Betrachtet man die Sterne innerhalb einer Kugeloberfläche mit Radius $\frac{b}{Q}$, so wird für alle Werthe von q_1 und q_2 ($q_1 > q_2$), sobald $q_1 < Q$ ist, nur das erste Glied der Formel (VIII) einen reellen Werth haben, also die Zahl der Sterne unabhängig von den absoluten Werthen von q_1 und q_2 , nur mit $q_1 - q_2$ proportional sein.

Für die Bradley-Sterne ist Q ungefähr 0°075; es müssten also die Zahlen der Sterne, deren senkrecht zum Apex projecirte E.B. zwischen 0°005 und 0°015, 0°015 und

0°025 u. s. w. bis 0°065 und 0°075 liegen, einander gleich sein; die Beobachtung dagegen giebt für diese Zahlen:

610	163
419	111
255	72
225	

Die Hypothese von gleichen linearen M. P. und ungleicher von der Entfernung zur Sonne abhängiger Stern-dichtigkeit ist also bestimmt zu verwerfen. Es ist jedoch möglich, dass die M. P. ungleich sind und zu gleicher Zeit die Sterndichtigkeit sich mit der Entfernung zur Sonne ändert.

Leiden 1898 März.

H. G. van de Sande Bakhuyzen.

Star Occultations observed at Windsor, N. S. Wales, during 1897.

By John Tebbutt.

I am indebted to Mr. Joseph Brooks, F. R. A. S., for kindly supplying me with predictions of the occultations of Nautical Almanac stars for the first eight months of the year. Occultations Nos. 7 and 65 were observed with the $3\frac{1}{4}$ inch, Nos. 2, 3, 67, 72, 101, 105, 106 and 132 with the $4\frac{1}{2}$ inch, and all the rest with the 8 inch refractor.

No.	Star	Mag.	Ph.	Lb.	Windsor M. T.	No.	Star	Mag.	Ph.	Lb.	Windsor M. T.
1	105 Piscium	5½	D	Dk	Jan. 11 ^d 9 ^h 23 ^m 6 ^s 5	36	Lalande 23737	7	D	Dk	July 7 ^d 6 ^h 17 ^m 32 ^s 0
2	ψ Leonis	—	D	Bt	20 10 9 11.6	37	—	9½	D	Dk	7 6 20 21.9
3	ψ Leonis	—	R	Dk	20 11 14 5.5	38	Lamont 1203	8½	D	Dk	7 8 42 30.4
4	Quetelet 2719	7½	D	Dk	Febr. 13 10 39 8.7	39	Quetelet 5530	8	D	Dk	8 6 27 50.4
5	64 Arietis	—	R	Bt	Mar. 9 6 50 50.0	40	Lalande 25206	8	D	Dk	8 7 36 37.6
6	Lalande 6322	8½	D	Dk	9 7 14 30.7	41	Lalande 25231	9	D	Dk	8 8 32 9.1
7	—	8	D	Dk	14 7 4 38.3	42	83 Virginis	—	D	Dk	8 10 38 22.9
8	Lalande 10975	7	D	Dk	April 8 7 26 59.2	43	BAC. 4814	6	D	Dk	9 6 18 21.5
9	Lalande 11012	7½	D	Dk	8 7 42 42.5	44	Lalande 28379	8¼	D	Dk	10 6 22 41.3
10	Lalande 11008	7½	D	Dk	8 8 1 43.2	45	Lalande 28377	8	D	Dk	10 6 23 47.1
11	Lalande 14876	7	D	Dk	10 7 24 6.5	46	AOe ₂ 14700	9	D	Dk	10 6 59 12.2
12	Lalande 14870	9	D	Dk	10 7 31 42.3	47	AOe ₂ 14706	9	D	Dk	10 7 27 35.1
13	δ = +23° 43½'	8½	D	Dk	10 9 38 43.7	48	AOe ₂ 14773	8	D	Dk	10 9 54 28.0
14	Lalande 20029	8½	D	Dk	13 10 11 49.4	49	BAC. 5197	6½	D	Dk	10 11 35 12.1
15	Lalande 21322	9	D	Dk	14 8 1 45.3	50	AOe ₂ 14841	8½	D	Dk	10 11 39 47.4
16	BAC. 5286	5	D	Bt	19 7 59 42.4	51	Wash. Mur. Z. 114.14	8½	D	Dk	11 7 8 4.0
17	BAC. 5286	5	R	Dk	19 8 48 57.4	52	Wash. Mur. Z. 114.16	9	D	Dk	11 7 48 23.3
18	σ Scorpil	—	D	Bt	19 19 6 25.7	53	AOe ₂ 15916	7½	D	Dk	11 8 40 32.1
19	—	9	D	Dk	May 8 6 28 12.8	54	Lalande 32486	8	D	Dk	12 7 27 4.4
20	Lalande 16099	8	D	Dk	8 7 29 28.4	55	12 ^h 26 ^m 0 — 7° 35'	9	D	Dk	Aug. 3 6 21 26.4
21	—	9½	D	Dk	8 7 29 55.1	56	—	10	D	Dk	3 6 45 53.9
22	—	9	D	Dk	8 7 35 33.5	57	Lamont 1411	9	D	Dk	3 7 5 46.5
23	Lalande 16149	7½	D	Dk	8 8 19 53.8	58	—	9½	D	Dk	3 7 12 42.0
24	Lalande 16172	9	D	Dk	8 8 40 22.2	59	—	10	D	Dk	3 7 23 54.6
25	—	10	D	Dk	9 7 15 49.3	60	—	10	D	Dk	3 7 24 28.0
26	Lalande 17929	7½	D	Dk	9 7 17 10.3	61	—	10	D	Dk	3 7 53 46.0
27	Lalande 18007	8	D	Dk	9 8 56 0.8	62	—	10	D	Dk	3 7 58 18.1
28	v Leonis	—	D	Dk	12 7 45 21.2	63	Lalande 24826	8½	D	Dk	4 6 44 37.7
29	Lalande 22790	8½	D	Dk	June 9 7 9 7.1	64	—	9¼	D	Dk	4 7 13 56.7
30	Lalande 22811	7½	D	Dk	9 7 43 25.8	65	—	8	D	Dk	30 6 59 17.8
31	A Ophiuchi	—	D	Dk	14 9 23 1.3	66	13 ^h 5 ^m 5 — 12° 11'	9	D	Dk	31 7 12 29.8
32	A Ophiuchi	—	D	Dk	14 9 23 8.7	67	13 6.1 — 12 27	8½	D	Dk	31 7 40 55.9
33	BD. +3°2453 10 ^m	8	D	Dk	July 5 7 3 10.9	68	Lalande 25853	8	D	Dk	Sept. 1 6 51 9.4
34	BD. +3°2455 10 ^m	8	D	Dk	5 7 15 59.0	69	Lalande 25854	8¼	D	Dk	1 6 51 33.0
35	Lalande 22536	6	D	Dk	6 9 25 55.9	70	AOe ₂ 13361	8¾	D	Dk	1 6 53 1.5

No.	Star	Mag	Ph.	Lb.	Windsor M. T.	No.	Star	Mag.	Ph.	Lb.	Windsor M. T.
71	14 ^h 1 ^m 9 — 17° 30'	8½	D	Dk	Sept. 1 ^d 8 ^h 5 ^m 8.7	103	AOe ₂ 16087	8	D	Dk	Oct. 1 ^d 7 ^h 48 ^m 10.7
72	Lalande 25927	7½	D	Dk	1 8 42 26.7	104	AOe ₂ 16161	8½	D	Dk	1 9 25 54.9
73	14 ^h 57 ^m 8 — 22° 6'	9	D	Dk	2 6 37 37.3	105	—	8½	D	Dk	1 9 32 18.1
74	—	10	D	Dk	2 6 55 53.6	106	AOe ₂ 16172	8	D	Dk	1 9 56 51.5
75	—	10	D	Dk	2 7 9 20.8	107	Cord. GC. 25984	9	D	Dk	3 6 52 29.7
76	—	9½	D	Dk	2 7 19 8.8	108	—	9½	D	Dk	3 7 49 29.4
77	—	10	D	Dk	2 7 21 26.0	109	AOe ₂ 18975	8	D	Dk	3 8 22 56.1
78	Yarnall ₃ 6306	7½	D	Dk	2 7 48 48.6	110	λ Capricorni	5½	D	Dk	6 7 40 38.0
79	AOe ₂ 14620	8	D	Dk	4 7 45 25.6	111	λ Capricorni	5½	R	Bt	6 9 0 25.6
80	AOe ₂ 16505	8	D	Dk	4 9 41 15.0	112	22 ^h 31 ^m 3 — 6° 8'	8½	D	Dk	7 8 51 4.6
81	A Ophiuchi	4	D	Dk	4 9 45 22.8	113	Lalande 45801	6½	D	Dk	8 9 24 57.6
82	A Ophiuchi	4	D	Dk	4 9 45 26.5	114	20 ^h 15 ^m 1 — 19° 2'	9	D	Dk	Nov. 28 7 28 15.8
83	AOe ₂ 16531	7	D	Dk	4 10 10 57.9	115	Cord. GC. 27876	9	D	Dk	28 7 50 34.3
84	—	10	D	Dk	4 10 49 5.3	116	—	9½	D	Dk	28 8 6 37.9
85	AOe ₂ 16563	7	D	Dk	4 10 49 14.5	117	Lalande 39116	8	D	Dk	28 8 30 39.6
86	A Ophiuchi	4	R	Bt	4 10 51 25.9	118	21 ^h 10 ^m 6 — 13° 59'	9	D	Dk	29 7 33 50.2
87	A Ophiuchi	4	R	Bt	4 10 51 26.9	119	21 10.3 — 13 53	9½	D	Dk	29 7 38 30.1
88	AOe ₂ 19362	8½	D	Dk	6 8 51 41.7	120	—	9	D	Dk	29 8 17 8.8
89	AOe ₂ 19371	8	D	Dk	6 9 18 49.8	121	Lalande 41291	7	D	Dk	29 8 21 24.5
90	—	8½	D	Dk	6 10 9 28.7	122	Lalande 41337	8½	D	Dk	29 8 43 16.0
91	AOe ₂ 19413	8	D	Dk	6 10 16 23.5	123	—	8½	D	Dk	29 8 51 26.4
92	AOe ₂ 20365	8¼	D	Dk	7 9 4 0.8	124	—	9½	D	Dk	29 9 14 45.3
93	AOe ₂ 20382	8½	D	Dk	7 10 5 39.0	125	—	11	D	Dk	29 9 16 24.5
94	AOe ₂ 20416	7	D	Dk	7 11 12 54.4	126	Lalande 41368	7	D	Dk	29 9 24 4.0
95	Lalande 26866	6½	D	Dk	29 6 54 52.1	127	22 ^h 2 ^m 0 — 8° 43'	9	D	Dk	30 7 31 58.4
96	Cinc. Z. 2519	8½	D	Dk	29 6 57 6.3	128	—	9½	D	Dk	30 8 4 14.7
97	δ = — 20° 44'	10½	D	Dk	29 6 59 23.7	129	δ = — 8° 7'	9½	D	Dk	30 8 52 37.3
98	δ = — 20 54	10	D	Dk	29 7 27 39.0	130	Lamont 4494	8½	D	Dk	30 9 0 3.7
99	Lalande 26892	6	D	Dk	29 7 32 50.6	131	Lalande 43186	7½	D	Dk	30 9 17 13.1
100	15 ^h 44 ^m 4 — 24° 23'	10	D	Dk	30 7 50 49.9	132	—	7	D	Dk	Dec. 28 9 31 39.7
101	BAC. 5253	6	D	Dk	30 9 5 29.8	133	23 ^h 21 ^m 6 + 1° 8'	9	D	Dk	29 8 21 44.6
102	—	9	D	Dk	Oct. 1 7 26 57.1	134	Lalande 45927	7½	D	Dk	29 8 54 42.8

Remarks.

1, 4, 8, 9, 10, 11, 12, 22, 23, 24, 26, 27, 28, 29, 30, 32, 33, 34, 39, 41, 42, 43, 45, 46, 47, 48, 49, 51, 52, 53, 57, 62, 63, 64, 68, 72, 73, 75, 76, 77, 78, 81, 82, 85, 88, 89, 91, 94, 99, 100, 101, 103, 109, 110, 114, 117, 118, 119, 120, 124, 126, 129, 130, 131, 133, 134. Phase instantaneous and observation good. — 3, 7, 13, 15, 17, 20, 25, 31, 44, 74, 112, 128. Phase instantaneous. — 38. Phase instantaneous and observation pretty good. — 6, 35, 36, 40, 55, 56, 69, 90, 92, 93, 108, 115, 122, 123, 132. Phase not quite instantaneous and observation good. — 61, 65, 66. Phase not quite instantaneous and observation pretty good. — 14, 58, 83, 121, 127. Phase not quite instantaneous. — 70, 95, 96, 102. Observation good. — 2, 84, 106, 116. Observation pretty good. — 1, 14, 17, 33, 34, 35, 38, 104, 106. Star blurred. — 2. Bright limb well defined, but rather tremulous. — 21, 25, 55, 61, 62, 108, 116, 118, 119, 120, 124, 128. Observation on north quadrant. — 33, 34, 56, 60, 64, 67, 73, 74, 75, 77, 90, 97, 98, 100, 114, 123, 133. Observation on south quadrant. — 7. Disappearance about 80° from north end of terminator. — 8, 10, 58. Disappearance not far from south cusp. — 13. Disappearance about 15° or 20° from south end of terminator. — 16. Limb boiling greatly and

observation very unsatisfactory. — 14, 21, 31, 37, 46, 50, 54, 74, 84, 97, 98, 105, 125. Star faint. — 18. Observation in full daylight, and correct to a second. — 19. 6^m 13^s E and 12½° S of Yar₃ 3356. — 21. 1^m 15^s W and 9½° N of Lal. 16149. — 22. 1^m 3^s W and 3° N of Lal. 16149. — 25. 2^s 6 W and 1° N of Lal. 17929. — 28, 31, 32, 42, 107, 113. Observation through cloud. — 37. Uncertain to a second. 10° E and a few seconds north of 36. — 39. Suspected to be double. — 44. Time possibly half a second late. — 47. Disappearance on south limb. — 48. Disappearance near north end of terminator. — 50, 54, 97, 98, 105, 107, 113. Observation uncertain. — 54. Disappearance near south end of terminator. — 56. 26° W and 5° N of Lam. 1411. — 58. 29° W and 4° S of 57. — 59. Disappearance 90° from cusps. — 64. 2^m 4^s E and 5° S of Lal. 24769. — 65. Disappearance about 30° from north cusp. — 67. I thought I could again glimpse the star 1:75 later. — 32, 68, 82, 87. North component. — 31, 69, 81, 86. South component. — 70. Disappearance about 20° from north cusp, and identification doubtful. — 71. Disappearance by two stages about 10° from north cusp. — 74. 1^m 41^s W and 9½° S of 78. — 75. 1^m 12^s W and 9° S of 78. — 76. 50° W and 4° S of 78. — 77. 54° W

and 12' S of 78. — 79. At the recorded time nearly the whole of the star's light vanished instantaneously leaving a copper-coloured speck in contact whose gradual disappearance occupied fully a second. — 84. North companion of 85. — 86. Just separated from bright limb which was steady and well defined. — 90. 19° W and 5½' S of 91. — 102. Disappearance occupied half a second. 30½° W and 6½' N of 103. — 105. 33° E and 6' N of 104. —

108. 1° 9' W and 13' N of 109. — 111. Just in contact with limb which was unsteady and badly defined. — 116. 1° 4' W and on parallel of 117. — 120. 19° E and 9' S of 121. — 123. 1° 21' E and 11' S of 121. — 124. 1° 6' W and 10' S of 126. — 125. A little south of and following 124. — 128. 4° 32' W and 4' N of Lal. 43306. — 129. Disappearance on north limb. — 132. Disappearance about 60° from north cusp.

Private Observatory, Windsor, N. S. Wales, 1898 February 6.

John Tebbutt.

Observations of Hyperion and Iapetus

made with the 26 inch refractor of the Leander McCormick Observatory of the University of Virginia by Ormond Stone.

In the following measures, the angles given are each the mean of two comparisons; the distances were obtained from measures of double distances. Corrections have been applied for refraction. Eastern mean time [75th meridian] is used.

1894	Eastern M. T.	ρ	Eastern M. T.	s
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Dione-Hyperion.

April 24	8 ^h 58 ^m 24 ^s	100° 53	9 ^h 7 ^m 50 ^s	130° 70
	9 34 0	101.12	9 10 32	131.18
May 10	10 28 57	76.68	10 42 54	109.83
	10 58 55	77.03	10 47 32	109.15

Rhea-Hyperion.

April 2	11 2 52	100.05	11 14 29	136.36
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Titan-Hyperion.

Mar. 1	16 36 0	290.80	16 49 56	103.51
3	14 34 31	43.52	14 47 55	57.76
	15 17 33	45.40	15 31 29	57.85
7	15 2 24	270.40	15 19 55	166.28
	16 7 25	270.09	16 24 4	164.96
12	13 15 30	121.11	15 10 17	31.29
	14 49 40	121.11	15 16 27	31.15
13	13 38 46	117.96	15 37 37	26.79
	13 45 36	117.77	—	—
14	14 49 1	105.41	15 0 18	32.59
	15 19 19	104.41	15 7 46	32.07

Tethys-Iapetus.

April 30	10 10 56	233.51	10 23 17	138.26
	10 35 35	233.34	10 25 16	137.78

1894	Eastern M. T.	ρ	Eastern M. T.	s
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Rhea-Iapetus.

Mar. 21	14 ^h 35 ^m 8 ^s	42° 34	14 ^h 53 ^m 11 ^s	140° 30
	15 17 20	46.15	15 5 15	141.51
April 27	9 30 49	152.22	9 40 35	131.94
	9 49 57	152.50	9 42 10	132.70
	10 1 28	315.39	11 11 1	170.89
	11 28 40	315.45	11 13 58	170.60
	—	—	11 14 58	171.23

Titan-Iapetus.

Mar. 23	14 13 37	76.94	14 28 41	31.25
	—	—	14 33 15	31.94
	—	—	14 34 59	31.63
April 24	9 54 6	141.07	10 2 44	116.55
	10 49 27	141.91	—	—
June 3	11 20 11	335.35	11 58 16	192.01
	12 12 28	336.55	—	—
4	8 50 33	6.60	9 0 47	169.69
	9 14 2	7.07	9 2 28	169.35
	—	—	9 3 57	169.82

Hyperion-Iapetus.

April 30	9 13 44	181.85	9 34 54	47.01
	9 55 49	182.24	9 37 51	47.32

Literarische Anzeigen.

Ph. Fauth. Beobachtungen der Planeten Jupiter und Mars aus den Oppositionen von 1896–97 auf der Privatsternwarte zu Landstuhl III. — Herausgegeben auf Kosten der Kgl. Preussischen Akademie der Wissenschaften. Mit 147 Abbildungen und 5 Karten. Kaiserslautern 1898.

A. Wolfer. Publicationen der Sternwarte des eidg. Polytechnikums in Zürich. Band I. Zürich 1897. — Der vorliegende Band enthält die Beobachtungen, welche der Verfasser auf der Sonnenoberfläche in den Jahren 1887–89 angestellt hat.

Inhalt zu Nr. 3494. *H. G. van de Sande Bakhuyzen.* Ueber die Vertheilung der Sterne im Raume nach der Grösse der Eigenbewegungen. 209. — *J. Tebbutt.* Star Occultations observed at Windsor, N. S. Wales, during 1897. 219. — *O. Stone.* Observations of Hyperion and Iapetus. 223. — Literarische Anzeigen. 223.