antigonus is *rab uqu*, written logographically as GAL ÉRIN^{mes}. The first sign may be GAL as well as DUMU. The next one could be ÉRIN (although it looks more like PI), but the last is certainly RU.

No. 3

BM 35115 (= Sp II 660) + 35789 (= Sp III 316) + 45640 (= 81-7-6.33)

Copies: LBAT 1415 (45640), 1416 (35115), 1417 (35789)

Photo: Pl. 2

Lunar eclipses and eclipse possibilities, arranged in 18-year groups. For a discussion, see the Appendix, and C. B. F. Walker, in *Mesopotamia and Iran in the Persian Period: Conquest and Imperialism 539-331 BC*, ed. J. Curtis (London 1997) 17-25.

Obv.

I'

1' [...] after sunrise'

2' [...] (Year) I' of Bēl-ibni

3' [...] to between south

4' [...] it set eclipsed.

5' [At before sunri]se.

II'

1 [...]

2 [Month II'] (after) 5 months between

3 [nor]th and east it began: two-thirds of the disk

4 [was covered'. The we]st' wind blew.

5 [At] 1.40°

6 [after sun]set.

7 [Month VI] was intercalary.

8 [... I]4' which was omitted.

9 [At] after sunrise.

(break)

1' [...]

2' all' was covered. In 6°'

3' middle of Aries The south wind

4' blew. At 20° after sunset.

5' (Year) 5. [month I]. the 15th. (eclipse) which was omitted.

6' At [x]+10° after sunrise.

III'

- 1 Accession year of Šamaš-šumu-ukīn,
 2 month II, (after) 5 months:
 3 (eclipse) which was omitted.
 4 At 40° after sunrise.
-

- 5 Month VIII, (eclipse) which was omitted.
 6 At 30° before sunset.
 (break)

- 1' [....]
 2' It set eclipsed. At 20°+[x]
 3' before sunrise.
-

- 4' (Year) 2, month I, the 14th,
 5' began'. At 3°' [....]
 6' after sunset.

IV'

- 1 (Year) 18 of Šamaš-šumu-ukīn,
 2 month II, (after) 5 months.
 3 (eclipse) which was omitted.
 4 At 1,0° before sunset.
-

- 5 Month VIII, the 13th, [....]
 6 and south [....]
 7 [....]
 8 [....]

V'

- 1 (Year) 16 of Kandalānu.
 2 month III, (after) 5 months, the 15th, 2 fin[gers']
 3 between north and east were covered.
 4 It cleared in the north. The north wind b[lew']
 5 20° onset, maximal phase. [and clearing]
 6 behind α Scorpii [it was eclipsed.]

Rev.

I'

- 1' [....] which was omitted.
 2' [At] 12°' before sunset.
-
- 3' [.... the 1]4th, moonrise to sunset: 1°;
 4' [....]
 5' [....]
 6' [....] after sunset.

7' [...] it was eclipsed.

8' [...] 10'

9' [...] clouds'

10' [...] not seen

11' [...] seen

12' [...] be]fore sunrise.

13' [...]

II'

1' [...] omitted [...]

2' Month XII₂, the 14th.

3' it began on the south side.

4' one-fourth of the disk was covered.

5' It cleared to the west. 27°

6' onset, maximal phase, and clearing.

7' The "garment of the sky" was there, the south wind blew.

8' At 48° after sunset.

9' (Year) 8, month VI, the 14th, 1 ½

10' fingers'

11' At 1.20° before sunrise.

12' Month XII, the 14th, (eclipse) which was omitted.

13' At ½ *bēru* before sunset.

14' (Year) 9, month VI, the 13th.

15' [...]

III'

1' [...]

2' At 20° after sunrise.

3' (Year) 26, month I, the 12⁺{xth.}

4' it began on the east side: it set eclipsed.

5' 1 2 3 cubits in front of β

6' Capricorni it was eclipsed. The north wind which was

7' set to the east side blew.

8' At 10°

9' before sunrise.

- 10' Month VII. the 13th. (eclipse) which was omitted.
 11' At 12^{o'} after sunrise.
-
- 12' Month XII₂. the 15th. when it began on the south side.
 13' in 15° all was covered. 21°
 14' maximal phase. When it began to clear from the east.
 15' it cleared in 19° of night to the west.
 16' 55^{o'} onset. maximal phase, and clearing.
 17' 14 fingers in front of α Librae
 18' it was eclipsed. (In) its eclipse. the w[est' wind]
 19' which was slanted to the south [blew.]
 20' At 37° [after sunset.]
-
- 21' (Year) 2{7.}

IV'

- 1' [...] [...]
-
- 2' (Year) 45. month I. the 10+[xth,]
 3' to sunrise [...]
 4' from [...]
 5' [...]

Comments

For dates of the eclipses see Appendix.

Obv. I' 2': The first preserved sign is most likely KAM, certainly not MU. In other instances in this text where year numbers are written, they are also not preceded by MU. Nor are royal names preceded by vertical wedges. I am therefore inclined to read "(Year) 1 of Bel-ibni", but have to admit that I do not know what is written before it.

II' 1: This line begins the eclipse report for -685 Apr 22. After the destruction of Babylon by Sennacherib, there was no king in Babylonia. In analogy to line 5' below, one could restore "3" at the beginning of the line. Thereafter, a king's name or its equivalent is expected, but I could not find a suitable reading. A possible reading *bar-tú* "revolt" is unlikely.

II' 5': "(Year) 5" seems to be counted from the conquest of Babylon by Sennacherib.

No. 4

BM 32234 (= S+ 76-11-17.1961)

Listed as LBAT *1419

Photo: Pl. 2

Reports of lunar eclipses and eclipse possibilities, arranged in 18-year groups. Five columns each are preserved on obverse and reverse. For a discussion, see Appendix, and C. B. F. Walker, in *Mesopotamia and Iran in the Persian Period: Conquest and Imperialism 539-331 BC*, ed. J. Curtis (London 1997) 17-25.

'Oby.'

I'

- 1' [Year 17 (of Nabopolassar), month VI, the 1]4th'.
2' [...] in 20°
3' [...] x]+4°' maximal phase:
4' [...] it cleared from] east to west
5' [...] night
6' [...] was visible
7' [...] re]mainder'
8' [...] after sun]set'.

II'

- 1' [...] Vir]go'
2' [At] 30° before sunset.
-

- 3' (Year) 14 of Nebukadnezar
4' month VI, (eclipse) which was omitted.
5' With sunrise.
-

- 6' [Mon]th XII, the 14th, (eclipse) which was omitted.
7' after' sunrise'.

III'

- 1' [Month XII,]
2' [...]
3' it cleared [from] east to north.
4' The south wind blew 1 cubit
5' in front of Libra it was eclipsed.
6' Saturn rose in Capricorn: Mars
7' was 2 cubits in front of α Scorpii.
8' At 1.30° after sunset.
-

- 9' (Year) 32 of Nebukadnezar,
10' month VI, (eclipse) which was omitted.

11' At 35° before sunset.

12' Month XII, the 15th',

13' [.....]

IV'

1' [.....] [.....]

2' Month VII, the 13th, in 17° on the east side

3' all was covered: 28° maximal phase.

4' In 20° it cleared from east to west.

5' Its eclipse was red.

6' Behind the rump of Aries it was eclipsed.

7' During onset, the north wind blew, during clearing, the west wind.

8' At 55° before sunrise.

9' Month XII₂, the 15th [.....]

V'

1' cleared [.....]

2' to [.....]

3' eclipsed [.....]

4' Month VII, the 11+[xth.]

5' $\frac{2}{3}$ of the disk to tota[lity]

6' not total, it set eclipsed.

7' The north wind which was set to the west side

8' blew. 5°

9' in front of η Tauri it was eclipsed.

10' At 14° before [sunrise].

'Rev.'

I'

1' [.....] night' to'

2' [.....]

3' [.... before'] sunset'.

4' [When I watched' I did not'] see (it).

II'

1' Month VIII, the 13th, in 0:15 *bēru*

2' all was covered: 25° maximal phase.

3' In 25° it cleared from east to west:

- 4' it was red. During onset, the north wind <blew>.
 5' [during] clearing, the south wind. At 1', 17°
 6' after sunset.

III'

-
- 1' Month VIII, the 13th, it began on the south side;
 2' I did not watch the maximal phase: it set eclipsed.
 3' In the eclipse, Venus stood there;
 4' the remainder of the planets
 5' did not stand there.
 6' At 10° before sunrise.

IV'

- 1' at 18°' [...]
 2' 40° onset, ma[ximal phase, and clearing]. The "garment of the sky" was there.
 3' In the area of the 4 rear stars of Sagittarius it was eclipsed. Month VI was intercalary.
 4' Month V, the 14th', Xerxes - his son killed him.

-
- 5' Month VIII, the 14th, 13° after
 6' sunset, (the moon) came out of a cloud,
 7' one-fourth of the disk on the [...]
 8' and west side was covered, 8°' [onset' and]
 9' clearing [...]

V'

- 1' Month IX, the xth, [...]
 2' [...]

Comments

For dates of the eclipses see Appendix.

I' 1': the last sign looks like a large A. It is not ME: cf. ME in rev. III' 4f.

II' 1': the reading is uncertain: but the eclipse did occur in Virgo.

V' 5': the missing word at the end of the line may have meant "was missing". Whether two-thirds of the lunar disk were still outside the earth's shadow depends on visibility conditions near the horizon at the time. When the moon sank below the horizon, it was rather about two-thirds eclipsed.

Rev.

II' 1': 15 *bēru* may mean 15/60, i. e. one-fourth of this time-unit. There may be an error here, though, because usually these time intervals are given in degrees, and 15° (twice as much as one-fourth *bēru*) would better fit computation. An indication of direction is expected, cf. obv. IV' 2'.