

Sources
in the History of Mathematics and
Physical Sciences

5

Editor

G.J. Toomer

Advisory Board

R.P. Boas P.J. Davis T. Hawkins
M.J. Klein A.E. Shapiro D. Whiteside

VOLUME II

THE PLANETS

INDICES

TABLE OF CONTENTS

PART III. EPHEMERIDES OF THE PLANETS

INTRODUCTION				
§ 1. The Planetary Theory in General	279			
A. Introduction	279			
B. The Leading Ideas of the Planetary Theory	279			
C. Periods	281			
D. Mean and True Motion	284			
E. Dates	285			
F. Concluding Remarks	286			
§ 2. Theory of Mercury	287			
A. Introduction	287			
B. System A_1 .				
I. Heliacal Rising (Γ). Positions	288			
II. First Appearance in the Evening (Ξ). Positions	290			
III. Continuation of $B(\Gamma)$ and $B(\Xi)$	291			
IV. Dates of Γ and Ξ	292			
V. Continuation of $T(\Gamma)$ and $T(\Xi)$	293			
VI. Last Visibilities (Σ and Ω). Positions	293			
VII. Last Visibilities (Σ and Ω). Dates	294			
C. System A_2	295			
I. Last Visibility in the Morning (Σ). Positions	295			
II. Reappearances as Evening Star (Ξ). Positions	296			
III. Last Visibility in the Evening (Ω). Positions	296			
IV. Heliacal Rising (Γ). Positions	297			
V. Dates	298			
D. Daily Motion	299			
§ 3. Theory of Venus	300			
A. The Main Parameters	300			
B. System A_o	300			
C. Systems A_1 and A_2	301			
§ 4. Theory of Mars	302			
A. General Properties	302			
B. Subdivision of Synodic Motion	303			
C. System A	303			
I. Positions for Φ , Γ and Ω	303			
II. Positions for Θ and Ψ	305			
III. Dates for Γ , Φ , and Ω	306			
IV. Dates for Θ and Ψ	306			
§ 5. Theory of Jupiter	307			
A. System A	307			
I. Positions	307			
II. Dates	308			
B. System A'	308			
I. Positions	308			
II. Dates	309			
C. Modifications of the Systems A and A'	310			
D. System B	310			
I. Positions	311			
II. Dates	311			
E. System B'	311			
F. Subdivision of Synodic Motion. System A'	311			
G. Daily Motion	313			
§ 6. Theory of Saturn	313			
A. System A	313			
B. System B	314			
I. Positions	314			
II. Dates	314			
C. Subdivision of Synodic Motion. System A	314			
CHAPTER I. MERCURY				
Introduction	316			
§ 1. System A_2	316			
No. 300a. At least S.E. 4 to 22	316			
No. 300b. At least S.E. 10 to 18	317			
§ 2. System A_1	317			
No. 300. S.E. 118 to 143	317			
No. 301. S.E. 133 to 153	318			
No. 302. S.E. 166 to 189	321			
No. 303. At least S.E. 183 to 186	324			
No. 303a. At least S.E. 214 to 220	324			
No. 303b. At least S.E. 216 to 229	324			
No. 304. At least S.E. 224 to 226	325			
No. 305. For at least five years	325			
§ 3. Daily Motion	326			
No. 310. For at least seven months	326			

CHAPTER II. VENUS		
§ 1.	System A _o	329
No. 400.	S.E. 111 to 135	329
No. 401.	S.E. 175 to 303	329
§ 2.	System A ₁	330
No. 410.	S.E. 236 to at least 259	330
No. 411.	S.E. 246 to at least 254	330
No. 412.	At least S.E. 265 to 281	331
§ 3.	System A ₂	332
No. 420.	S.E. 180 to 242	332
No. 421a.	At least S.E. 183 to 242	332
No. 421.	At least S.E. 187 to 204	333
No. 430.	S.E. 96 to at least 111	333
CHAPTER III. MARS		
§ 1.	System A	335
No. 500.	At least S.E. 89 to 131	335
No. 501.	S.E. 123 to 202	335
No. 501a.	At least S.E. 170 to 187	336
No. 501b.	At least S.E. 172 to 187	336
No. 502.	First and last visibility for about 80(?) years	336
No. 503.	Stationary points for several years	337
No. 504.	Longitudes for at least 102 years	337
§ 2.	System X	338
No. 510.	Last visibility for at least 18 years	338
CHAPTER IV. JUPITER		
§ 1.	System A	339
No. 600.	S.E. 113 to 173	339
No. 606.	S.E. 113 to at least 161	339
No. 601.	S.E. [115] to 181	340
No. 602.	At least S.E. 130 to 205	340
No. 603.	S.E. 147 to 218	341
No. 604.	At least S.E. 157 to 191	341
No. 604a.	At least S.E. 185 to 197	342
No. 605.	At least S.E. 188 to 222	342
No. 607.	At least S.E. 209 to 218	342
No. 608.	At least S.E. 217 to 237	342
§ 2.	System A'	343
No. 609.	At least S.E. 134 to 146	343
No. 610.	At least S.E. 142 to 195	343
No. 611.	S.E. 180 to 252	344
No. 612.	At least S.E. 187 to 230	344
No. 613.	At least S.E. 197 to 206	345
No. 613aa.	At least S.E. 202 to 210	345
No. 613ab.	At least S.E. 202 to 273	346
No. 613a.	S.E. 203 to at least 274	346
No. 614.	At least S.E. 239 to 247	346
§ 3.	System B	347
No. 620.	At least S.E. 127 to 194	347
CHAPTER V. SATURN		
No. 700.	At least S.E. 86 to 134	357
No. 701.	At least S.E. 108 to 118	357
No. 702.	At least S.E. 123 to 182	357
No. 703.	Last visibility for at least 19 years	358
No. 704.	S.E. 155 to 243	358
No. 704a.	At least S.E. 201 to 224	359
No. 705.	At least S.E. 203 to 225	359
No. 705a.	At least S.E. 229 to 252	360
No. 706.	Second stationary points for at least six years	360
No. 707.	Fragment for at least 25 years	360
No. 708.	Fragment for at least 47 years	361
No. 709.	Fragment for at least 11 years	361
CHAPTER VI. PROCEDURE TEXTS		
Introduction		362
§ 1.	Procedure Texts from Uruk	362
No. 800.	Mercury. Mean synodic arc	362
No. 800a.	Mercury. Table for Γ and Σ	364
No. 800b.	Mercury. Table for Γ and Σ	364
No. 800c.	Mercury. Table for Ξ and Ω	365
No. 800d.	Mercury. Table for Ξ and Ω	365
No. 800e.	Mercury. Fragment of table	365
No. 801.	Mercury and Saturn	366
Introduction		366

Section 1. Mercury, Γ and Σ	366	Sections 28 to 31. Venus, synodic period, fragments	402
Section 2. Mercury, Ξ and Ω	367	No. 813. Jupiter	403
Sections 3, 4, and 5. Saturn, System A	368	Section 1. System A; approximate periods	403
Sections 6, 7, and 8. Saturn, Periods; System B	370	Section 2. System A, arcs; motion	404
No. 802. Saturn	371	Sections 3 and 4. Fragments, coefficients	405
Introduction	371	Section 5. Trapezoid	405
Sections 1, 2, and 3. System A	371	Section 6. Velocities	405
Sections 4, 5, and 6. Periods; System B	372	Section 7. System A'' , arcs	406
No. 803. Mars. Retrogradations	373	Section 8. System A''' , arcs	406
No. 804. Mars; cf. Pls. 211 and 212	374	Section 9. System A' , daily motion	406
No. 805. Jupiter	375	Section 10. System A, arcs, motion	408
Section 1. System B	375	Section 11. System A modified, arcs, motion	408
Section 2. System A'	375	Section 12. System B, dates	411
§ 2. Procedure Texts from Babylon	376	Section 13. System B, derivation of $\Delta\tau$ from $\Delta\lambda$	411
No. 810. Jupiter	376	Sections 14 to 16. System A' , derivation of $\Delta\tau$ from $\Delta\lambda$	411
Sections 1 and 2. System A' , arcs	376	Sections 17 and 18. System A' , arcs, motion	413
Section 3. Daily motion, slow arc	377	Sections 19 to 22. Systems B and B'	413
Section 4. Daily motion, medium arc	378	Section 23. System A or A' , motion	415
Section 5. Daily motion, fast arc	378	Section 24. System A or A' , fast arc	416
Section 6. Daily motion, medium arc	379	Section 25. System A' , arcs	416
No. 811. Jupiter, Saturn, and Mars	379	Sections 26 and 27. Systems B and B' , motion	417
Section 1. Jupiter, modified System A' , arcs; approximate periods	379	Section 28. Motion; coefficients	417
Section 2. Saturn, approximate periods	380	Section 29. Coefficients for motion	418
Section 3. Mars, approximate periods	380	Section 30. Motion, fast arc, times	418
No. 811a. Mars	381	Section 31. Motion, fast arc, longitudes	419
Sections 1 and 2. Coefficients	382	Section 32	420
Section 3. Derivation of $\Delta\tau$ from $\Delta\lambda$	382	No. 813a. Jupiter	420
Sections 4 and 4a. Dates of Γ , Φ , Ω (?)	383	Sections 1 to 3. System A, arcs, motion	420
Section 5. Φ and Ω	384	Sections 4 and 5	420
Section 6. Components of synodic time	384	No. 813b. Jupiter	421
Sections 7 to 9. Derivation for the three components	386	Section 1	421
Section 10. Velocities	388	Section 2. System A, arcs	422
Section 11. Periods; mean synodic arc	390	Section 3. System A''' , arcs	422
No. 811b. Mars	391	No. 814. Jupiter	422
No. 812. Jupiter and Venus	392	Section 1. System A; approximate periods	422
Section 1. Jupiter, System B, dates	392	Section 2. System A, motion, coefficients; System A' , arcs	423
Section 2. Jupiter, System B, derivation of $\Delta\tau$ from $\Delta\lambda$	393	Sections 3 and 4. System A' , motion	424
Section 3. Jupiter, System A' , arcs	393	No. 815. Venus. Approximate periods	425
Section 4. Jupiter, System A' , daily motion, slow arc	394	No. 816. Mercury, System A_3	425
Sections 5 to 9. Jupiter, System A' ; fragments	394	Section 1. Yearly motion, Ω and Γ	425
Section 10. Jupiter, approximate periods	395	Section 2. Yearly motion, Ξ	426
Sections 11 to 16. Venus, longitudes	396	Section 3. Φ and Ψ , synodic arcs	427
Sections 17 to 24. Venus, dates	397	Section 4. Ω and Γ , 20-year period	428
Sections 25 to 26. Venus, summary of motion	399		
Section 27. Venus, longitudes	400		

Section 5. Ξ , 20-year period	428
No. 817. Jupiter. Mathematical Problem	429
Section 1. Jupiter, coefficients for motion; invisibility	429
Section 2. Jupiter, NA(?)	429
Section 3. Jupiter, velocity (?)	430
Section 4. Trapezoid	430
No. 818. Jupiter	431
Sections 1 and 2. System A or A', motion	431
Section 3. Phenomena for S.E. 61 and 62	432
No. 819a. Jupiter	432
Sections 1 to 5	433
Sections 6 to 8	433
No. 819b. Jupiter	434
No. 819c. Mercury(?) and Saturn, with data for S.E. 61 to 64	435
§ 3. Procedure Texts from Colophons of Ephemerides	436
No. 820. Jupiter, System B'	436
No. 820aa. Jupiter, System A	437
No. 820a. Mercury, System A_1 , Γ and Σ , Ξ and Ω	437
No. 821. Jupiter, System A	439
No. 821aa. Mars, arcs	439
No. 821a. Jupiter, System B	439
No. 821b. Venus, Systems A_1 and A_2	440
No. 822. Jupiter, System A'	443
No. 823. Jupiter, System B	444
No. 823a. Jupiter, System A'	444
No. 824. Planet(?)	444

PART IV. FRAGMENTARY AND UNIDENTIFIED TEXTS

Introduction	445	A. Nos. 1013 to 1021	448
§ 1. Sun and Moon	445	No. 1013	448
No. 1000	445	No. 1014	449
No. 1001	445	No. 1015	449
No. 1002	446	No. 1016	449
No. 1003	446	No. 1017	449
No. 1004	446	No. 1020	449
No. 1005	446	No. 1021	450
No. 1006	446	B. Nos. 1030 to 1032	450
No. 1007	447	No. 1030	450
No. 1008	447	No. 1031	450
No. 1009	448	No. 1032	450
No. 1010	448	§ 3. Planetary Texts from Babylon	451
No. 1011	448	No. 1050	451
§ 2. Planetary Texts from Uruk	448	No. 1051	452

PART V. INDICES AND BIBLIOGRAPHY

§ 1. Concordance of Texts	453	A. General Glossary	467
§ 2. Bibliography and Abbreviations	461	B. Technical Terminology	498
§ 3. Glossary	467	§ 4. Subject Index	504

