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KG
11365
317
N 34

Observations with
E. Equatorial.
(Copy.)
From Apr. 9. 1866 to Aug. 26 1866.

Vol. 1.

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.RG-11365.317

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1866 Apr. 9. Monday

AG-11365.37

At 9 52 sid. time commenced sweeping for Biela's comet with the great equatorial; lowest power eye-piece, field 30'.

Sweeps about 25 m. E and 30 m. W. in right ascension from a field of small stars described on special chart. The centre of the field which was made the starting point was about $9^h\ 54^m$ R.A. $-20°\ 50'$ Dec. At 10 35 saw a faint nebulosity; diameter 2' to 3'.

Reading of Dec. circle 337 52 40; hour angle +0 50 40 at $10^h\ 43^m$.
+1 0 0 at 10 52 20

Put on the filar micrometer and started the clock.

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Measurements of $\Delta\alpha \cos\delta$; c from a. (c the nebulosity)

1	+17ˢ.00	Note Sept. 18, 1880. From these measures very fair.
2	+18·30	$\Delta\alpha$ 12ˢ.9 and 12ˢ.9 respectively; the transit below gives 13ˢ; $\Delta\delta$ 156".8. The observer is presumably Prof. Winlock; G. M. Searle had probably not yet joined the Observatory.

This nebulosity is No. 1985 in Sid. Hicatal. = G.C. 1985

$\Delta\alpha$ by chronometer at $12^h\ 40^m$ = +13ˢ.

$\Delta\delta$ c south of a 16ˢ.00

Note Sept. 18, 1880. No means of identifying object found April 10. It may possibly be G.C. 1987.

Apr 10 Tuesday

Found the conspicuous object of last night in the same place apparently.

Mr. Langley continued the search, making sweeps across the opening of the dome starting from circle reading 337 52 40 and proceeding south by fields of 12' eyepiece. An error in setting the hour circle at 10 24 caused the sweeps to be made 32 m. further west than was intended. Mr. L. then worked back in the same manner so as to cover the ground thus lost. At 10 57 noticed a small nebulosity, very faint, as follows



Between that and third place, with a large margin each way.

Apr. 12 ~~Wednesday~~ Thursday

Mr. Langley began sweeping from this object and proceeded north and found another nebulous object at reading of Dec. circle 337 31 5; at $10^h\ 9^m$ Sid. Time, its hour angle = −0 28 6. Put on large eyepiece and beginning at which place swept over the whole region contained

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1866 May 10 ~~Wednesday~~ Thursday

Object	Obs	Observer	Angle Reading	Angle Position	Distance Reading	Distance Difference	Time	Remarks
Star S +10° for zero point of position circle			283 5					
			103 3					
For middle of field					51.75			
			May 15 ~~Monday~~ Tuesday					
Σ 1643		J W	319 45	323 26				
Σ 1670		S P L	28 0					
runs on wire at			103 25					
		J W			58.93	0.51		
					58.42			
Σ 1664		J W	121 10	163 1				
		S P L	119 45	163 26	58.28	2.00		
					60.28			
Σ 1661		J W	319 15	323 56	58.58	0.30		
					58.28			

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1866 June 2 Saturday

Observer	No of Obs.	Object	Angle Reading	Angle Position	Distance Reading	Distance Difference	Time	Remarks	Observer
							mean Solar		
J W		Titan runs along wire	289 20				9 45		W?
		Titan	19 30	269 39				Wire through Titan & centre of planet	
					46.00	10.44			
					56.44				
		Enceladus			48.18	3.35			
					51.53				
		Titan			45.81		10 40		

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1866 June 7 Thursday

Observer	No of Obs	Object	Angle: Reading	Angle: Position	Distance: Readings	Distance: Difference	Time: mean solar	Remarks
W.?		Titan					9 10 20	
		runs along wire	289 0 108 55					Telescope E. of pier
		Titan from centre of Saturn	277 55	11 14			9 20	
			97 50	11 19	52.10 68.36	16.26	9 25	
			279 30	9 39	51.87	16.49	9 35	
					51.67	16.69	9 50	
		Tethys	267 15	21 54			9 57	
			87 15	201 54				
					65.52 68.53	3.01		
		Rhea	253 0	36 9			10 5	
					67.57 71.68	4.11		
		Dione	121 30	167 39				
					66.81 71.71	4.90		
		Enceladus	271 0	18 9			10 15	
					68.86 71.71?	2.85?		

This satellite was not visible when the measures were made but was seen just before and just after, so that they are nearly correct.

June 7 11h PM Good seeing. Saw the division of the ring on the north following side of the planet continued up to the ball with great distinctness; very much more distinct than on the left, where it could not be traced to the ball, unless by glimpses. (S&L)

The same obsn. was made by J.W.

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1866 June 9 Saturday.

Observer	No. of Obs.	Object	Angle: Reading	Angle: Position	Distance: Readings	Distance: Difference	Therm	Time by watch	Remarks
W	1	Titan	243 18		30.53				The planet and satellite as
	2				30.53	7.14		8 43	these measures were taken
					37.67				was gradually approaching
	3				28 93	7.40		47	the edge of the field. The
					36 33				last was taken near the edge.
	4				27 55	7.76		51	
					35.31				
	5				26 31	7.82		54	
					34.13				
	6				25 12	7.59		56	
					32 71				
	7				23 61	7.78		59	
					31.39				
									Stellar focus adjusted.
	8				26.06	7.43		9 42	
					33.49				
	9				30.09	7.44		46	
					37.53				
	10				28.52	7.57		48	These measures with a
					36.09				power of 401
	11				29.24	7.43		52	
					36.67				
	12				25.88	7.66		9 55	
					33.54				
	13				32.33	7.47		10 1	
					39.80				
	14		240 20					8	
	15		239 15						
	16		238 45					12	
									Put on lowest power again
	1	Rhea from Titan ~~Titan & Rhea~~	183 30						
	2		183 20						
	3				37.48	4.12			
					41.60				
	4				40 88	4.09		27	
					44.97				

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1866 June 9 Saturday & June 10 Sunday.

Observer	No. of obs.	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm.	Time by watch	Remarks
J W	1	Dione from Titan	211 30						
	2		213 45						Vision bad for this obs.
	3		211 20						
	4				42·22	4·31		10 38	
					46·53				
	1	Path of star near equator or meridian	289 50						
			109 47						
	1	Dione from Rhea	279 5					44	
	2				47 35	2·12		49	
					49 47				
	3				51 95	2·46		54	
					49 49				Bad seeing for these last
	4				51·94	2·06		10 55	two observations
					54·00				
	1	Tethys from Rhea			56·53	4·69		11 0	This measure a good one, but the seeing became too bad to repeat it.
					61 22				
	2				61·82	4·45		8	
					66·27				Repeated. Rhea, Dione, & Tethys in a line.
J W	1	Titan	359 20					Time by chronometer (sidereal) 14 17	
	2		1 10					21	
	3		0 30					22	
	4		0 20					24	
	5				70·64	6·14		27	
					64·50				
	6				64·36	6·16		32	
					58·20				
	1	Tethys	245 5					38	The pos. of this satellite was measured by placing the wires tangent to the ball of the planet, and the satellite in the middle between them. The distance was measured by placing one wire on the satellite and the other across the middle of the planet. In all previous cases the distance has been measured in this way but the positions by placing the wires across the ball of the planet.
	2		246 15					43	
	3		247 45					45	
	4				61·29	2·03		47	
					59·26				
	5				65·79	2·08		49	
					63·71				

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1866 June 10 Sunday and 11 Monday

Observer	No of Obs.	Object	Angle: Reading	Angle: Position	Distance: Readings	Distance: Difference	Therm.	Time. by sid. chron.	Remarks
J W	1	Rhea	138 10					14 56	
	2		137 30					14 59	
	3		135 20					15 1	
	4		136 0				ext. 52	3	
	1	Dione	290 0					8	
	2		290 30						
	3		290 20					13	
	4				70·71 64·61	6·10		16	
	5				72 79 66·77	6·02		19	Obscure and unsteady
	6				75 49 69 58	5·91		23	
	7				73 85 67 55	6·30		28	73·35? very faint
	8				73·37 67 60	5·77		15 31	" "
									The positions were taken with the wires tangent to the ball in all cases except that of Titan. Seeing was occasionally good — at the close very bad. The time by sidereal chronometer no 236
J W	1	Titan	319 40					13 26	
	2		319 45					30	
	3				65 76 76 03	10 27		34	
	4				66 94 76·83	9·89		39	The positions and the first measure of distance were taken by twilight without illumination of wires. The wires across the centre of the planet.
	5				68 39 78 61	10·22		42	
	6				71 21 81 34	10·13		46	
	1	Rhea	282 45					14 3	
	2		282 50					6	
	3				53·91 45·95	7·96		10	Unsteady
	4				53 74 45·91	7·83		14	"

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1866 June 11 Monday

Observer	No of Obs.	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Time by sid chron.	Remarks
J W	5	Rhea			51 91 43 97	7·94		14 16	Unsteady
	6				50 20 42 05	8·15		18	"
	7				48 24 40 42	7·82		21	Bad seeing
	8				46 02 38 09	7·93		23	
	1	Semid. of planet			45 71 44 80	0·91			
	1	Dione	·314 26					14 32	Clouds prevented any
	2		312 15					35	measurement of Tethys
	3		313 0					37	Positions of Dione were
					46 54 42 57	3·97		15 14	taken with the wires tangent to the ball
					44 91 40 99	3·92		16	
S P L	1	Titan	319 10					24	
	2		317 20					26	
	3		318 30					32	
	4				45·72 35 08	10·64		36	Good
	5				45 64 35 09	10·55		40	
	1	Tethys			35·925 34·49	1·435		45	
	2				35·585 34 340	1·245		46	
	3		22 0					57	
	4		20 45					15 59	
J W	5		19 15					16 3	
	6		18 30					4	
	7		14 40					6	Bad
	8		15 40					watch time 8	
S P L	9		15 0					10 48	
	10		13 40					51	

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1866 June 15 Friday

Observer	No of Obs	Object	Angle: Reading	Angle: Position	Distance: Readings	Distance: Difference	Therm	Time by watch	Remarks
JW	1	Titan	280 31					9 29	Seeing very bad; lowest power on.
BP	2		281 50						
JW	3		280 16					33	
BP	4		281 1						
JW	5				45 825	17.63		41	
					28 195				
BP	6				7·365	17.195		48	
					24 560				
JW	7				43 79	17.46		56	
					26 33				
	8				42 25	17.63		59	
					24 62				
BP	9				0·705	15·375		10 2	Rejected
					16 08				
BP	10				58 60	17·23		16	
					41 37				
JW	11				44 00	17.44		22	
					36 56				
JW	12				51 82	17·39		25	
					34 43				
JW	1	Rhea	294 45					29	
BP	2		294 10					32	
JW	3				33 125	7·905		35	
					41·03				
JW	4				35·77	7·79		38	Illum. reduced; the last measure the best. (the last of the two by J. W better than the first.)
					43 56				
BP	5				40·07	7·97		44	
					47 04				
BP	6				49 65	7·83		47	
					41·82				
JW	1	Dione	137 20					52	Seeing much improved; Xth
JW	2		139 4					54	Tethys becomes visible.
JW	3		139 0					10 55	
BP	4		132 45					11 1	
JW	1	Tethys	127 45					5	
JW	2		126 52					6	
JW	3		123 15					9	
JW	4		121 52					10	
	5		124 0					14	

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1866 June 15 Friday and June 26 Tuesday

Observer	No of Obs.	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Time by watch	
	6	Tethys	121 45						
J W	7				52.49	3.30		11 16	
					49 19				
J W	8				54 43	3.39		11 19	
					51 04	~~			
J W	9	Tethys from Dione			56 06	3.49		22	
					52 57				
J W	2				55 97	3.28		30	This obs. made with the clock off.
					52.69				
								by watch, corrected.	
J W	1	Titan	352 10					8 42	
	2		171 35					49	
	3		171 50					53	
	4				39.38	6.205		9 1	
					45 585			5	
	5				41 14	6.18		5	
					47 32				
G M S	6				42 90	6.16		10	
					49 06				
	7				42 15	6.18		12	
					48 33				
J W	1	Tethys	254 10					17	2d power
	2		246 50					26	lowest "
	3		251 50					28	" "
	4		253 20					31	2d power
	5				44.90	2.22		33	
					42.68				
	6				42.43	2.245		37	Very unsteady
					40.185				
	1	Rhea	120 15					42	
	2		120 20					45	
	3		120 15					46	
	4				35.025	5.71		48	
					29.315				
	5				32.70	6.08		51	Unsteady
					26.62				
	6				30 01	5.87		53	
					24 14				

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1866 June 26 Tuesday and 30 Saturday

Observer	No of Obs.	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Time by watch corrected.	Remarks	Observer
JW	1	Dione	127 10					9 56		JW
	2		128 50					9 59		
	3		127 15					10 0		
	4				19 435	3·41		2	Rather unsatisfactory measure	
					22 845					
	5				17 625	3·355		5		
					20 98					
GMS	1	Titan	167 1					11		
	2		168 43					14		
	3		168 34					15		
	4		168 49					16		
	5				17 10	6·24		28		
					23 34					
	6				16 53	6·52.		30		
					23 05					
	7				15 97	6·50		32		
					22 44					
	1	Path of bright star somewhat out of merid.	283 21							
			103 6							
	2		283 47							
			103 53							
	3		284 3							
			104 9							GM
	1	Path of Small star about 15m past meridian	267 26						Circle turned and set more firmly on tube.	
			87 31							
	2		267 14							
			87 19							JW
	3		267 16							GM
			87 22							
		zero points taken as		277° 30′	till July 2.					
JW	1	Rhea	154 40	22 50				10 10	Planet low, seeing very poor. Wires unsteady tangent to ball planet	
	2		153 55	23 35				12	Better measure	
	3				49 14	2·425		14	Illum. on both sides for the first time.	
					46·715					
	4				48·705	2·595		16		
					46·11					
	5				48·115	2·615		17		
					45·50					

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1866 June 30 Saturday

Observer	No of Obs.	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Time	Remarks.
J W	6	Rhea	129 29		47 87	2·59		10 19	
			128 25		45 28				
	1	Dione	129 29	48 1				10 22	Definition bad
	2		128 25	49 5				23	This also poor
	3		127 58	49 32				25	
	4				53 675	2·475		28	Satellite faint and planet unsteady
					51 20				
	5				55 02	2·62		30	
					52·40				
	6				56 79	2·57		32	
					54 22				
	1	Titan	265 40	271 50				38	Wires across middle of
	2		265 57	271 33				39	planet.
	3		266 20	271 10				42	Planet very unsteady
	4				63·83	19·045		45	
					44·785				
	5				58·07	18·58		51	
					39·49				
	6				55·285	18·76		53	
					36·525				
	7				53·22	18·78		55	
					34·44				
GMS	1	ξ Bootis	59 40	297 50					
	2		56 36	300 54					
	3		57 53	299 37					
	4		59 5	298 25					
J W	5		56 36	300 54					
GMS	6		57° 58′ mean	299 32	48·23	0·51			
					48·74				
	7				46·47	0·68			
					47·15				
	8				43·38	0·56			
					43·94				
	9				41·84	0·46			
					42·30				

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1866 July 1 Sunday

Observer	No of Obs	Object	Angle: Reading		Angle: Position		Distance: Readings	Distance: Difference	Therm	Time by watch corrected	Remarks	Observer
JW	1	Enceladus	258	30	~~270~~ 99 / 197	0				8 11	Measures taken in twilight	JW
	2		259	40	~~270~~ 98 / 197	50				13	without illum of wires.	
	3		259	20	~~270~~ 98 / 8	10				14	Definition remarkably good but object faint. Wire across	
	4						41.62 / 45.025	3.405		16	middle of planet. Measure not very satisfactory wires not enough illuminated.	
	5						40.67 / 43.75	3.08		21	Illum. applied on both sides	
	6						39.425 / 42.63	3.205		21		
	7						37.64 / 40.80	3.16		23		
	8						35.74 / 38.69	2.95		25		
	9						34.77 / 37.81	3.04		26		
	1	Tethys	313	10	~~224~~ 44 / 224	20				30	Mimas not visible (though	
	2		316	3	~~224~~ 41 / 224	27				32	seen earlier.)	
	3		314	40	~~232~~ 42 / 232	50				33	Obs'ns 1 2 3 4 wires tangent to plan.	
	4		316	50	~~230~~ 40 / 230	40				34	Unsatisfactory	
	5		313	50	~~223~~ 43 / 223	40				36	Obs'ns 5 6 7 wire across middle	
	6		313	15	~~224~~ 44 / 224	15				36	of planet	
	7		315	55	~~221~~ 41 / 221	35				38		
	8						30.985 / 33.84	2.855?		42	$(31.985)^2$ / $(32.84)^2$	
	9						30.79 / 32.55	1.76		43		
	10						28.90 / 30.77	1.87		46		
	11						27.40 / 29.13	1.73		48		GM
GMS	1	Rhea	89	37						8 58		
	2		89	14								
	3		89	34								
	4		89	12								
	5		89	13						9 4		
JW	6	mean	89	22	88	8	40.80 / 33.04	7.76		9 15		
MS	7						41.09 / 33.07	8.02		20		

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1866 July 1 Sunday

Observer	No of Obs	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Time by watch (Corrected)	Remarks
ighs	JW 8	Rhea			40·03	7·76		9 23	
					32·27				
	9				38·13	7·88		9 25	
					30·25				
ated.	1	Dione	240 53					30	
leo	2		240 30					31	
	3		241 30					32	
	4		242 5					32	Better than obs. no 3.
	5		241 15					33	
	6		mean 241 15	116 15	38·19	3·07		36	
					35·12				
	7				39·42	3·26		37	
					36·16				
	8				40·525	3·295		39	
					37·23				Obsns. 8 & 9 each double
ugh	9				40·415	3·295		41	weight.
					37·12				
plan.	1	Titan	79 0					47	
	2		78 35					47	
iddle	3		79 20					50	very careful measure
	4		mean 78 58	278 32	60·73			54	
	5				60·91				
	6				60 87				
	7				60·62				
					60·78	17·04			
					43·735				
					43·75				
					43·745				
					43·735				
	GMS 1		79 2		43·74			10 7	
	2		79 13					9	
	3		78 58					11	
	4		mean 79 4	278 26	61·47	16·97?		13	(66·47 ?
					49·50				
	5				67·65	16·88		18	
					50·77				
	6				68·51	16·84		20	
					51·67				
	7				69·14	16·87		22	
					52·27				

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1866 July 1 Sunday and 2 Monday.

Observer	No. of obs.	Object	Angle: Reading	Angle: Position	Distance: Readings	Distance: Difference	Therm	Time by watch corrected	Remarks
JW	1	Transverse	268 7	89 23					
		axis of ring	268 4	89 26					
GMS	1	Path of meri-	No1 267 58						Clamp vernier = No.1.
		dional star	No2 87 56						
	2		1 267 48						
			2 87 46						
	3		1 267 30						Power no 1. (lowest); power
			2 87 27						no 2. used during the
	4		1 267 36						previous work tonight.
			2 87 34				59¼		
GMS	1	Transverse	1 263 56					7 33	Zero of position circle
	2	axis of ring	2 83 54						shifted since last night.
	2		1 263 47					44	
			2 83 45						
	3		1 264 21					46	
			2 84 19						
	4				64·80	4·19		50	Outside diameter
					68·99				
	5				64·79	4·17		52	"
					68·96				
	6				76·68	4·18		53	"
					72·50				
	1	Conjugate			75·64	1·38		7 59	"
		axis of ring			74·26				
	2				39·79	1·40?		8 3	"
					39·19				41·19?
JW	3				39·65	1·42			"
					41·07				
	4				39·395	1·47			"
					40·865				
GMS	5				40·17	1·34			"
					38·83				
	1	Titan	66 20					8 47	
	2		66 4						
	3		66 12					49	
	4		mean 66 12	2·88 5	42·54	13·18		54	
					55·72				

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1866 July 2 Monday

Observer	No of obs.	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Time by watch corrected	Remarks
JW	1	Rhea	218 0					9 22	
GMS	2		214 32						
	3		215 8					10 1	
	4		214 15						
		mean	215 29	138 48					
	5				53·39	3·24?		4	
					49·15				50·15?
	6				53·35	3·21		8	
					50 14				
	7				45 03	3·27		10	
					41 76				
	8				40 03	3·28		13	
					36 75				
	1	Tethys	104 50	249 27				19	
	1	Titan	244 56					31	
	2		244 43					34	
	3		245 4					35	
		mean	244 54	289 23					
	4				67·79	12·72		38	
					55·07				
	5				67·84	12·84		40	
					55 00				
	6				63 96	12·73		42	
					51·23				
	1	Tethys	100 42					46	
	2		99 20					48	
	3		98 55	254 38				50	
		mean	99 39						
	4				49·37	3·30		54	
					46·07				
	5				49 26	3·41		56	
					45·85				
	6				49·28	3·43		57	
					45·85				
	1	Dione	76 50					11 1	
	2		78 36	276 34				3	
		mean	77 43						
	1	Path of mend. star	1 264 16						
			2 84 14						
	2		1 264 19						
			2 84 17						
	3		1 264 17						
			2 84 15						

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1866 July 3 Tuesday

Observer	No of Obs	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Time by watch corrected	Remarks
							74	7 10	
GMS	1	Transverse axis of Saturn's ring	264 36						
	2		264 6						
	3		264 5	90 1					
		mean	264 16						
	1	Conjugate diameter of ring			65·78	1·33			
					64·45				
	2				70·23	1·23			
					69·00				
	3				76·31	1·36			
					74 95				
	1	Transverse diameter of ring			49·31	4·25			
					45·06				
	2				45·01	4·17			
					40·84				
	3				36·99	4·31			
					32·68				
W	1	Enceladus			35·12	3·17		8 32	
					31 95				
	2				35·35	3·40		35	
					31·95				
	3				35·445	3·508		36	Better than either of the preceding
					31·937				
	4				35·535	3·585		37	
					31·95				
	5				35·475	3·425		38	
					32·05				
	6		258 0					42	Good measure
	7		257 45	276 25				43	
		mean	257 52						
	1	Telthys	282 30					45	Power no 3.
	2		280 45						
	3		279 45	73 17				46	
GMS	4	mean	281 0		32·01	3·20		56	
					28·81				
	5				32·23	3·23		8 59	
					29·00				
	6				32·20	3·11		9 0	
					29 09				

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1866 July 3 Tuesday

Observer	No of Obs.	Object	Angle: Reading	Angle: Position		Distance: Readings	Distance: Difference	Therm	Corrected mean Time	Remarks
GMS	1	Dione	279 5						9 4	
	2		279 8						6	Poor
	3		277 45						8	This also poor
	4	mean	278 39	75	38	32·22	4·45		23	Power no 2
						27 77				
	5					32 40	4·60		25	
						27 80				
	6					32 29	4·48		26	
						27·81				
	1	Rhea	272 59						31	Good
	2		272 49						33	"
	3		272 45						35	
	4	mean	272 51	261	26	10·79	-7·15		37	
						17·94				
	5					10·81	7·13		39	
						17·94				
	6					20·90	7·10		41	
						28·00				
	1	Titan	222 53						45	
	2		223 7						46	
	3		222 25						47	Poorer than the two others
	4	mean	222 48	311	29	13·35	7·75		50	Definition bad
						21·10				
	5					30·46	7·91		53	
						38·37				
	6					30·40	7·95		54	
						38·35				
JW	1	ξ Bootis	55 50						11 9	
	2		55 30						10	
	3		54 40						11	
	4	mean	55 20	298	57	50·71	0·625		14	
						51·335				
GMS	5					59·81	0·59			
						59·22				
	6					65·56	0·54			
						65·02				
	7					69·63	0·57			
						69·06				

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1866 July 3 Tuesday

Observer	No of Obs.	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Corrected mean Time	Remarks
SPL	1	Rhea	270 45						These three all poor Definition grows worse.
	2		270 0					10 5	
	3		270 15	263 57					
	4	mean	270 20		16·57	7·38		10 15	
					23·95				
								10 23	Satellite invisible. Definition very bad.
		Path of star	263 55						
		for zero point	83 54						These observations should all have been put before that of ξ Bootis.
JW	1	σ Coronae	339 0						
	2				70·11	0·335			
					69·775				
GMS	3		338 38						
	4	mean	338 49	195 28	56·57	0·33			
					56·24				
JW	1	70 Ophiuchi	70 20						
	2				50·028	0·72			
					49·308				
GMS	3		72 17						
	4				57·10	0·57			
					57·67				
	5				57·13	0·53			
					57 66				
JW	6		71 50						
	7	mean	71 29	102 48	57·638	0·482			
					58·12				
	8				57·622	0·612			
					57·01				
							63·5	12 45	

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For an observation of Polaris July 7 for instrumental correction, see Aug. 3.

19

Declination axis struck with a sledge hammer July 6 Friday at noon to loosen it.

1866 July 5 ~~Tuesday~~ Thursday and 6 Friday

Observer	No. of Obs.	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Corrected mean Time	
SPL	1	Rhea	294 42					9 4	
	2		293 52					15	
	3		294 53					18	
	4	mean	294 29	59 48	49 53	9·18		24	
					58 71				
	5				34 50	9·42		27	
					43 92				
	6				34 66	9·49		30	
					44 15				
	1	Tethys -	282 54	71 23				37	Tethys grows too faint for measurement being seen only by glimpses
JW	1	σ Coronae	340 15						
	2				53·685	0·345			
					53·34				
SPL	3		343 15						
	4			192 32	53·24	0·53			
		mean	341 45		53 77				
JW	1	ξ Bootis	236 45						
SPL	2				45 16	0·59			
					44 57				
GMS	3		237 26						
	4				59·10	0·66			
		mean	237 6	297 11	58 44				
JW	5				58·69	0·66			
					58·03				
	6				58·575	0·65			
					57·925				
	1	τ Ophiuchi	283 48						
	2		287 45						Unsteady, not well defined.
	3		286 20						
	4	mean	285 58	248 19	52·115	[0·185] [xj − xw]			Backlash of screw perhaps neglected Definition bad and measure unsatisfactory
					52·30				
	5				52·49	0·26			An obs. here made for backlash made the difference of readings for coincidence of wires, driving the screw in opposite directions
					52·23				
	6				52 67	0·285			
					52·385				

0.033

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320 Observations made by rectangular coordinates; $x = \Delta\alpha \cos\delta$, $y = -\Delta\delta$; the threads being adjusted to the zero reading and one 90° different, by means of stops clamped to the limb.

1866 July 9 & 10.

Observer	No of Obs	Object	x Readings	x Difference	y Readings	y Difference	Therm	Time (mean)	Remarks
J W	1	Titan	62·60	+15·34				8 15	Seeing bad
			47·26						
	1	Equat. diam. of planet	43·05	1·74					Wires not Illuminated
			41·31						
	2		43·31	1·72					
			41·59						
	3		48·43	1·71					
			46·72						
	1	Titan	62·73	+15·13				8 26	Illumination applied
			47·60						
	2		62·98	+15·40				30	
			47·58						
	3		63·37	+15·60				33	
			47·77						
	4				43·51	+2·85		36	
					40·66				
	5				43·72	+3·06		37	Reject
					40·66				
	6				43·63	+2·89		40	
					40·74				
SPL	7		63·83	+15·41				45	
			48·42						Seeing
	8		63·96	+15·13				48	quite
			48·83						
	9		64·48	+15·24				51	bad
			49·24						
J W	1	Titan			48·50	+4·49		7 55	Wires not ill'd.
					44·01				
	2				48·68	+4·50		57	
					44·18				
	3		61·39	+10·70				59	"
			50·69						
	4		61·48	+10·80				8 0	"
			50·68						
	5		61·46	+10·65				2	"
			50·81						
	6		61·465	+10·715					
			50·75						

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1866 July 10 Tuesday

Observer	No of Obs.	Object	x Readings	x Difference	y Readings	y Difference	Therm	Time	Remarks
JW	1	Rhea	58·38 50·90	+ 7·48				8 4	No illumination
	2		58·38 50·73	+ 7·65				6	"
	3		58·35 50·83	+ 7·52				8	"
	4				49·42 48·90	− 0·52		10	"
	1	Tethys	53·33 49·14	− 4·19				14	"
	2		53·55 49·41	− 4·14				22	Wires illuminated
	3		53·49 49 35	− 4·14				23	
	4		53·73 49·50	− 4·23				24	
	5		53·99 49·92	− 4·07				25	
	6				49·85 49·35	− 0·50		28	
	7				50·12 49·44	− 0·68		29	
	8				50·00 49·47	− 0·53		30	
	9				50·11 49·59	− 0·52		31	
SPL	1	Dione	54·64 49·40	− 5·24				38	
	2		54·72 49·54	− 5·18				40	
	3		54·90 49·53	− 5·37				42	
	4		55·05 49·99	− 5·06				45	
	5		~~50·09~~ ~~49·48~~	−	50·09 49·48	+0·61		50	
	6		~~50·07~~ ~~49·37~~	−	50·07 49·37	+0·70		54	Good

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1866 July. 10 Tuesday

Observer	No of Obs.	Object	x Readings	x Difference	y Readings	y Difference	Therm	Time	Remarks
SPL	1	Rhea			50·28	−0·32		8 57	
					50·60				Seeing
	2				50·38	−0·35		9 0	poor
					50·73				
	1	Polar diam of planet			51·55	1·96			Poor
					49·59				
	1	Equat. diam	45·42	1·73	~~45·42~~				worse
			47·15	~~1·73~~					Planet too unsteady for measurement

Observer	No of Obs.	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Remarks
GMS	1	Σ 2076	207 4				
	2		203 45				Focus poor
	3		205 15				
	4				55·82		Focus adjusted (not the stellar)
					54·93	0·89	
	5				56·02		
					55·01	1·01	
SPL	6		212 32				
	7		208 52				
	8		208 24				
	9				55·40		
					56·41	1·01	
JW	10		209 30				
	11		208 0				
	12		209 50				
SPL	13	mean	208 8	326 9	55·06	1·12	
					56·18		
JW	1	19 Ophiuchi	263 55				
	2		263 20				
	3	mean	263 38	90 39	56·70	2·36	
					54·34		
	4				56·425	2·14	
					54·285		
	5				56·52	2·20	
					54·32		
	1	61 Ophiuchi	261 15				
	2		261 14				
		mean	261 14	93 3			

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1866 July 10 Tuesday.

Observer	Nos of Obs.	Object	Angle Reading	Angle Position	Distance Reading	Distance Diff.	Therm	Remarks
JW	3	61 Ophiuchi			48·20	2 35		
					50·55			
	4				48·14	2·53		
					50·67			
	5				48·27	2·11		
					50·38			
	6				50·37	2·14		} Better than preceding ones
					48·23			
	7				50·36	2·24		
					48·12			
SPL	1	70 Ophiuchi	74 7					
	2		74 17					
	3		mean 74 12	100 5	49·38	0·63		
					48·75			
	4				49·35	0·59		
					48·76			
GMA	1	Σ 2396	232 32					
	2		232 52					
	3		mean 232 42	308 35	43·38	1·66		
					45·04			
	4				43·30	1·76		
					45·06			
	1	23 Aquilae	343 34					
	2		345 15					
	3		mean 344 24	9 53	43·74	0·31		Very poor
					44·05			
	4				43·72	0·28		
					44·00			
JW	1	250 Aquilae	303 45					
	2	[illegible]	300 15					
	3	= Σ 2656	299 15					Better than preceding obsns.
	4		300 15					
	5		mean 300 52	223 25	65·06			
					64·14	0·92		
	6				65·12	0·86		
					64·26			
	7				65·88	0·93		
					64·95			

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1866 July 10 Tuesday and 11 Wednesday

Observer	No. of Obs.	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Time corrected mean.	Remarks
J W	1	δ Equulei	328 15						
	2		327 30						
	3		328 30						
	4	mean	328 5	26 12	57.61	[4.59 / 3]			58.61 ?
					62.20				
	5				58.77	3.57			
					62.34				
	6				58.84	3.53			
					62.37				
		20 Pegasi							Too close to observe
		α Capricorni							Companion 150° N to E estimated but not well seen
							61.0 ext.		
							67.0 int.		
			x		y				
								8 8	α Leonis; companion about 200° from the apparent zenith to the left.
J W	1	Japetus			41.82	+9.58		8 40 ± 5m	Probable error of 5 revolutions
					51.40				
	2				42.06	+9.34			Mean of three readings
					51.40				
	3		55.69	+0.88				8 45 ± 5m	
			54.81						
	4		55.68	+0.90					
			54.78						
G M S	5		60.07	+1.41				8 48	
			58.66						
	6		60.39	+1.46				50	
			58.93						
	7		60.59	+1.48				53	
			59.11						
	8				64.57	+14.38		9 0	
					78.95				
	9				64.83	+14.43		6	
					79.26				Reading of position circle 264° 8′
	1	♄ Titan			73.86	+5.38		9	
					79.24				
	2				74.00	+5.42		12	
					79.42				

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1866 July 11 Wednesday

Observer	No of Obs	Object	~~Angle~~ x Readings	x Difference	y Readings	y Difference	Therm	Time Corrected mean	Remarks
GMS	3	Titan	53·03 49·17	+3·86				9 15	All obsns. of x tonight very doubtful on account of wind.
	4		53·27 49·19	+4·08				17	
	1	Dione from Titan	51·25 53·29	−2·04				19	
	2		51·26 53·41	−2·15				21	
	3				51·28 44·28	−7·00		23	
	4				51·17 44·27	−6·90		25	
	1	Tethys from Titan			48·83 44·25	−4·58		27	
	2				49·00 44·50	−4·50		29	
	3		53·57 54·37	−0·80	~~53·57~~ ~~54·37~~			31	
	4		53·65 54·44	−0·79	~~53·65~~ ~~54·44~~			33	
	1	Rhea from Titan	53·21 54·41	−1·20				34	
	2		53·01 54·42	−1·41				35	
	3		53·18 54·49	−1·31				36	
	4				48·02 44·86	−3·16		38	
	5				47·94 44·82	−3·12		39	All the obsns. of Saturn system with power no 1. (lowest) Reading of position circle set for y 264° 8′ for x 174° 5′
			Angle		Distance				
JW	1	Path of mer star for zero point	84 25						
	1	Σ 2076	27 35 27 15						Power no 1.
			mean 27 25	326 52					

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1866 July 11 Wednesday

Observer	No. of obs.	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Time mean corrected	Remarks
J W	3	Σ 2076			53·92				Power no 3 applied
					52·91	1·01			
	4				53·81	0·96			
					52·85				
	1	19 Ophiuchi	82 45						
	2		81 45						
	3		81 50						
	4		82 35						
	5	mean	82 14	92 3	45·36	2·32			
					47·68				
	6				45·51	2·26			
					47·77				
	1	70 Ophiuchi	73 4		49·49	0·62	76		
	2		73 15		48·87				
	3	mean	73 10	101 7	49·43	0·69			
	4				48·74				
	1	61 Ophiuchi	260 20						
	2		79 15						This should have been posted before 70 Ophiuchi
	3		79 45						
	4	mean	79 47	94 30	49·68	2·04			
					47·64				
	5				49·77	2·02			
					47·75				
	1	Σ 2396	51 30						
	2		51 30						
	3	mean	51 30	302 47	47·71	1·83	78		
					45·88				
	4				47·88	1·99			
					45·89				
	5				46·98	1·75			
					45·23				
	6				46·78	1·56			
					45·22				
	7				46·83	1·74			
					45·09				
G M S	1	Σ 2346	248 39						companion red; principal star white (J.W.)
	2		249 30						
	3		249 53						
		mean	249 21	284 56					

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1866 July 11 Wednesday

Observer	No of Obs.	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Time	Remarks
GMS	4	Σ 2346			45·50	1·82			
					43·68				
	5				45·79	1·87			
					43·92				
	6				45·56	1·90			
					43·66				
JW		23 Aquilae							Companion too faint to observe.
GMS	1	250 Aquilae	303 2						
		= Σ 2656	301 44						
	2		302 20						
	3		mean 302 22	234 52	56·89	0·86			
					57·75				
	4				56·65	1·13			
					57·78				
	5				56·87	1·04			Nos 5 & 6 better than 3 & 4.
					57·91				
	6				56·87	1·05			
					57·92				
JW	1	α^2 Capricorni	200 20						
	2		199 30						
	3		mean 199 55	157 19	53·89	0·90			
					52·99				
	1	components of companion	293 45						
GMS	4	α^2 Capricorni	201 43						
	5		200 33						
	6		mean 200 8	156 6	49·84	0·85			
					50·69				
	7				49·77	0·93			
					50·70				
	8				49·69	0·94			
					50·63				
JW	1	Jupiter. Equat diam.			53·75	5·19			
					58·94				
	2				53·56	5·11			
					58·67				
	1	" Polar diam			50·83	4·95			
					45 88				
	2				50·85	4·90			
					45·95				

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1866 July 11 Wednesday

Observer	No of Obs.	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Time	Remarks
JW	1	δ Equulei	329 30				76		
	2		329 15						
	3		329 0						
	4	mean	329 15	25 2/3	44.78	3.53			
					41.25				
	5				44.73	3.52			
					41.21				
GMS	1	Σ 2833	195 15						
	2		196 36						
	3		196 34						
	4	mean	196 8	338 9	38.38	0.95			
					39.33				
	5				38.36	0.99			
					39.35				
	6				38.33	0.98			
					39.31				
JW	1	12 Aquarii	349 5						
	2		346 30						
	3		346 20						
	4	mean	347 18	186 59	29.49	0.44			
					29.93				
	5				29.50	0.45			
					29.95				
GMS	6		162 22						
	7		159 30						
	8		159 0						
	9		161 55						
	10	mean	160 56	193 21	39.19	0.30			
					39.49				
	11				39.26	0.35			
					39.61				
JW	1	Σ 2253	277 3				75		
	2		272 30						
	3		274 4						Better than 1 & 2.
	4	mean	274 32	79 45	51.94	1.55			
					53.49				
	5				50.56	1.44			
					49.12				

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1866 July 11 Wednesday and 12 Thursday

Observer	No of Obs	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Time corrected mean	Remarks
GMS	6	Σ 2253	92 58						
	7		94 13						
	8		94 30						
	9	mean	93 54	80 23	53·89	1·77			
					52·12				
	10				53·59	1·65			
					51·94				
JW	1	Equat. diam. of Saturn i.e. diam. perp. to circle of declination			58·98	1·86			These observations were made by twilight the last at 8 PM the seeing was good. The dusky ring was well seen. My first impression was that it was less distinct and narrower on the preceding ansa, but a closer examination did not confirm this impression.
					57·12				
	2				55·16	1·82			
					53·34				
	3				55·40	1·88			
					53·52				
	1	Polar diam			56·44	1·80			
					54·64				
	2				56·55	1·77			
					54·78				
	3				56·58	1·76			
					54·82				
			x		y				
	1	Encedadus			56·11			8 19?	used for these two error of watch, somewhat uncertain.
					55·24	+0·87			
	2		59·10	+2·75				22?	
			56·35						
	3		56·95	+2·61				25	Planet unsteady and satellite faint.
			54·34						
	1	Tethys	54·62	−3·17				27	
			51·45						
	2		54·75	−3·14				29	
			51·61						
	3				57·55	−0·81		31	
					56·74				
	4				57·54	−0·83		32	
					56·71				
	1	Dione			55·14	+1·56		33	
					56·70				
	2				55·33	+1·45		34	
					56·78				

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1866phae.proj..317R

1866 July 12 Thursday

Obsen.	No of Obs.	Object	x Readings	x Difference	y Readings	y Difference	Therm	Corrected mean Time	Remarks	Obsen
JW	3	Dione			55·40	+1·60		8 36		SP
					57·00					
	4				55·44	+1·66		8 37		
					57·10					
	5		58·38	+2·60				40		
			55·78							
	6		58·47	+2·70				41		
			55·77							
	7		58·58	+2·53				42		
			56·05							
	8		58·85	+2·75				44		
			56·10							
	1	Japetus	53·06	−3·37				46		Ju
			56·43							
	2		53·23	−3·28				47		
			56·51							
	3		53·45	−3·13				48		
			56·58							
	4		53·48	−3·14				49		
			56·62							
	5				44·16	+13·50		53		
					57·66					
	6				44·18	+13·42		55		
					57·60					GM
SPL	1	Rhea	45·63	−6·87				9 6		
			38·76							
	2		45·60	−6·56				9		
			39·04							
	3		45·84	−6·81				12		
			39·03							
	4		46·19	−6·67				15		JW
			39·52							GM
	5				55·02	+1·28		20		JW
					53·74					
	6				55·25	+1·29		23		GM
					53·96					
	7				55·29	+1·16		26		
					54·13					

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1866 July 12 Thursday

Observer	No of Obs.	Object	x Readings	x Difference	y Readings	y Difference	Therm	Corr. mean Time	
SPL	1	Titan			50·17	+5·47		9 30	
					55·64				
	2				55·87	+5·56		36	
					50·31				
	3				56·10	+5·49		39	
					50·61				
	4		45·60	−2·91				44	
			48·51						
	5		48·85	−2·85				46	
			46·00						
			Angle Reading	Angle Position	Distance Readings	Distance Difference			
JW	1	λ Ophiuchi	156 30						Power no 3.
	2		156 45						
	3		158 20						
	4		158 0						
	5		158 20						
	6	mean	157 35	16 42	48·92	0·29			
					48·63				
	7				48·97	0·21			
					48·76				
	8				49·04	0·17			
					48·87				
GMS	9		148 33						
	10		146 24						
	11		147 53						
	12	mean	147 37	26 40	48·81	0·21			
					48·60				
	13				49·56	0·19			
					49·37				
JW	14		156 5						
GMS	15		150 0						} Compromise
JW	16		153 20						
	17		152 45						
		mean	153 2	21 15					
GMS	1	Σ 2173	240						
	2		234						
	3		233						
	4		232½						
		mean	234°9	119° 2½					

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1866 July 12 Thursday and 14 Saturday

Observer	No of Obs	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Corr. mean Time	Remarks
GMS	5	Σ 2173			49·55	0·16			
					49·39				
	6				49·57	0·18			
					49·39				
	7				49·56	0·15			
					49·41				
	1	Σ 2234	154 35						
	2		153 56						
	3	mean	154 16	200 1	57·01	1·70			
					58·71				
	4				57·15	1·65			
					58·80				
JW	1	τ Ophiuchi	107 45						
	2		284 20						
	3		283 40						
	4		285 50						
GMS	5		287 6						
	6		291 52						
	7		287 30						
	8	mean	286 52	247 25	59·23	0·15			
					59·38				
	9				59·19	0·19			
					59·38				
	10				59·25	0·14			
					59·39				
JW	1	Jupiter Equat. diam.			57·45	5·17			
					67·62				
							70		External
							78		In alcove of dome.
JW		Regulus	153 ∞						Near horizon apparent elongation
	1	Japetus	95·24	−11·47				8 31	
			83·77						
	2		80·70	−11·70				34	
			69·00						
	3		80·56	−11·30				37	
			69·26						

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1866 July 14 Saturday

Observer	No. of Obs.	Object	x Angle Readings	Angle Position	y Distance Readings	Distance Difference	Therm	Corr. mean Time	Remarks
gw	4	Japetus	80·63	−11·36				8 39	
			69·27						
	5				41·88	+11·38		8 42	
					53·26				
	6				41·75	+11·26		44	
					53·01				
SPdo	1	Titan	45·60	−14·45				8 52	
			60·05						
	2		45 62	−14 53				56	
			60·15						
	3		45·72	−14·74				58	
			60·46						
	4				50·20	+3·77		9 3	
					53·97				
	5				50·45	+3·70		6	
					54·15				
	6				50·52	+3·60		8	
					54·12				Seeing poor during these obsns.
			Angle		Distance				
gw	1	51 ξ Librae	102 0						Power no 4
	2	$\frac{A+B}{2}$. C	102 50						
	3		102 30						
	4		103 50						Power no 3
	5		103 30						
	6		103 50						
	7	~~Σ 1999~~ mean	103 5	71 12	60·10	0·70			
					59·40				
	8				60·27	0·68			
					59·59				
	9				60·34	0·75			
					59·59				
	10				60·55	0·63			
					59·92				
~~gHS~~	1	Σ 1999	74 5						
	2		73 15						
	3		74 5						
	4		73 30						
			mean 73 ~~29~~		100 33				

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1866 July 14 Saturday

Observer	No of Obs.	Object	Angle: Reading	Angle: Position	Distance: Readings	Distance: Difference	Therm.	Corr. mean time	Remarks
GMS	5	Σ 1999	73 20						
	6		72 10						
	7		73 20						
	8		72 33						
	9	mean	72 51	101 26	58·30				
					57·19	1·11			
	10				57·54	1·09			
					58·63				
	11				58·68	1·14			
					57·54				
	12				57·63	1·11			
					58·74				
	1	49 Serpentis	209 2						
	2		207 30						
	3		210 23						
	4		210 19						
	5		208 19						
	6	mean	209 6	325 11	61·53	0·39			
					61·92				
	7				61·90	0·35			
					61·55				
	8				61·51	0·35			
					61·86				
				∞	y				1866·0
GW	1	Nemausa (51)			61·52	+12·29		1h 30m	Approx. position of a 18h 45m 43s·5 −7° 6′ 4″
		from star b/c			49·23				" " c 18 45 57·4 −7° 9′ 11″
	1	from star a			61·52	+6·38		to	
					68·00				c follows W XVIII 1123 63s·5
	1	from a	69·82	+3·69					
			66·13					2h 0m	
	1	c	49·08	−17·05					
			66·13						
								Corrected sidereal time 21h	
	1	from a	49·56	+2·06				29m 30s	
			47·50						
	2		49·91	+2·05				31 10	
			47·86						
	3		50·21	+2·12				32 40	
			48·09						

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1866 July 14 Saturday & 15 Sunday

Observer	No. of Obs	Object	x Reading	x Diff.	y Reading	y Diff.	Therm	Corr. sid. time, 21h	Remarks
J W	4	Nemausa from a			54·44	+6·63		33 40	
					47·81				
	5				54·55	+6·94		35 15	
					47·61				
	6				54·61	+6·92		36 54	
					47·69				
	7				54·41	+6·56		38 25	
					47·85				
	8				54·70	+6·94		39 30	
					47·76				
	9		51·65	1·16				44 10	
			50·49						

Swept for De Vico's comet within the limits of α laid down in the ephemeris and from +12 to +13 30 of δ. Sky toward the last light from dawn and hazy. Power no. 1. Field about 12′ in diam. Breadth of each sweep nearly a field.

								Corr. M.S.	
G M S	1	Japetus	44·98	−14·78				8 22	
6′4″			59·76						
9′11″	2		44·49	−15·17				24	These Observations of x generally bad on account of wind.
			59·66						
	3		44·86	−14·85				25	Good
			59·71						
	4		45·24	−15·33				28	
			60·57						
	5				48·89	+10·06		33	
					58·95				
	6				48·82	+10·27		35	
					59·09				
	7				48·93	+10·13		37	
					59·06				

Reading of circle for x { 84 6
y { 264 8

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1866phae.proj..317R

1866 July 15 Sunday

Observer	No of obs.	Object	x Reading	x Diff	y Reading	y Diff	Therm	Time	Remarks
MS	1	Titan			57.51	+1.69		8 39	
					59.20				
	2				45.05	+1.57		41	
					46.62				
	3				45.20	+1.70		43	
					46.90				
	4		45.46	−17.43				46	
			62.89						
	5		45.69	−17.52				48	
			63.21						
	6		45.90	−17.63				50	
			63.53						
									Reading of circle for x 174 8
									354 2
		Nemausa (51)							
			Sid. Clock time of transits	Δα		Δδ			
	1	W XVIII 1123	17 55 54.6						
	1	Nemausa	56 0.0	+5.4					
	2				39.28	−12.62			
					51.90				
			58 22.6						
	3		27.9	+5.3					
	4				39.22	−12.71			
					51.93				
			18 0 16.3	+5.1					
	5		21.4	+5.1					
	6				39.35	−12.75			
					52.10				
			2 42.0						
	7		47.3	+5.3					
	8				39.19	−12.98			
					52.17				
			4 32.4						
	9		37.7	+5.3					
	10				39.17	−12.94			
					52.11				
			6 26.9						
	11		32.0	+5.1					

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1866phae.proj..317R

1866 July 15 Sunday

Observer	No of Obs	Object	Sides. Clock time of transits	Δα Diff.	Δδ Reading	Δδ Diff.	Therm	Time	Remarks
	12				39.27 / 52.23	−12.96			
GMS		W XVIII 1123	18 8 18.0						
	13	Nemausa	23.2	+5.2					
									Reading of circle for transits 174 7
									" Δδ 264 13
									Corr. to clock − 8ˢ
				a c					
	1	W XVIII 1123	18 12 0.6						
		a } of July	12 49.9	+49.3					
		c } 14	13 3.8	+63.2					
	2		13 31.1						
			15 20.0	+48.9					
			14 34.0	+62.9					
	3		15 21.9						
8			16 10.7	+48.8					
2			16 24.7	+62.8					
	4		16 50.1						
			17 39.0	+48.9					
			17 53.0	+62.9					
	5		18 12.9						
			19 1.8	+48.9					
			19 15.7	+62.8					
	6	a			69.98	+17.62		mean	
		c			50.92	−1.44		time	Reading for Δδ 264° 12′
		W XVIII 1123			52.36				
	7				70.10	+17.71		approx.	stars run well along wires.
					50.95	−1.44			
					52.39				
	8				70.20	+17.75			
					50.97	−1.48		10ʰ 50ᵐ	
					52.45				
	9				70.20	+17.64			
					51.03	−1.53			
					52.56				
	10				70.22	+17.58			
					51.12	−1.52			
					52.64				
									Bar. at 12ʰ M.T. 29.990 Att Therm 81°.5 ?

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1866phae.proj..317R

1866 July 15 Sunday

Observer	No. of Obs.	Object	Angle: Reading	Angle: Position	Distance: Reading	Distance: Diff	Therm	Time	Remarks
JW	1	ε Equulei	100 20						
	2	$\frac{A+B}{2}$. C.	99 55						
	3		100 29						
	4	mean	100 15	74 2	52·58	1·14			
					51·44				
	5				52·50	1·31			
					51·19				
	6				52·00	1·01			
					50·99				
GMS	7		98 6						
	8		96 13						
	9		98 0						Good
	10	mean	97 26	76 51	50·85	1·17			
					52·02				
	11				50·78	1·08			
					51·86				
	12				50·60	1·12			
					51·72				
	1	" AB	62						
	2		65						
	3	mean	63°5	290 47	53·30	0·11			
					53·19				
	4				53·30	0·16			
					53·14				
	5				53·31	0·15			
					53·16				
JW	6		248						
	7		249°5						
		mean	248°8	285 29					
	1	20 Pegasi	38 2						
	2		36 0						
	3	mean	37 1	317 16	51·76	0·22			
					51·54				
	4				51·775	0·235			
					51·54				
GMS	5	#	38 56						
	6		40 0						
	7		41 25						
	8		38 43						
		mean	39 46	314 31					

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1866phae.proj..317R

1866 July 15 Sunday & 16 Monday

Observer	No of Obs	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Time	Remarks
GMS	9	20 Pegasi			51·91	0·21			
					51·70				
	10				51·85	0·14			
					51·71				
	11				51·85	0·16			
					51·69				
									Sweep for De Vico's comet.
									Double stars found in sweep
									Nfrm α 1866 δ Dist Mag
									2 51 +14 35 2″ 9 9
									2 54 +14 25 1″ 8 8
									Bar. 15¼ M.J. 29·980
									Att. Therm. 79·5
									No. 4. 78·0

			Δα clock sid. time of transits	Δα Diff.	Δδ Readings	Δδ Diff.			
GMS	1	Fremansa	18 17 42·8	−48·1					Readings for Δα 174 15
		W XVIII 1123	18 30·9						Δδ 264 12
	2				10·52	−41·28			
					51·80				
	3		23 38·5	−48·2					
			24 26·7						
	4		26 49·8	−48·1					
			27 37·9						
	5		28 30·9	−48·3					
			29 19·2						
	6		29 56·3	−48·3					
			30 44·6						
	7		31 10·0	−48·1					
			31 58·1						
	8				10·92	−41·74			
					52·66				
	9		35 43·0	−48·2					
			36 31·2						
	10		37 34·0	−48·4					
			38 22·4						
	11				30·69	−41·92			
					72·61				

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1866 July 16 Monday, 17 Tuesday & 19 Thursday.

Observer	No of Obs	Object	Clock sid. time of transits	Δα Diff	Δδ Readings	Δδ Diff.	Therm	Time	Remarks	Observer
GMS	12	(51) Nemausa			30·74	−41·85				GM
		W XVIII 1123			72·59					
	13				30·61	−42·07				
					72·68					
	14		18 48 59·5	−49·0					Bad on account of clouds. ½ weight.	
			49 48·5							
				∞	−y =	Δδ		corrected sidereal		
JW	1	(51) Nemausa			75·18	+30·76		17 34		
		W XVIII 1070			44·42					
	2				75·10	+30·35		36·6	Better than 1st	
					44·75					
		Nemausa								
		W XVIII 1075		−0·50				39·4	Clouds prevented further obsns.	
				∞		−y = Δδ				
JW	1	Melpomene (18)			53·12	−6·13		18 34·1		
		Unknown			46·99					
	2	Comp. star			53·12	−6·14		35·6		
					46·98					
	3				53·13	−6·14		37·3		
					46·98					
			83·62					39·6	} Not regarded as good at the time	
			48					40·1		
			35					40·6		
			29					41·1		
			24					41·6		
			34					42·1		GM
			35					42·6		
	0		27					43·1		
			33					43·4		
			·23					43·9		
			83·35							
			rejecting 2 first 83 30							
			45·95							
			45·97							
	4		45·96	+37·34				18h 42m·3		
GMS			82·85							
			46·01	+36·84						
					47·92	−5·54			} For a check.	
					53·46					

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1866 July 19 Thursday & 22 Sunday.

Observer	No of Obs.	Object	Δα Clock sid. time of transits	Δα Diff	Δδ Reading	Δδ Diff	Therm	Time	Remarks
GMS	1	Nemausa	19 58 4.2					corrected sidereal	Transit of each star over two wires.
			22.1						
			58 13.2	+1 36.7					From W 1070 to 1075
		XVIII W 1070	59 40.6						
			59.2	-1 36.2					
			59 49.9	-1 36.7				19h 58.1m	
		W XVIII 1075	59 50.1						
			20 0 8.6						
			59 59.4	-1 46.2				"	
	2	W XVIII 1070			58.04	-32.61		20h 2.7m	Wire set in both cases on
		" 1075			42.07	-16.64		"	W 1075 just as it was going
		Nemausa			25.43				out of the field.
	3				58.07	-32.70		20 6.2	
					42.36	-16.99		"	
					25.37				
	4	Nemausa	20 13 30.0						
			36.3						
			13 33.2						
		W XVIII 1070	15 7.3						
			13.5						
			15 10.4	-1 37.2				20 13.4	
		W XVIII 1075	15 16.9						
			22.9						
			15 19.9	-1 46.7				"	
GMS	1	W XVIII 946	19 43 18.1						Transit of each star over two wires
			24.2	+45.9					
		Nemausa	44 4.0						
			10.1	-30.8					
		W XVIII 979	44 34.9						
			40.8						
	2		44 59.1						
			45 5.1	+46.0					
			45.2						
			51.1	-30.7					
			46 15.9						
			21.8						
	3		46 38.0						
			44.1	+46.0					
			47 24.1						
			30.1	-30.6					
			54.7						
	4		48 0.7						
			34.8						
			40.7	+46.0					
			49 20.7						
			26.7	-30.8					
			51.5						
			57.5						

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1866 July 22 Sunday and 24 Tuesday.

Observer	No of Obs	Object	Δα Clock sid. time of transits	Δα Diff	Δδ Readings	Δδ Diff.	Therm	Time Obs. sider.	Remarks
GMS	5	W XVIII 946			54·24	−19·73			Fixed wire set on Nemausa.
		" " 979			52·50	−17·99		?	Rattle on chronographs
		Nemausa			34·51				at time wire was set on
	6				~~			45	(51) except in 1st & 4th
					52·65	−18·10		19 55 ~~53~~ ~~50 0 37~~	measurements.
					34·55				
	7				54·35	−19·79			
					52·66	−18·10		29 20 0 ~~37~~	
					34·56				Reading of position circle 84°20′
	8				36·65	−19·93			stars run well on wires.
					34·91	−18·19		?	
					16·72				
	9				36·76	−19·91		40 6 ~~48~~	
					35·04	−18·19			
					16·85				
	10				36·92	−20·03		14 10 ~~32~~	
					35·16	−18·27			
					16·89				
	11	W XVIII 946	20 19 45·5						
			~~29~~ 59·5	+ 44·8					
		Nemausa	20 ~~30·6~~						
			~~44~~·5	− 31·8					Reading for transits 174° 18′
		W XVIII 979	21 2·1						
			16·0						
	12		21 33·9						
			48·0	+ 44·9					Each star over two wires.
			22 18·8						
			32·9	− 31·6					
			22 50·4						
			23 4·5						
	13		23 30·3						
			44·3	+ 44·8					
			24 15·0						
			29·2	− 31·9					
			47·0						
			25 1·0						
SP 2	1	W XVIII 1204	~~18 9~~ ~~17 55~~ 36·8		Clock sid t.	Δα transits	Diff.		Reading for transits 174°15′
			50·8		18 11 34·8				
		Melpomene	~~54~~ 59·2	+2 22·6	48·8				
			12 ~~23~~ 13·7		13 57·2	+2	22·6		
	2				14 11·7				
			13 ~~59~~ 45·3		15 43·3				
			59·3		57·3				
			18 ~~16~~ 1·5	+2 22·4	18 5·5	+2	22·4		
			22·0		20·0				
	3		~~17~~ 12·5		19 10·5				
			26·5		24·5				
			~~19~~ 34·5	+2 22·3	21 32·5	+2	22·3		
			49·1		47·1				

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1866 July 24 Tuesday

Observer	No of Obs	Object	Δα clock sid. t. of transits	Δα Diff	Δδ Reading	Δδ Diff	Therm	Time corr. M.S.	Remarks
SPL					103·70			10h 21m	Reading for Δδ 84° 22′
	4				45·58	−58·12		corr. sid. t.	
	5				〃	−58·67		18 45·4	
	6				11·84	−59·32		19 4·2	
					71·16				
GMS	7		19 11 13·0 17·4 13 33·7 37·8	+2 20·6					
	8		14 0·1 4·6 16 20·6 24·9	+2 20·4					
								M.S.	
					80·03			11 9·8	
					20·44	−59·59			

			Angle		Distance	
SPL	1	P XX 376 Equulei	70 25			
	2		64 52			
	3		65 3			
	4	mean	66 47	287 30	50·89	
	5				·76	
	6				83	
					50·827	
					51·14	0·313
GMS	7		~~68 32~~		50·55	
	8				·55	
	9				52	
					50·54	
					50·75	0·210
	10		68 32			
	11		69 19			
	12		67 03			
		mean	~~68 18~~	285 59		
GMS	1	ε Equulei	67 42			
	2		68 10			
	3		66 52			
	4	mean	67 35	286 42	48·75	
	5				72	
	6				70	
	7				71	
					48·720	
					48·57	0·15

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1866 July 24 Tuesday & 26 Thursday

Observer	No of Obs	Object	Angle: Reading	Angle: Position	Distance: Reading	Distance: Difference	Therm	Time	Remarks
GMS	1	ε Equulei	99 7						
	2	$\frac{A+B}{2}$. C	97 37						
	3		98 54						
	4		98 33						
	5	mean	98 32	5° 45′	53·05				
	6				53·00				
	7				52·99				
					53·013				
					50·86	2·15			
									Chart made from the heavens of a circle of about 10′ radius about the Berl. Jahrbuch place of Daphne, but no motion perceived after an hour and a half in any of the stars.
SPL	1	μ Herculis	110 53	243 24					
	1	components of	81 51						
	2	companion	83 8						Good
	3		83 26						
		mean	82 48	91 29					
GMS	4		88 37						Good
	5		86 15						
	6		89 13						
SPL		mean	88 2	86 15	44·47				
					44·36				
	7				0·11				Doubtful Both observers agreed independently in estimating the component farthest from the principal star as half a magnitude brighter than the other.
SPL	1	W XVIII 1224	264 27						
		for zero point	84 24						
GMS	2		84 26						
			264 28						

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1866 July 26 Thursday

Observer	No of Obs	Object	Δα Clock sid. time of transits	Diff	Δδ Readings	Diff.	Therm	Time corr. sidereal	Remarks
SPL.	1	Methomene ~~W XVIII 1224~~	18 24 12·1						Reading for transits 174 26
		W XVIII 1224	14·8	−9·6					" Δδ 84 26
			21·6						
			24·6						
	2		25 23·7						
			26·8	−9·7					
			33·3 ~~30·7~~						
			36·6 ~~33·3~~						
	3		46·9						
			49·8	−9·8					
			56·5						
			59·7						
	4		26 10·2						
			13·4	−9·9					
			20·2						
			23·2						
	5		39·6						
			42·8	−9·8					
			49·4						
			52·5						
	6		27 3·2						
			6·1	−9·9					
			13·0						
			16·1						
	7		28 20·1						
			23·4	−10·0					
			30·1						
			33·4						
	8		54·7						
			58·0	−10·0					
			29 4·7						
			7·9						
	9		23·1						
			26·4	−9·9					
			33·1						
			36·2						
GMS	10				58·70	+16·60		18 32·0	
					42·10				
	11				58·72	+16·62			
					42·10				
	12				58·74	+16·64		35·2	
					42·10				
	13				58·77	+16·56		36·1	
					42·21				
	14				58·72	+16·47		37·3	
					42·25				
	15				58·76	+16·52		38·1	
					42·24				

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1866 July 26 Thursday

Observer	No of Obs	Object	Δα Clock time of transits	Δα Diff	Δδ Readings	Δδ Diff	Therm	Time corr. sidereal	Remarks
G.M.S	16	Melpomene			58·71	+16·40		18 38·9	
		W XVIII 1224			42·31				
	17				58·73	+16·40		40·0	
					42·33				
	18				58·68	+16·46		41·1	
					42·22				
	19				58·67	+16·37		42·1	
					42·30				
	20		18 43 49·5						
			55·0	−10·5					
			44 0·0						
			5·5						
	21		26·7						
			32·2	−10·5					
			37·2						
			42·7						
	22		58·0						
			45 3·6	−10·5					
			8·5						
			14·1						
	23		30·3						
			35·9	−10·5					
			40·8						
			46·4						
	24		46 7·8						
			13·3	−10·4					
			18·2						
			23·8						
	25		42·0						
			47·6	−10·6					
			52·6						
			58·3						
		Melp. & W 1224							
SPL	1	over 1st wire	54 8·4	−10·8					
			19·2						
G.M.S	1	over 2d wire	31·8	−10·9					
			42·7						
S	2		55 0·1	−11·0					
			11·1						
L	2		23·6	−10·9					
			34·5						
L	3		56 2·7	−10·8					
			13·5						
S	3		26·1	−10·9					
			37·0						

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1866 July 26 Thursday

No of Obs	Observer	Object	Δα Clock sid. t. of transits	Δα Diff	Δδ Readings	Δδ Diff.	Therm	Time corr. mean	Remarks
4	S	Melp. 8 W XVIII 1224	18 56 52.7 57 3.5	−10.8					
	L		26.9 26.9	−10.9					
5	L		50.4 58 1.6	−11.2					
	S		14.0 25.0	−11.0					
6	S		50.2 59 1.2	−11.0					
	L		13.7 24.6	−10.9					
7	L		41.7 52.9	−11.2					
	S		19 0 5.0 16.2	−11.2					
8	S		25.9 ~~36.8~~ 36.8 ~~49.3~~	−10.9					
	L		1 49.3 0.3	−11.0					
	L		35.5 46.6	−11.1					
9	SPL				67.12 51.99	+15.13		10 49	
10					67.10 52.26	+14.84		54	
11					67.17 52.23	+14.94		56	
12					67.20 52.41	+14.79		58	
13					67.86 53.16	+14.70		11 1	
14	SPL	1st wire	19 27 47.4 59.6	−12.2					
	GMS	2d wire	28 12.5 24.8	−12.3					
15	S		42.5 54.8	−12.3					
	L		29 7.4 19.8	−12.4					
16	L		36.3 48.7	−12.4					
	S		30 1.3 13.9	−12.6					
17	S		35.4 47.9	−12.5					
	L		31 0.5 12.9	−12.3					

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1866 July 26 Thursday

Observer	No of obs.	Object	Δα Clock sid time of transits	Diff			Thorn	Time	Remarks
SPL		Melpomene	19 31 27·1	−12·3					
	18	and W 1224 over 1st wire	39·4						
GMS		" 2d wire	52·2	−12·5					
			32 4·7						
S			20·4	−12·5					
	19		32·9						
L			45·3	−12·3					
			57·6						
L			33 13·5	−12·4					
	20		25·9						
S			38·7	−12·4					
			51·1						
S			34 9·7	−12·3					
	21		22·0						
L			34·4	−12·6					
			47·0						

			Angle			Distance		
SPL	1	23 Aquilae	343 52					
	2		345 8					
	3	mean	344 30	9	47	51·10	0·33	
						51·43		
	4					51·43	0·30	Good
						51·13		
	5					51·53	0·34	
						51·19		
GMS	6					51·50	0·30	
						51·20		
	7					51·58	0·35	
						51·23		
	8		341 22					
	9		339 50	13	41			
		mean	340 36					
SPL	1	Σ 2346	65 40					
	2		65 57					
	3	mean	65 48	288	29	55·26	1·89	
						53·37		
	4					55·28	1·93	
						53·35		
GMS	5					55·41	2·13	
						57·54		
	6					55·47	2·07	
		mean	66 17					
	7	##	66 45	288	0	57·54		
	8		65 49					

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1866 July 26 Thursday & 29 Sunday

Observer	No. of Obs.	Object	Angle Reading	Angle Position	Distance Reading	Distance Difference	Therm	Time	Remarks
SPL	1	20 Pegasi	37 34						
	2		40 0						
	3	mean	38 47	315° 30	59·54	0·18			
					59·36				
GMS	4				58·13	0·22			
					58·35				
	5				58·31	0·14			
					58·17				
	6				58·17	0·14			
					58·03				
	7		38 30						not very good
	8		40 19	314 53					
		mean	39 24						
	1	Σ 2833	19 8						
	2		21 22						
	3		19 22						
	4		19 10						
	5	mean	19 46	334 31	59·39	0·97			
					60·36				
	6				59·37	0·97			
					60·34				
	7				59·39	0·97			
					60·36				

~~GMS~~	No. of Obs.	Object	Clock sid. t. of transits (Δα)	Diff	Readings (Δδ)	Diff.	Therm	Time	Remarks
GMS		~~Aletheneae~~							
	1	W XVIII 1174	19 4 11·0						Reading for transits 174° 16′
		star 2′·6 south of 1174.	13·9	+2·9					" " Δδ 84° 19′
	2		24·5						
			27·2	+2·7					
	3		42·3						
			45·1	+2·8					
	4		59·0						
			5 1·9	+2·9					
	5		22·0						
			24·7	+2·7					

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1866 July 29 Sunday

Observer	No of Obs.	Object	Δα Clock sid. t. of transits	Δα Diff.	Δδ Readings	Δδ Diff.	Therm	Time	Remarks
MS	1	Melpomene	19 9 41·8	−40·9					
		W XVIII 1174	10 22·7	+ 2·7					
		star 2′·6 south of 1174	10 25·4						
	2		10 48·2	−41·2					
			11 29·4	+2·8					
			11 32·2						
	3		12 52·0	−41·0					
			12 33·0	+2·9					
			12 35·9						
			13 6·3						
			~						
			~					corr. M.J	
		W XVIII 1174			78·49				southern star about $0^{Mag}.38$ < 1174
	1	star 2′·6 south			62·66	−15·83		10 54·9	Melpomene " $0^{Mag}.5$ "
					78·48				
	2				62·78	−15·70		57·1	
					78·55				
	3				62·83	−15·72		58·6	
	1	Melpomene			46·84	−16·07		11 4·6	
		star 2′·6 S. of 1174			63·01	#			
	2				46·82	−16·30		6·8	
					63·12				
	3				46·82	−16·38		9·1	
					63·20	~~~~			
	1	Melpomene			46·48	−32·10		12·5	
		W XVIII 1174			78·58				
	2				46·54	−32·32		15·3	
					78·86				
	1	Melpomene	19 55 14·1	−42·5					
		W XVIII 1174	56·6	+2·8					
		star 2′·6 south	59·4						
	2		56 43·4						
			51·8	−42·6					
			57 26·0						
			34·3						
			57 28·8	+2·8					
			37·1						

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1866 July 29 Sunday

Observer	No. of obs	Object	Δα Clock sid. t of transit	Diff.	Δδ Reading	Diff.	Therm	Time	Remarks
GMS	3	Melpomene	19 57 58.5 58 6.8	−42.6					
		W XVIII 1174	58 40.9 49.5	+2.8					
		star 2'.6 south	58 43.8 52.2						
			Angle		Distance				
GMS	1	α^2 Capricorni	205 15						First two position angles better than last two.
	2		205 40						
	3		204 45						
	4		206 17						
			205 29	148 59					
	5				82.81 82.93	0.82			Good
	6				82.21 83.05	0.84			"
74	7				82.24 83.05	0.81			
	1	components of companion	271°	.5					
	1	12 Aquarii	162 30						
	2		163 26						
	3		163 42						
			163 12	191 15					
	4				48.11 48.42	0.31			
	5				48.12 48.52	0.40			
	6				48.15 48.49	0.34			
	7				47.08 47.46	0.38			
	1	ζ Aquarii	195 36						
	2		195 35						
	3		196 33						
	4		197 26						
			196 18	338 10					

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1866 July 29 Sunday and 31 Tuesday.

Obs	No. of Obs.	Object	Angle Reading	Angle Position	Distance Reading	Distance Diff.	Therm	Time	Remarks
SP	5	ζ Aquarii			50·62	0·42			
					51·04				
	6				50·68	0·44			
					51·12				
	7				51·12	0·42			
					50·70				
	8				45·29	0·41			
					45·70				
									Seeing very fine. Searched for Daphne but found nothing like it within 40′ of the Berlin Jahrbuch place.
SPh	1	βδ of quad	254 15′					mean. 10 30	Seeing very good
	2	ruple star	250 50						Observed that the most
	3	in "trifid"	252 30						southern component of
		nebula	252 32	281 56	61·18	c			the triple star in the "trifid"
	4				60·99	0·19			nebula R.A 17 52 δ −23°
					61·18				was double. The stars in
	5				60·99	0·19			order of magnitude are
									α β γ δ, δ being the
JW	6		79 45′						new one.
	7		78 0						Estimated magnitudes δ.β
	8		76 50						α 7
	9		75 15						β 8½ ·α
	10		76 0						γ 12½ ·γ
			77 10	277 18					δ 13 Colour of δ is blue.
									J W. ~~differed~~ suspected independently
SPh	1	α β	140 45′						that southern star appeared
	2		140 30						double.
	3		140 53						
			140 43	213 45					
	4				57·97	1·12			
					59·09				Seeing not nearly as good
	5				58·05	1·12			
					59·17				
	6				59·34	1·19			
					58·15				

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1866 July 31 Tuesday

Observer	No. of Obs.	Object	Angle Reading	Angle Position	Distance Reading	Distance Diff.	Therm	Time	Remarks
SPL	1	α y	145 48						y has grown so faint that no reliable measures of distance can be taken
	2		148 15						
	3		149 0						
			147 41	26 47					
		Star runs along wire	264 34						
			x		y				
	1		34.95	+9.41	36.20	−6.96			Measurement of position of stars in "Trifid Nebula". "α" the principal component of the quadruple star being at the origin.
			44.36		43.16				
	1		33.27	+12.16	62.20	−24.28			
			45.43		37.92			mean 12 20	Seeing very poor; the nebula being near the horizon which renders the above values of x very unreliable.
									Jupiter.
									"A" A conspicuous spot in the lower margin of the (apparent) lower belt. Just to the left of A is a diffuse bright spot. seems elongated in the direction of the equatorial diameter. B & C more diffuse and less conspicuous. (J. W.)
			Angle		Distance				
	1	ζ Aquarii	19 30						
	2		16 38						
	3		17 35						
			17 54	336 34					
	4				52.62	0.40			
					52.22				
	5				52.65	0.39			
					52.26				

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1866 July 31 Tuesday

Observer	No. of Obs	Object	Angle Reading	Angle Position	Distance Readings	Distance Diff.	Therm	Time	Remarks
SAH	6	ζ Aquarii			52·73	0·40			Not so good as preceding measures of distance
					52·33				
		37 Pegasi							Probably found but not well seen as double.
	1	λ Equulei	309 8						
	2		311 2						
	3		311 4						
			310 25	224 3					Estimated magnitude of both components 7 or 7½.
	4				57·24				
	5				·23				
	6				·20				
					57·22⅔	0·320			
					56·90				
					89				
					·89				
					56·893				
GMS	1	P XX 178	249						
	2	A C	248						
	3		249·5						
			248·8	105°·7					
	5				57·53	2·41			
					55·12				
	6				57·99	2·42			
					55·57				
	1	A B	97 5						
	2		97 15						
	3		97 28						
			97 16	257 12					Duplicity of B not apparent.
	4				57·85	1·63			
					56·22				
	5				57·57	1·50			
					56·07				
	6				57·53	1·59			
					55·94				
	1	Star runs	84 30						
	2	along wire	24						½ weight.
			84 28						

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1866 Aug 2 Thursday

Observer	No of Obs	Object	Angle Reading	Angle Position	Distance Readings	Distance Diff.	Therm	Time	Remarks
								mean	
BS	1	BS of "Infid"	259 10					9 15.	
"Infid" nebula	2	nebula	259 23						Hardly as good as the first
	3		258 33						Worse yet
GMS	4		258 53						
			259 0	275 25					
	5				61·80	0·31			
					61·49				
	6				61·75	0·27			
					61·48				
	7				62·33	0·28			
					62·05				

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1866 Aug 3 Friday and July 7 Saturday

Observer	No of Obs	Object	Reading	Position		Therm	Time watch.	Remarks
GMS		Polaris transit over middle of field					$4^h 22^m 2^s$	Watch compared with sid. clock as follows
		Middle of field set to dec. of Polaris					$4^h 25^m$	Clock 13 18 0 — watch 4 29 52
								18 10 — 30 2
								18 30 — 30 22
		Verniers of hour circle	11 59 40					19 0 — 30 51
			0 0 0					13 18 25 — 4 30 16·7
		Verniers of dec. circle		I	91 23 54			Clock - Watch 8 48 8·3
				II	1 24 32			Corr. to Clock −10·3
				III	271 24 28			Sidar - Sidereal 8 48 52·0
				IV	181 23 36			Sid - watch +8 47 58
								MJ - " − 54
								Reading for middle of field 51'·75 not very good owing to clouds; not more than 0'·10 out
JW		Transit of Polaris over middle of field					sid. chron. 7 58 49	Corr. to Chronometer = −14ˢ; interpolated, & may be wrong ± 3ˢ.
		Verniers of hour circle	6 46 34					
			18 46 27					
		Verniers of dec. circle		I	88 35 40			
				II	358 35 4			
				IV	178 35 36			
				III	268 36 18			Reading for middle of field 51'·78; screw perhaps inadvertently turned a few hundredths after adjustment.

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1866phae.proj..317R

1866 Aug 3 Friday

Observer	No of Obs	Object	sidereal chronometer transits over the two wires.	Diff.				Therm	Time	Remarks.
GMS		Groomb. 784						76		Observations by eye and ear; wires set for coincidence at 54r.00; ~~micrometer~~ moveable wire moved to 49r.00. Backlash avoided by driving screw in same direction for both readings. Position circle set to 174°28'. Telescope moved forward by tangent screw of hour circle after each obsn.
	1	BAC 1280 for value of screw revol.	16 25 32.3 45.4	13.1						
	2		28 1.5 14.5	13.0						
	3		31 7.5 20.5	13.0						
	4		32 39.4 52.5	13.1						
	5		33 42.7 56.3	13.6						
	6		34 52.4 35 5.5	13.1						
	7		35 52.3 36 5.5	13.2						
	8		40 28.4 41.5	13.1						
	9		43 40.2 53.6	13.4						
	10		44 2.3 15.5	13.2						
				13.18						
			Angle		No of Obs	Distance				
Alvan Clark	1	μ Herculis components of companion	88 19		4	~40	0.08			Mr. Clark's measures of distance were made by placing the wires on the stars as usual and taking the reading. Then moving the telescope so that the wire previously on one star covered the other, and moving the other wire across to the ~~other~~ first star. The diff. of readings = twice the distance of the stars.
	2		91 51			~24				
	3		89 37		5	50	0.24			set so as to be certain that the wires were outside the stars.
			89 56	84 29		02				
JW	6		[82 40]							~~weight of 1~~ Reject; taken with two low a power.
	7		84 36							" " 2
	8		89 53							" " 2
			~~86 12~~							
	9	another obsn.	89 33							
			88 1	86 24	10		0.11			
SPd	11		90 34							The telescope having been turned upon 99 Herculis (an extremely delicate object) Mr. Clark remarked that the object glass was in perfect adjustment, and the instrument performing as well as he ever knew it. He thought that the slight noise heard in passing the zenith, could not come from a shifting of the position of the object glass in its cell; which he remarked was unlikely to occur except when the telescope was directed toward the horizon. He observed that the instrument had always worked hard in declination.
	12		87 27							
	13		82 48							
			~~82 4~~							
			86 56	87 29						

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1866 Aug. 3. Friday

Observer	No. of Obs	Object	Angle: Reading	Angle: Position	Distance: Reading	Distance: Difference	Therm	Time (mean)	Remarks
JMS	1	Σ 2173	225°						Poor
SPL	2		213						
J W	3		255						
	4		245						
	5		240						
			236	118°					
J W	1	Σ 2234	155 15						
	2		155 15						
	3		155 0						
			155 10	199 25					
	4				55.83			11h 0m	Power no 3.
	5				.90				
	6				.84				
					55.857	1.754			
					54.10				
					.12				
					.09				
					54.103				
	1	Σ 2253	276 0						
	2		275 50						
	3		275 15						
			275 42	78 43					
	4				47.87			11 25	Power 3.
	5				.87				
	6				.75				
					47.830	1.737			
					49.55	35			
					.54				
					.60				
					.58				
					49.567				
	1	44 Bootis	294 45						
	2		300 15						
	3		300 30						
	4		300 0						
	5		298 50						
	6		298 30						
	7		299 15						
	*		298 52	235 32					
GMS	8		294 0						
	9		293 10						
	10		292 50						
			293 20	241 5					

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1866 Aug 3 Friday

Observer	No of Obs	Object	Angle: Reading	Angle: Position	Distance: Reading	Distance: Difference	Therm	Time	Remarks
SPL	11	44 Bootis	296 30					11h45m	Power 3.
	12		296 9						
	13		296 36						
			296 25	238 0					
Jw	14				47.37	0.54			
					46.83				
	15				47.44	0.42			
					47.02				
	16				47.44	0.51			
					46.93				
SPL	17				46.72	0.56			SH
					47.28				
					47.07	0.43			Small as possible; probably too small.
					47.50				
					47.00	0.52			Thought to be large.
					47.52				
SPL	1	μ² Bootis	295	239					Too close to measure. Not sure of duplicity. Jw.
		VVVVVV 1741.							
		Set for Frigga by Peters' ephemeris Astr. Nachr. 1597, but failed to find it.							
Jw	1	δ Herculis	353 30						Power no 1.
	2		351 45						
	3		354 40						
			353 18	181 7					
	4				52.08				
	5				52.34				
	6				52.34				
					52.253	2.111			
					50.11				
					11				
					18				
					16				
					12				
					11				
					16				
					18				
					50.16				
					50.142				
		37 Pegasi							Not separable. Seeing not very good.

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1866 Aug 5 Sunday

Observer	No. of obs	Object	Angle: Reading	Angle: Position	Distance: Readings	Distance: Difference	Therm	Time	Remarks
JW	1	β δ of "Infid" nebula	251 43						
	2		252 35						
	3		252 15						
B Peirce		mean	252 11	282 14					
	4		251 55						
	5		251 28						
	6		254 20						
			252 34	281 51					
GMS	7		258 54						
	8		255 7						
	9		256 10						
			256 44	277 41					
JW	10				[illegible]	0.29			
	11					0.30			
	12					0.30			
GMS	13				49.12	0.28			
					49.40				
	14				49.20	0.21			
					49.41				
	15				49.22	0.20			
					49.42				
GMS	1	α β of "	140 38						
	2		140 15						
	3		140 3						
	4		140 19	214 6	51.58	1.12			
					50.46				
	5				51.67	1.01			
					50.66				
	6				51.70	1.07			
					50.63				
	1	α γ "	150 25						
	2		152 14						
	3		150 45						
	4		151 8	23 17	52.95	0.64			
					52.31				
	5				52.96	0.66			
					52.30				
	6				52.90	0.60			
					52.30				

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1866 Aug 5 Sunday

Observer	No. of obs.	Object	Angle: Reading	Angle: Position	Distance: Readings	Distance: Difference	Therm	Time	Remarks
JW	1	P XX 178 Components of β.	29 10	145 15 or 325 15					
GMS	2		44 15	130 10 or 310 10					
~~After~~	1	" . 1C	70 12						
	2		68 22						
	3		69 8						
			69 14	105 11					
	4				47.83	2.52			
					50.35				
	5				44.73	2.42			
					47.15				
	1	" 1 B	98 20						
	2		98 47						
	3		98 34	255 51	44.10	1.59			
					45.69				
	4				45.39	1.51			
					43.88				
	1	4 Aquarii	59 15						
	2		59 10						Duplicity uncertain; perhaps not the star.
	3		60 28						
			59 38	114 47					
JW	4		210	114					
	1	λ Equulei	310 30						very careful measure
	2		308 15						
	3		310 20						Seeing bad
	4		310 3						
			309 47	224 38					
	5		307 15	227 10					As extreme lower limit.
GMS	6		309 22						
	7		308 15						
	8		310 30						
	9		311 17						
			309 51	224 34					
	10				54.62	0.32			
					54.30				
	11				54.53	0.27			
					54.26				
	12				54.56	0.31			
JW	13				54.25				
						0.34			

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1866 Aug 5 Sunday

Observer	No of Obs	Object	Angle: Reading	Angle: Position	Distance: Reading	Distance: Difference	Therm	Time	Remarks
~~J W G M S~~	1	≈ 2847	43 5						
	2		44 20						
	3		224 0						
	4		43 48	310 37		0·25			
	5					0·22			
G M S	6		49 36						
	7		53 20						
	8		49 44						
	9		48 33						
	10		50 28	304 7		0·11			
	11					0·09			
	12					0·21			
	13					0·14			
J W	1	Σ 2455	236 40						More than 1 mag diff. between the components; about 1½ mag. Small star pea green; Large star light yellow. J W.
	2	all very careful	238 20						
	3		239 45						
	4		239 10						
			238 29	115 56					More than 2 mags. difference. G M S.
G M S	5		237 57						
	6		239 34						
	7		240 38						
	8		239 18						
			239 22	115 3					
	9				49·70	0·31			
					49·39				Measures of distance quite satisfactory.
	10				49·75	0·36			
					49·39				
	11				49·75	0·35			
					49·40				
J W	12					0·41			
	13					0·46			
	1	P XX 376	252 40						
	2		250 50						
	3		254 50						
			252 47	281 38	51·265				Principal star set midway between wires; companion on one of them.
	4				50·65	0·31			

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1866 Aug 5 Sunday & 6 Monday

Observer	No of obs	Object	Angle Reading	Angle Position	Distance Reading	Distance Difference	Therm	Time	Remarks
J W	5	ρ XX 376			51·105	0·375			
					50·73				
	6	"			51·07				
					50·79	0·28			
									Turned on Neptune; satellite not visible.
									All measures of tonight with power no 3.
S P L	1	Star b	58·58 x	−10·69	27·37 y	−21·41			Provisional measurements of stars in "Trifid" Nebula.
		of trifid nebula	47·89		48·78				
	1	" c	36·29	+12·11	24·47	−24·31			Rectangular coordinates.
			48·40		48·78				
	1	" i	~~37·25~~ 31·13 ~~40~~	+17·27	37·25	−11·53			α (brightest star of quadruple) is at the origin. Letters
			48·~~78~~		48·78				used refer to sketch of Aug 2.
	1	" f	38·28	+10·10	41·78	−6·77			
			48·38		48·55				
	1	" g	~~34·30~~ 43·23	+5·15?	34·33	−12·06?			
			48·38		46·39				The ? appended to a
	1	" h	47·28	+1·12?	30·53	−18·02?			measurement indicates an
			48·40		48·55				indeterminateness due to
	1	" j	46·17	+2·66	51·23	−7·61			the faintness of the star.
			48·83		58·84				
	1	" l	40·52	+8·58	54·97	−3·87			
			49·10		58·84				
	1	" e	42·35	+6·99	62·46	+3·86			
			49·34		58·60				
	1	" d	33·03	+16·32	66·35	+7·76			
			49·35		58·59				
			Angle		Distance				
J W	1	2 Ophiuchi	151 40						Too close to measure distance seeing not being good.
	2		148 20						
	3		148 45						
			149 35	24 50					

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1866 Aug 6 Monday

Observer	No of Obs	Object	Angle: Reading	Angle: Position	Distance: Readings	Distance: Difference	Therm	Time	Remarks
JW	1	49 Serpentis	29 10						Very careful measure
	2		29 45						
	3		30 30						Star very unsteady
	4		30 20						
			29 56	324 29					
	5				49·70	0·38			Definition much poorer than at first.
					49·32				
	6				49·65	0·41			
					49·24				All these measures of
	7				49·63	0·44			distance with illumination
					49·19				only on one side.
GMS	8				49·44	0·37			
					49·07				
	9				49·36	0·41			
					48·95				
	10				49·33	0·38			
					48·95				
GMS JW		210 Herculis							large star yellow; small star green. J. W.
	1		265 2						
	2		265 47						Hardly as good as 1st.
	3		265 48						
			265 32	268 53					
	4				38·99	0·36			
					39·35				
	5				38·95	0·35			
					39·30				
	6				38·94	0·38			
					39·32				
SPL	7				28·61	0·48			
					28·13				
	8				28·53	0·41			
					28·12				
	9				28·55	0·42			
					28·13				
	10		85 23						
	11		84 18						
	12		85 38						
			85 6	269 19					

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Aug 7. Occultation of λ Geminorum Immersion 0 22 48 } By Chronometer. sidereal. Observed with comet seeker
GMS. Emersion 1 13 56 } " " small telescope 65

1866 Aug 6 Monday & 8 Wednesday Correction to Chronometer at $0^h 30^m = -31^s.8$

Observer	No of Obs	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Time	Remarks
GMS	1	ζ Herculis	32	342° or 322					Extremely uncertain; may be merely optical.
SPL	1	δ Herculis	173 2						
	2		174 5						
	3		173 44						
			173 37	180 48					
	4				47.82	1.99			
					45.83				
	5				47.74	2.05			
					45.69				
	6				47.79	2.12			
					45.67				
Jw	1	P XXII 33	11 10	343 15					Further obsns. prevented by clouds. All measures with power no 3.
SPL		Trifid nebula stars.						mean time	Only principal stars visible.
Jw	1	4 Aquarii	210	144				9 30	Power of 401 } suspected not certain.
GMS	2		214	140					" }
									Star certainly identified by comparison with 5 Aquarii
GMS	1	W XIX 1273	210						
	2		208						
	3		203						
	4		201						
	5		205						
			205.4	329°.0					
Jw	6		199						
	7		201						
	8		203						
	9		204						
			201.8	332°.6					
GMS	1	Star for zero point	264 22						
			84 19						
	2		264 26						
			84 24						
									Eclipse (Reapp.) of Jupiter's 1st Satellite observed on chronograph. by G.M.S.
									Sid. clock.
									Satellite first certainly seen 19 44 31.1
									Attained full brightness 45 3.4
									Corr. to Clock —

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1866 Aug 10 Friday

Observer	No of Obs	Object	Angle Reading	Angle Position	Distance Reading	Distance Difference	Them	Time	Remarks
JW	1	γ Coronae							Too close to measure. Elongation even not certain
SPL	1	η Coronae	144 45						Power 401
	2		146 30						Illumination only on one side for all measures of this star
	3		145 40						
			145 38	28 ~~208~~ 45					
	4				56.56	0.15			
					56.71				
	5				56.15	0.13			
					56.02				
	6				56.87	0.15			
					56.72				
GMS	7		142 19						
			139 5						
			139 0						
			140 8	34 15					
	8				55.96	0.14			
					55.82				
	9				55.96	0.13			
					55.83				
JW & GMS		η Herculis							Too close to measure. Not sure of elongation.
JW	1	46 Herculis	9 0						
	2		8 40						
	3		8 15						
	4		8 40						
	5		9 30						
			8 49	165 34					
	6				51.07	0.40			
					50.67				
	7				51.03	0.57			Star very much blurred on this measure.
					50.46				
	8				51.06	0.51			
					50.55				
	9				50.89	0.46			Stars very indistinct
					50.43				

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Friday

1866 Aug 10 ~~Saturday~~

Observer	No. of Obs.	Object	Angle: Reading	Angle: Position	Distance: Readings	Distance: Difference	Therm	Time sidereal	Remarks
JW	1	ρ Herculis	225 45						
	2		228 45						
	3		227 45						
	.		227 25	306 58					
GMS	4		224 43						
	5		225 17						
	6		226 0						
	7		222 52						
			224 43	309 40					
	8				51·07	0·46			
					50·61				
	9				50·66	0·44			
					51·10				
	10				46·06	0·43		$21^h 30^m$	
					45·63				
	11				45·94	0·38			
					45·56				
	12				46·02	0·46			
					45·56				
		ε ℓ 5							
	1	ε¹/ε ε² Lyrae	181 45						
	2	ε¹/ε ε²	181 55						
	3	ε to 5	181 44						
			181 48	173 35					
	4				23·60				
	5				·72				
	6				·80				
	7				·79				
	8				·79				
					23·740	31·502		21 55	
					55·24				
					·25				
					·25				
					·23				
					55·242				
	1	southern pair	207 0						
	2	= 5 Lyrae	206 12						
	3		205 46						
	4		210 40						
			207 24	143 59					

It is obvious that there have been an error of 10 in reading the whole revolutions of the screw as the stars are only distant about 3'. G.S.S. 1871 Oct 27. ? (S.W.)

[Is not this a double distance?
S. W. June 18(78)]

Note, May 28, 1880. The comparatively close agreement of the last four micrometer settings makes it pretty certain that they are coincidences of wires. A.S.

Note, July 12, 1881. Besides, the original states that they are coincidences, which settles the question. The interpretation of the observation by G.S.S. is probably correct.

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1866 Aug 10 Friday

Observer	No of Obs	Object	Angle: Reading	Angle: Position	Distance: Readings	Distance: Difference	Therm	Time corrected sidereal	Remarks
GMS	5	southern pair of ε Lyrae = 5 Lyrae			49·19	0·40			
					48·79				Definition
	6				49·22	0·38			
					48·84				poor.
	7				49·35	0·42			
					48·93				
	1	northern pair = ε Lyrae	160 23						
	2		155 23						
	3		156 52						
	4		156 43						
			157 20	17 3				22h 8m	
	5				52·74	0·29			
					53·03				
	6				52·79	0·29			seeing bad
					53·08				
	7				52·72	0·38			
					53·10				
	8				52·63	0·44			
					53·07				
			clock sid. t. of transits	Δα Diff.	Readings	Δδ Difference			
JW	1	Parthenope and W XXII 607.	23 23 17·3						
			20·7	−21·6					
	A		39·0						Transits over two wires
			42·2						
	2		24 6·8						
			9·9	−21·8					
			28·2						
			32·0						
	3		24 56·2						
			59·9	−22·0					
			25 18·2						
			21·8						
	4				64·56			23h 26m·3	
	5				·57			28·8	
	6				·56			30·3	
	mean				64·563	+17·011			

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1866 Aug 10 Friday

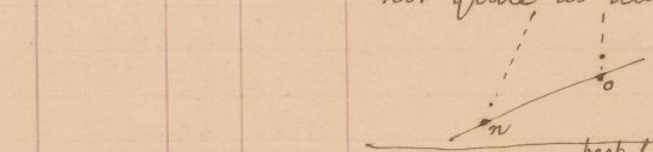
Observer	No. of Obs	Object	Δα Clock sid. of transits	Diff	Δδ Readings	Difference	Therm	Time corrected sidereal	Remarks
		Parthenope & W XXII 607	23 47 12·0 16·3 34·7 39·0		47·60 60 50 62 ·57				Coincidence
GMS					56 61 56 58 54 55 58				of wires
JW	7		23 47 12·0 16·3 34·7 39·0	−22·7					Record on chronograph very poor
	8		55·2 59·4 48 17·3 21·9	−22·3					
	9				63·73			23 52·8	
	10				60			53·1	
	11				62			53·5	
	12				73			53·8	
	13				74			54·0	
	mean				63·684	+16·132			
GMS					62 60 65				
					47·53 48 52 51 49 54	+			Coincidence
		mean of 18 coincidences			47·552				

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1866 Aug 11 Saturday

Observer	No of Obs	Object	$x = \Delta\alpha \cos\delta$ Readings	Diff	$y = -\Delta\delta$ Readings	Diff	Therm	Time mean.	Remarks.
SHL		Star b of trifid neb. (Trifid neb. = Cyc. 4355)	40·66	−10·35	63·32	−21·61		$8^h\,0^m$	Late twilight. Can see all the stars measured by Mason. Definition bad.
			51·01		41·71				
		" c	62·89	+12·02	65·77	−24·06			
			50·87		41·71				
			62·79	+12·38					
			50·41						
		" i	67·67	+17·15	53·50	−11·79			Observed just south of line joining a e d a faint straight narrow channel nearly filled up with nebulous matter. was less confident than the nebula surrounded quadruple star which seemed to be in channel with blackness on each side. less on the preceding than following.
			50·42		41·71				
		" f	60·45	+10·50	48·86	−7·15			
			49·95		41·71				
		" n	84·47	+35·24	44·42	−2·35			
			49·23		42·07				
		" o	91·31	+42·08	41·13	+0·94			The star o has a faint but distinct companion in the south following quadrant. Prof. Winlock observed a ~~faander~~ similar but much fainter companion to n only to be seen well by indirect vision and not quite as distant.
			49·23		42·07				
		" m	20·11	−29·09	68·22	−25·84			
			49·20		42·38				
		Bright star north of c	60·25	+12·69	63·41	−45·83			
			47·56		17·58				



best

Fine aurora, from 10 to 11 about.

Unsuccessful search for (87) Thisbe. Much more than ½ mag. (nearer 1½) between Oeltzen 20070 & 20096 which were selected as comparison stars.

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1866phae.proj.:317R

1866 Aug 13 Monday

Observer	No. of Obs	Object	Angle Reading	Angle position	Distance Reading	Distance Diff.	Therm	Time mean	Remarks
GMS		Trifid nebula			β ε				Definition excellent just at close of twilight. Saw a minute component of the "quadruple" star before unnoticed. It is too faint to bear illumination.
					44·12	0·52			
JW		(Full darkness) Measurement of ε, the new component described in column of remarks			43·60				
			x		y				By estimation distance A β ε < a y: β by 1/8 to 1/10; α A very minute; γ star also seen about 20 S of ε.
		Star k.	50·84	−6·79	45·45	−9·00			
			57·63		54·45				
									Very difficult to measure well
JW & GMS		51 ξ Librae							A & B cannot be separated or even elongated. J.W & GMS
JW GMS		γ Coronae	149°	25° or 205°					reading 225° Appears triple as above but images not steady. G M S
JW	1	η Coronae	136°						
	2		136°	±8′					
	3		136°						
	4		136 20						
			136 5	38 18					
	5				46·88	0·20			distances more satisfactory to observer than usual for small ones.
					46·68				
	6				46·75	0·20			
					46·55				
GMS	7		142 50					9h 30m	
	8		143 8						
	9		141 56						
			142 38	31 45					
	10				46·77	0·11			
					46·66				
	11				46·52	0·12			
					46·64				
JW	12		139 45						
	13		137 0						
			138 22	36 1					

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1866 Aug 13 Monday

Observer	No of Obs	Object	Angle Reading	Angle Position	Distance Readings	Distance Diff.	Therm	Time	Remarks	Obser
JW		ζ Herculis							Not separable. J W. Triple to G.M.S. like γ Coronae	GM
JW	1	P XV 76	216 15	318 8						
GMS	2		208 34							
	3		208 56							
	4		211 19							
			209 36	324 47				$10^h 15^m$		
	5				53·70	0·19				
					53·51					
	6				53·61	0·08				
					53·53					
	7				53·60	0·13				
					53·47					SP2
	8				53·44	0·13				
					53·57					
	9		33 30							
	10		33 30							
			33 30	320 53						
GMS	1	η Draconis	206 17						Power no 3 Hardly as good as first	
	2		210 10							
	3		211 35							
	4		211 45							
	5		212 3							
			210 22	144 1						
	6				37·96	0·55				
					38·51					
	7				38·69	0·41				
					38·28					
	8				38·76	0·46				GM
					38·30					
	9				38·82	0·53				
					38·29					

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1866 Aug 13 Monday

Observer	No of Obs	Object	Angle Reading	Angle Position	Distance Reading	Distance Diff.	Therm	Time	Remarks
GMS	1	46 Herculis	192 38						
	2		191 45						
	3		193 13						
			192 32	161 51					
								$11^h 15^m$	
	4				58·65	0·48			
					58·17				
	5				58·73	0·66			
					58·07				
	6				58·73	0·55			
					58·18				
	7				58·56	0·51			
					58·05				
SPL	1	ρ Herculis	40 3						
	2		41 40						
	3		41 13						
			40 59	313 24					
	4				56·47	0·45			
					56·87				
	5				56·22	0·28			
					56·50				
	6				56·03	0·43			Best of distance measurements
					56·46				
	7				56·19	0·44			
					55·75				
	8				56·76	0·40			
					56·16				

Observer	No of Obs	Object	Δα clock sid. t. of transits	Δα Diff	Δδ Readings	Δδ Diff	Time corrected M.J.	Remarks
SMS	1	Parthenope L W XXII 543			21·79		$12^h 47^m.7$	Reading for Δδ 264° 28′
	2				80		48·8	
	3				·79		50·1	
	4				·77		51·2	
	5				·65		52·7	
	6				·60		53·9	
					21·73	−54·77		

corrs
76·50
51
52
47
46
52

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1866 Aug 13 Monday

Observer	No of Obs	Object	Δα Clock sidt. of transit	Δα Diff	Δδ Reading	Δδ Diff	Therm	Time	Remarks.
GMS	1	~~Polaris~~ ~~x~~ ~~Ursæ~~	22 29 40·3						Reading for transits 174°28'
		& W XXII 543	46·0	+30ˢ·0					Illumination defective on
		& Parthenope	30 10·2						first.
			16·1						
	2		30 39·5						
			45·3	+30·0					
			31 9·4						
			15·3						
	3		31 36·7						
			42·4	+29·9					
			32 6·4						
			12·5						
	4		32 24·0						
			30·0	+30·0					
			54·0						
			59·9						
	5		33 18·1						
			24·0	+29·9					
			48·0						
			53·9						
	6		34 8·8						
			14·8	+29·8					
			38·7						
			44·6						
	7		34 57·7						
			35 3·7	+29·8					
			27·7						
			33·4						
			Angle		Distance				
SPL	1	Σ 2847	53 17						Power no 3
	2		50 27						" " 7
	3		51 2						doubtful
	4		51 35	302 48	76·91	0·10			
					76·81				All these distances consid-
	5				76·94	0·11			ered by observer rather small.
					76·83				
	6				76·92	0·11			
					76·81				
GMS	1	κ Pegasi	53 38						
	2		54 38						
	3		52 0						
	4		51 52						
			53 2	301 21					

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15 Wednesday

1866 Aug 13 Monday & 14 Tuesday & 16 Thursday

Observer	No of Obs	Object	Angle Δα Clock adjt. of transits Reading	Diff. Position	Distance Δδ Reading Reading	Diff. Diff.	Therm	Time	Remarks
GMS	5	κ Pegasi			55·49	1·27		$2^h 0^m$	
					54·22				
	6				55·79	1·14			
					54·65				
	7				56·03	1·24			Wt. of 3.
					54·79				
	8				56·12	1·26			Wt of 2.
					54·86				
						1·227			
	1	Star for zero	264 7 / 84 5						
	2	point	264 26 / 84 24						very good; double weight
	3		264 20 / 84 18						
	4		264 26 / 84 24						
	5		264 22 / 84 21						
JW		Cluster H. 2125 = M.2 = G.C. 4678							Reading of vernier 178 37·5 splendid object.
		Cl. H. 2128 = M 30 = G.C. 4687							" " " 156 15 pretty object; may be well to measure direction of radii
		Cl. H. 2120 = G.C. 4670 = M 15							" " " 191° 36′ splendid.

Aug 15. Removed micrometer. The reading of the principal sliding tube on the scale at the side is 27·5

JW	1	Equatorial diam of Jupiter			16·70	16·54		$11^h 30^m$	Observed with Airy's double image micrometer
					33·24				
					~~16·54~~				
	2				33·31	16·55			
					16·76				
									Seeing too bad for further obsns.

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47.2

1866 Aug 17 Friday (micrometer replaced.)

Observer	No. of Obs	Object	Angle Reading	Angle Position	Distance Readings	Distance Difference	Therm	Time sidereal	Remarks
GMS	1	Star forzen point	268 42 88 39						:
	2		268 45 88 44						
	3		268 57 88 53						
	4		268 46 88 45						Double weight.
		Mean	268 47 88 45						
SPd	1	44 Bootis	300 15					21 36	Power no 2.
	2		299 16						
	3		300 21						
			299 57						
	4				32·75 32·22	0·53			Rivet
	5				22·92 22·25	0·67			
	6				27·99 27·39	0·60			Fully small enough
	7				32·35 32·84	0·49			
JW	8				32·89 32·49	0·40			Stellar focus adjusted, there being apparently some parallax
	9				33·03 32·56	0·47			
	10				32·91 32·38	0·53			
	11				32·79 32·30	0·49			
SPd	12				32·15 32·62	0·47			I thought rather small
JW		452 Herculis							If found, two close to be separated.

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1866 Aug 17 Friday

Observer	No of Obs	Object	Angle Reading	Angle Position	Distance Reading	Distance Difference	Therm	Time sidereal	Remarks
J W	1	5 Lyrae	217 15					22 30	Power no 3.
	2		216 2						
	3		215 30						
	4		215 45						
	5		215 0						
	6		214 0						
	7		214 45						
	M		215 28						
	1	ε Lyrae	159 30					22 45	
	2		158 15						
	3		157 30						
	4		160 15						
			158 52						
	8	5 Lyrae			27·34	0·33		22 55	
					27·01				
	9				27·98	0·31			
					27·67				
	10				28·13	0·31			
					27·82				
	5	ε Lyrae			28·20	0·37		23 3	
					27·83				
	6				28·20	0·34			Seeing rather worse than previously.
					27·86				
	7				28·23	0·35			
					27·88				Measures all very carefully made.
J W	1	Σ 2847	231 45					23 50	Reading of dec. circle 175° 57′
	2		235 0						Better than 1st.
	3		233 45						
	4		232 15						
			233 11						
GMS	5		225 30						
SPL	6		233 0						Distance cannot be measured; definition too poor.
J W		Neptune							Satellite perhaps visible, below to the right about 15″

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1878. June 15. Note by S. N. I have omitted the following Observations in my copy of this book, since as double stars, as I do not know the value of the double image Micr. Scales.

1866 August. 20.

Observer	No. of Obs.	Object	Angle reading	Distance. 1st read.s	Distance. Diff.	Therm	Time Mean	Remarks.
JW.		The Filar Micrometer having been removed and the double image Micrometer substituted the following measurements were taken with the latter						
		Equal Diam.r of Jupiter		31.900			10.40.	
				31.970				
				31.885.				
				95.755	31.918			
				18.070				
				18.160.				
				18.060				
				54.290	18.097			
					13.821			
		Polar Diam.r of Jupiter		31.75				
				31.69				
				31.71.				
				31.65.				
				31.56				
				158.36	31.670			
				18.330				
				18.260				
				18 275				
				54.865	18.288			
					13.382			
JW		12 Aquarii	110°.35′					
GMS			109°.25					
StL			103°.					
GmS		ζ Lyrae	269°.16′	(1)37.65.				
				(2)12.10.	25.55			
				249.75				
				24.97.				
				(3) 24.88.				
				18.28.				
				25.				
				25.04.				
				24.99.				
				24.99				
				25.11				
				125 13				
				25.03				

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1866 August 20

Observer	No. of Obs.	Object	Angle	Distance		Therm	Time Sid.	Remarks
Gms.		ε Lyrae		18.33.				
				18.30.				
				18.28	25.03			
				54.91	18.30.			
					6.73			
				31.79				
				31.69.				
				31.67				
				31.72.				
				31.73				
				158.60	25.03			
					31.72			
					6.69			
Gms			269°43′					
JW.			269.21.					
JW			268.48.					
Gms			268.02					
Gms			268.58					
			1344.72	268.58				Double image Micrometer removed after these measures. Position of Focus 12.6.
			Filar Micrometer put on					
Gms		ε Lyrae	20.41.	53.70.				
			21. 0	.75				
			21.08	.77				
			21.06	.76				
			2112	53.745	53.74			
			20 58					
				49.22				
				17				
				22				
				23				
				23.				
				49.214	49.21			
					4.531			
			Zero of Position					
			260.10.					
			260.12.					
			260.22 (W.1/2)					
			260°13′					
JW.		61. Cygni	239.15.	53.87.			23h30	
			238.05	.84				
			237.50.	.83				
			239.05.	53.827	53.83			
			239.40.					
			239.15.	51.91.				
			238.52.	.92				
				.92				
				.92				
				51.918	51.92			
					1.909			

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1866 August 22nd

Observer	No. of Obs	Object	Angle reading	Angle position	Distance reading	Distance diff.	Therm	Time Sid. h	Remarks
JW.		x Aquilae	227°		53'.22			18h.43	
			227°.50'		52'.99	0'.23			
			225°.50'						
			226°.53'		52.92				
					52.70	0.22			
					52.54				
					52.30	0.24		18.50	
S.P.L.					52.22	0.10			Certainly cannot be less.
					52.32				
					52.16	0.18			Think this is greater.
					52.34				
					52.52				
					52.35	0.17			Supposed to be right. but not as good a measure as the
JW.					52.325				others.
					52.14	.185			
					52.365				
					51.975				
					2/390	.195			
G.M.S.					51.89	.27			Confident this is too large.
					52.16				
					52.32				
					52.12	.20			Equally Confident this is too small.
					51.61				
					51.81	.20			Not very well satisfied with this meant to be right.
					51.55				
					51.37	.18			Think this is a little too small

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1866 August 22nd

Obs.	Lib.	Object.	Angle reading.	Angle portion.	Distance reading	Distance Diff.	Chron.	Time sid.	Remarks
G.M.S.		π Aquilae			51.55				
					51.36	.19			Think this is about right
					52.24				
					51.80				
					2/44	.22			Double distance.
S.P.L.					51.63				
					51.86	.23			
					52.02				
					51.62				
					2/40	.20			Double distance.
J.W.		6 Coronae	337°.04′					19.47	
			335°.10′						
			335°.30′						
			336°.50′						
			336°.30′						
			335°.45						
			336°.08		50.785				
					50.485	0°.300		19.55	
					50.74				
					50.42	.32			
					50.68				
					50.37	.31			
	GMS				.70				
					.39	.31			
					.70				
					.39	.31		20.10	
					71				
					38	.33			

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1866 August 22

Observer	No. of Obs	Object	Angle. Reading	Angle. Distance	Distance reading	Distance Diff.	Time	Time Sid.	
G.M.B.		δ Coronae	335°.35′						
			337.06.						
			337.26.						
			336.00					20.10	
			337.24.						
			336.11.						
			336.37.						
		η Coronae							Seeing not good enough to observe it well.
JW		21 Herculis	84°.50.						
			82°.20.						
			81°.45.						
			82°.50.						
			83°.45						
			83.06.						
G.M.B.					52.61				
					.65.				
					.62				
					.64				
					.70				
					63				
					52.64.45				
					Coincidence				
					52.23				
					.24				
					.26			20.4.30	
					.26				
					.26				
					52.250	0.395			
									Clouds prevented further work

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1866 Aug. 22

Observer	No. of obs.	Object	Angle	Distance reading	Distance diff.		
S.P.L.		Wire 1 of Microm[r]		00.00			These measurements of the value of a revolution of the screw in different parts of its length were taken thus. The moveable wire being placed at 0 the 1st fixed wire is brought to coincidence. The moveable wire is then made to coincide with fixed wire No 2 and the scale read. The system of fixed wires is then moved forward till the first and moveable wire again coincide; and this is repeated till the screw is exhausted.
		Wire 2(1)		25.068	25.068	25.062	
		Wire 2(2)		50.089	25.021	25.024	
		" 2(3)		75.109	25.020	.007	
		Wire. 1.		00.000.			
		" 2(1)		25.062.	25.062.		
		" 2(2)		50.086.	25.024		
		" 2(3)		75.079	24.993		
		Wire. 1		00.000.			
		" 2 (1)		25.055.	25.055.		
		" 2 (2)		50.082.	25.027		
		" 2 (3)		75.089	25.007		
S.P.L		Obs. for back-lash		0.028.			moveable wire at 75.
				.017			
				.034			The moveable wire is brought to coincidence with the fixed wire several times successively from opposite sides, and the difference of the means taken as the back lash in this part of the Screw.
				.001			
				.016			
				1.019	1.019		
				.978			
				.970			
				.980			
				.977			
				.978			
work				.976	.976		
					0.043		

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Aug 24h 1866.

Observer	No. of Obs	Object	Angle. Reading	Angle. Position	Distance. Reading	Distance. Diff.	Therm	Time Sid.	Remarks.
J.M.S		Σ 2173	219°15.						Too unsteady to measure well
			217°						
	Obs. for O. point		80°.32'.						
			80°.18 (Rev. 2)						
			80°.17 (Rev. 2)						
			80°.20.						
S.P.L.		σ Coronae							Power of 401. Definition not very good but stars steady
			341°.26'						Quite satisfactory.
			338°.34 (1st Mt.)						
			339°.04 (No. Mt.)					19.35	
			339°.41'		43.81.				
					43.49				
						0.32.			
					44.91.				
					44.51	.40			
					44.93				
					44.52	.41			
					44.95.				
					44.54	.41			
G.M.S.					44.88				
					.53	.35			
					44.82.				
					.48	.34			
					44.88.				
					.48	.40			
					44.82.				
					.49	.33			Will satisfied with this.
								19h.45	
			340.16						
			339.02.						
			339.08.						
			339.29.						

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August 24 · 1866.

Observer	No. of Obs.	Object	Angle. Reading	Angle. Diff.	Distance. Reading	Distance. Diff.	Ther.	Time Sid.	Remarks
G.M.S.		ε Coronae.							
		$\frac{AB}{2}$ − C.	83°.58′.						
			83.58.						
			83.58						
			83.58.						
					51.93.				
					51.93.				
					52.08.				
					51.92.				
					51.99.				
					51.98.					
					51.972				
					Coincidence.				
					46.60.				
					.62				
					.60				
					46.607	5.365			
S.P.L.		η Coronae	320.50.						Not well divided.
			314.05.						
			311.27						
G.M.S.			334°.00.						
			331.35.						
			323.28.						
			323.55.						
S.P.L.		≡ 2318.	275.16.						Power No. 2.
			276.06.						
			275.05.					20.30.	
					52.71	2.15			
					50.56	[illegible]			
					52.70.				
					50.57	2.13			
					52.62				
					50.55.	2.07			

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August 24. 18hh

Observer	No. of Obs.	Object	Angle: Reading	Angle: position	Distance: Reading	Distance: Diff.	Ther.	sid. Time	Remarks
G.M.S.		315 Hercules	96°.21.						
			93.46.						
			93.47.						
			96.02.						
			94.36.						
			95.15						
	mean		94 58		63.62.			20.48.	
					62.52	1.10			
					63.63.				
					62.54	1.09.			
					63.59.				
					62.46	1.13			
					63.56.				
					62.43	1.13			
S.K.		η Draconis	205°.00.						
			209.07						Power N°. 2.
			210.15						
			209.07						Power of 401
			210.30						
					66.17			21.05.	
					66.78.	0.61.			
					66.85.				
					66.23	.62			
					66.57				
					67.07	.50			
					66.42				
					66.92	.50.			
					66.35.				
					66.95	.60			
G.M.S.			204°.21'		66.63				
					67.19	.56			
			204°.37		66.58.				
			206°.36		67.17	.59			
					66.59				
					67.17	.58.			

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1866phae.proj...317R

August 24 & 18th.

Obsrv.	No of Obs.	Object.	Angle. Readings.	Pericenter.	Distance. Readings.	Distance. Diff.	Ther.	Time.	Remarks.
Gms.		μ Draconis	350.50						
			351.00						
			357.14						
			349.16						
			350.39						
			350.36						
					49.93				
					49.61	.32			
					50.05				
					49.64	.41			
					49.94				
					49.69	.25			
					49.95				
					49.68	27			Probably the best.
					49.96				
					49.68	.28			
					49.95				
					49.69	.26			
								21.40	
Gms.		P. XXII 33	185.50						
			186.15						
			185.38						
		mean	185 54						
					52.79				
					.76				
					.74				
					.75				
					52.760				
					Pericidence.				
					51.84				
					.79				
					.81				
					.83				
					.83				
					51.820	0 .940			

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1866phae.proj..317R

Aug. 24 1866.

Observ.ⁿ	No. of Ob.	Object.	Angle. Reading.	Angle. Portion	Distance. Reading.	Distance. Diff.	Hem.ⁿ Vernier.	Vernier. Sid.ᵉ	Remarks.
SPL		μ Draco.			52.05				
		PXXII 33.			.14				
					.14				
					52.110				
					Coincidence.				
					53.17.				
					.16				
					.18				
					53.170	1.06			
			7°.10						
			7°.16.						
			7°.43						
			7°.23						
SPL		44 Aquarii	231.48.					22ᵐ.6	Seeing very bad.
			232.32						
			235.16.						
			232.49						
			233.06.						
					46.75				
					23	4 H. 52			
					46.74.				
					.22	4 H. 52			
					46.76.				
					34	.52			
GMS					42.00				
					41.47	.53			
					41.92				
					41.36	.56			
					41.93				Poor.
					41.38	.55			
SPL		PXXII. 275.	31.°						
			52.						
			39.						
			40.40						
GMS			9°.30.						

No Separation. Angle estimated.

Vernier of Dec.ⁿ Circle 182°.22′
AKR (nearly) 22ᵐ.55ˢ

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1866phae.proj..317R

Aug. 24 · 1866.

Observ.	No. of Ob.	Object.	Angle. Reading.	Position	Distance. Reading.	Diff.	Thr.	Time Sid.	Remarks.
S.H.		κ Pegasi.	46.57					23h.20.	Satisfactory measure
			48.46.						
			46.25.						
			47.23.						
					33.48				
					.29				
					.31				
					33.360				
					Coincidence.				
					32.05.	1.31.			
GMS		Σ 2847.	47.52.						
			47.45.						
			47.44						
			47.47.					23h.40	
					50.85.				
					50.96	.11			
					51.11.				
					50.95	.16			
GMS.		Star near by.	164.52					23.45.	b May. 29 May.
			165.45.						9 May is South
			164.12.						
			165.52.						
			165.29						
		mean	165 38		48.27				
					.22				Error of 1 revolution in one of these.
					.21				
					.23				
					48.232	1.118			
					Coincidence.				
					49.36.				
					35.				
					32.				
					37				
					49 350				

Vernier of dec. Circle 176.10
Approx α 21h.47m

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1866phae.proj..317R

August 24th 1866.

Observer	No. of Obs.	Object	Angle. Reading	Angle. British	Distance. Reading	Distance. Diff.	Ther.	Time sid.	Remarks.
G.M.S.		P. XXIII. 63. 98 Aquarii						0h. 10	Tried Power of 688. but could not be sure of duplicity.
GMS		η Cassiop.	226.50						
			226.25						
			225.38						
			225.43						
			227.32 (rev)					0.50	Less satisfactory than previous ones.
					44.96				
					45.71	.75			
					45.12				
					45.85	.73			
					45.04				
					45.68	.64			
					45.11				
					45.81	.70			
					45.11				
					45.83	.72			

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1866phae.proj..317R

August 25th Saturday

Observer	No. of Obs.	Object	Angle. Reading.	Angle. Position	Distance. Reading.	Distance. Distance.	Thr.	Time.	Remarks.
S.R.L.	Σ 2173.								Seeing not good enough to measure.
S.R.L.	Σ 2303.	307.56.							
		309.33.							
		311.44							
					53.79				
					.69				
					.73				
					53.7 37				
					Coincidence.				
					54.07.				
					.07				
					.07				
					54.07.	.33			
G.M.S.		305.35							
		302.27.							
		304.56.							
		303.43.			53.57.				
					.49				
					.50	.53			
					53.50.				
					Coincidence				
					53.82.				
					.84				
					.85				
					.87				
					.85				
				mean	53 834				
G.M.S.	Σ 2503.	68.00.							
		67.20.							
		67.43.							
		67.41						19.0	
					53.00.				
					52.97.				
					52.96.				
					52.97				
					Coincidence				
					53.24				
					.22				
					.19				
					.21				
					.21				
					53.214				

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1866phae.proj..317R

August 25h. Saturday

Observ.	No. of Obs.	Object	x = Δ α or δ Reading	Difference	y = Δ δ or α Reading	Difference	Ther.	Time Sid.	Remarks.
S.W.L.		Stars in			15.54				Full moon, and nebula wholly invisible. Power No. 1 "a" at origin.
		Neb. h. 2008 (G.C. 4403)			15.54				
		"b"		+0.24	38.13	+22.59		20h	{Letters refer to chart in book of original entry.}
		"c"		+1.49	59.48				
					38.62	-20.86			
		"d"	28.18		37.99				
			25.34	+2.84	38.41	+0.42			
		"e"	32.33.		18.00				The star "c" has a close and faint companion in the n.p. quadrant. (S.W.L.)
			25.44	+6.89	38.13	+20.13			
		"f"	32.66		32.13				
			25.44	+7.22	38.13	+6.00			Note Oct. 29, 1880. These stars cannot readily be identified with any of those observed in h 2008 (G.C. 4403) by Lassell (Mem. R.A.S., Vol. XXXVI, p. 49, and Plates VII, VIII). As the nebula was not seen, it is not certain that the telescope was actually set on G.C. 4403; and the region was not afterwards identified; see book W35, pp. 16, 20.
		"g"	31.23		16.62				
			25.33	+5.90	38.13	+21.51			
G.M.B.		double star "c"	50.17						
		in neb. h. 2008	50.40						
			50.26						
			50.28		51.94				
					47	.47			
					51.85				
					46	.39			
S.W.L.		315 Herculis	274° 14'						
			275.20.						
			273.47						
			274.27					20h.40	
					41.35				
					42.43	1.08			
					41.33				
					42.42	1.09			
					41.31.				
					42.43	1.12			

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1866phae.proj..317R

August 25h Saturday.

Obser.	No. of Obs.	Object.	Angle. Reading	Angle. Position	Distance. Reading	Distance. Diff.	Ther.	Time	Remarks.
GMS		Σ 2309	2°.25						α by Chron.r 18h 16m 50s.
			1°.42′.						δ + 25°.29
			0.10 (best)						Reading of Vernier 205.34.
			1.24						Est.d Magnitudes. 9.5 & 10.
			1°.25′						
					56.57.				
					.62				
					.63				
					56.607				
					Coincidence				
					57.02				
					02				
					02				
					57.02	.413 ~~.42~~			
S.C.L					56.46.				
					36.				
					.42				
					.46				
					56.425				
					Coincidence				
					56.84				
					.84				
					56.84	.415 ~~.42~~		21h.03	
			2°.15						
			0.59.						Magnitudes 10 & 10.5, smaller one. North.
			2.31						
GMS		Σ 2318.	274.00.		48.85			21.40	
			274.30.		48.80				
			275.43		48.84				
			274.44		48.83				
					48.830				
					Coincidence.				
					46.70.				
					46.69				
					46.70				
					46.70	697 2.133			

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1866phae.proj..317R

August 25th 1866. Saturday and 26 Sunday

Obsr.	No.	Object.	Angle. reading.	Position	Distance Reading.	diff	Ther.	Time.	Remarks.
S.H.K.		Σ 2455.	236.03.						
			236.59.						
			237.05.						
			236.42.						
					55.83.				
					55.41	0.42.			
					55.00.				
					55.38	.38			Considered rather small
					55.80.				
					55.43	.37			

			Clock sid. t. of transits	Δα Diff	Readings	Δδ Diff	corrected sidereal	
GMS.	1	W XXII 304 Parthenope	22 47 6.7 10.7 42.3 46.5	+ 35.7				Reading of position circle 170° 20′
	2		48 10.1 14.1 45.9 50.0	+ 35.8				
	3		49 13.5 17.7 49.2 53.4	+ 35.8				
	4		50 9.6 13.7 45.2 49.3	+ 35.6				
	5		51 9.7 13.8 45.2 49.6	+ 35.6				
	1	Parthenope & W XXII 313	Δα cos δ = −0ˢ.21 = −2″.1 = −0ˢ.14 Planet precedes.				23h 2m.5	Measured with micrometer screw; clock on.
	6	W XXII 304 and Parthenope			81.96		23 8.7	
	7				91		9.2	
	8				95		9.8	
	9				88		10.7	
	10				82		11.4	
	11				78		12.0	
	12				78		13.0	
					81.86	+16.82	23 10.7	

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1866 Aug. 26 Sunday

Observer	No. of Obs	Object	Readings Coincidence	Diff	Therm	Time corrected Sidereal	Remarks
GMS		W XXII 304 and Parthenope	65·06				
			05				
			00				
			03				
			04				
			65·04				
	2	W XXII 313	81·94			23 18·2	
	3	and Parthenope	97			18·8	
	4					19·4	
	5		82·05			20·0	
	6		02			20·5	
	7		03			21·3	
			81·94				
			81·99	+53·24		23 19·7	
			Coinc.				
			28·77				
			76				
			71				
			75				
			76				
			28·75				

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Double stars observed in this volume.

Name and appn. position for 1866	Dates, Observers, and pages.
Cassiopeae 0 40.9 +57 6	Aug 24 S 90
Regulus 10 1.2 +12 37	July 14 w 82, July 11 w 24
ξ Bootis 14 45.2 +19 40	June 30 S w 11, July 3 w S 17, July 6 w L S 19
44 Bootis 14 57.4 +48 11	Aug 3 w S L 58 59, Aug 17 L w 76
η Coronae 15 17.7 +30 46	Aug 10 L S 66, Aug 13 w S 71, Aug 22 S 82, Aug 24 L S 85.
ω² Bootis = PXV 74 15 19.4 +37 49	Aug 3 L w 59
P XV 76 15 20.0 +18 39	Aug 13 w S 72
γ Coronae 15 37.1 +26 43	Aug 10 w 66, Aug 13 w S 71.
51 ξ Librae 15 57.0 −11 0	July 14 w 33, Aug 13 w S 71
Σ 1999 15 57.1 −11 5	July 14 w S 33 34,
49 Serpentis 16 7.0 +13 54	July 14 S 34, Aug 6 w S 64 L S 84 85.
σ Coronae 16 9.7 +34 12	July 3 w S 18, July 6 w L 19, Aug 22 w S 81 82, Aug 24
η Draconis 16 22.2 +61 49	Aug 13 S 72, Aug 24 L S 86
λ Ophiuchi 16 24.2 +2 17	July 13 w S 31, Aug 6 w 63
Σ 2076 16 33.8 +0 7	July 10 S L w 22, July 11 w 25 26.
ζ Herculis 16 36.2 +31 51	Aug 6 S 65, Aug 13 w 72
η Herculis 16 38.3 +39 11	Aug 10 w S 66
46 Herculis 16 39.8 +28 36	Aug 10 w 66, Aug 13 S 73
19 Ophiuchi 16 40.4 +2 18	July 10 w 22, July 11 w 26
210 Herculis 16 59.2 +28 16	Aug 6 S L 64 Aug 22 w S 82
μ Draconis 17 2.6 +54 39	Aug 24 S 87
δ Herculis 17 9.5 +25 0	Aug 3 w 59 Aug 6 L 65
ρ Herculis 17 19.1 +37 16	Aug 10 w S 67 Aug 13 L 73
Σ 2173 17 23.4 −0 57	July 12 S 31 32, Aug 3 S L w 58, Aug 24 S 84, Aug 25 L 91
315 Herculis 17 34.9 +29 19	Aug 24 S 86, Aug 25 L 92
61 Ophiuchi 17 37.6 +2 38	July 10 w 22 23, July 11 w 26
μ Herculis 17 41.2 +27 48	July 26 L S 44, Aug 3 Mean Clark w L 57
Σ 2234 17 45.7 −7 52 +27 48	July 12 S 32, Aug 3 w 58
Quadr. star in trifid nb 17 52 −23	July 31 L w 52 53 Aug 2 S 55, Aug 5 w Oteira S 60
Σ 2253 17 57.3 +14 38	July 11 w S 28 29. Aug 3 w 58
τ Ophiuchi 17 55.8 −8 11	July 6 w 19, July 12 w S 32
78 Ophiuchi 17 58.7 +2 32	July 3 w S 18, July 10 L 23, July 11 w 26
Star "c" in neb. h 2008 18 12 −16 15	Aug 25 S 92
Σ 2303 18 12.8 −8 2	Aug 25 L S 91
Σ 2309 18 14.8 +25 28	Aug 25 L S 93
452 Herculis 18 19.6 +27 19	Aug 17 w 76
Σ 2318 18 20.1 +25 57	Aug 24 L 85 Aug 25 S 93
Σ 2346 18 30.8 +7 25	July 11 S 26 27 July 26 L S 48

Name and appn. position for 1866	Dates, Observers, and pages.
ε Lyrae 18 39.9 +39 32	Aug 10 S 67 68 Aug 17 w 77
5 Lyrae	Aug 10 S 67 68 Aug 17 w 77
ζ Lyrae 18 40.2 +37 27	Aug 20 S w 78 79
Σ 2396 18 42.2 +10 37	July 10 S 23 July 11 w 26
Σ 2455 19 1.1 +21 58	Aug 5 w S 62 Aug 25 L 94
23 Aquilae 19 11.7 +0 51	July 10 S 23 July 11 w 27 July 26 L S 48
Σ 2503 19 15.2 −7 19	Aug 25 S 91
π Aquilae 19 42.4 +11 29	Aug 22 w L S 80 81
W XIX 1273 19 51.4 −2 36	Aug 8 S w 65
250 Aquilae = Σ 2656 20 9.1 +7 23	July 10 w 23 July 11 S 27
α² Capricorni 20 10.6 −12 57	July 10 w 24 July 11 w S 27 July 29 S 51
P XX 178 20 24.8 +10 48	July 31 S 54 Aug 5 w S 61
4 Aquarii 20 44.3 −6 8	Aug 5 S w 61 Aug 8 w S 65
P XX 376 20 49.0 +4 1	July 24 L S 43 Aug 5 w S 62 63
ε Equulei 20 52.4 +3 47	July 15 w S 38 July 24 S 43 44
12 Aquarii 20 57.0 −6 21	July 11 w S 28 July 29 S 51 Aug 20 w S L 78
61 Cygni 21 0.7 +38 4	Aug 20 w 79
δ Equulei 21 8.1 +9 28	July 10 w 24 July 11 w 28
λ Equulei 20 55.6 +6 39.	July 31 L 54 Aug 5 w S 61
20 Pegasi 21 3.7 +12 29	July 10 w 24 July 15 w S 38 39 July 26 L S 49
κ Pegasi 21 38.6 +25 2	Aug 13 S 74 75 Aug 24 L 89
Σ 2833 21 45.1 +8 25	July 11 S 28 July 26 S 49
Σ 2847 21 51.2 −4 8	Aug 5 w S 62 Aug 13 L 74 Aug 17 w S L 77 Aug 24 S 89
Star near Σ 2847 21 47.4 −3 55	Aug 24 S 89 = Σ 2838, (100 Aquarii according to Σ)
41 Aquarii 21 44 22 6.9 +22 0	Aug 24 L S 88
P. XXII 33 22 7.8 +16 32	Aug 6 w 65 Aug 24 S L 87 88
ζ Aquarii 22 21.9 −0 42	July 29 S 51 52 July 31 L 53 54
37 Pegasi 22 23.2 +3 45	July 31 L 54 Aug 3 w 59
P XXII 275 22 53.9 +2 18	Aug 24 L S. 88
P XXIII 63 23 15.9 −20 50	Aug 24 S 90
Σ 1643	May 15 w 1
Σ 1670 (γ Virginis)	May 15 w L 1
Σ 1664	May 15 w L 1
Σ 1661	May 15 w 1

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Other objects.

Saturn Equat. diam. July 10 L 22 July 11 W 7 ? July 9 W 20 July 12 W 29
" Polar " June 11 W 7 ? July 10 L 22 July 12 W 29
" Major axis of ring. July 2 S 14 July 1 W 14 July 3 S 16
" Minor " July 2 S 14 July 3 S 16

Satellites of Saturn
Enceladus June 7 W 3, June 2 W 2
Tethys July 1 W 12 July 3 W 16 July 12 W 29
Dione June 7 June 9 W 5 June 10 W 6 June 11 W 7 June 15 W 8 June 26 W 9 July 1 W 12
Rhea June 7 June 9 W 5 June 10 W 6 June 11 W 7 June 15 W 8 June 26 W 10 June 30 W 11
Titan June 7 June 9 W 4 June 10 W 5 June 11 W 6 7 June 15 W 8 June 26 W 9 June 30 W
Japetus June 2 June 9 W 4 June 10 W 5 June 11 W 6 7 June 15 W 8 June 26 W 9 10 June 30 W 11

July 1 W 13 July 2 S 15 July 3 S 17 July 10 L 21 July 11 S 25 July 12 W 29 30
July 1 S W 12 13 July 2 W S 15 July 3 S 17 18 July 5 L 19 July 10 W L 21 22
July 11 S 25 July 12 L 30
July 1 W S 13 July 2 S 14 15 July 3 S 17 July 9 W L 20 July 10 W 20 July 11 S 24 25,
July 12 L 31 July 14 L 33 July 15 S 36
July 11 W S 24 July 12 W 30 July 14 W 32 33 July 15 S 35

Jupiter
Equat. diam. July 11 W 27 July 12 W 32 Aug 16 W 75 Aug 20 W 78
Polar " July 11 W 27 Aug 20 W 78

Asteroids
Nemausa July 14 W 34 35 July 15 S 36 37 July 16 S 39 40 July 17 W 40, July 19 S 41 July 22 S 41 42
Melpomene July 19 W 40 July 24 L S 42 43 July 26 L S 45 46 47 48 July 29 S 49 50 51
Parthenope Aug 10 W 68 69 Aug 13 S 73 74 Aug 26 S 94 95

Zero point of position-circle May 10 W 1, June 2 W 2, June 7 W 3
June 9 W 5 June 26 S 10 July 1 S 14 July 2 S 15
July 3 L 18 July 11 W 25 July 26 L S 44 July 31 L S 53 54 Aug 8 S 65
Aug 13 S 75 Aug 17 S 76 Aug 20 S 79 Aug 24 S 84

Clusters Messier 2, 15, & 30 Aug 14 W 75

Eclipse of Jupiter's I Satellite Aug 8 S 65

Occultation of λ Geminorum Aug 7 S 65

Search for Biela's Comet Apr 9, 10, 12, L 0.
" " De Vico's " July 14 W 35, July 15 W 39

Double stars found in sweeping
July 15, S., 39.

Condition of instrument Aug. 3, S., A. C., 57,
July 7 & Aug. 3, 56. Aug. 23, 83.

Further indexing required.

1877 Mar. 19. This book checked except for double stars.

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Note May 28, 1880. The measurements of distance in this book are almost all alternate coincidences; that is, one setting for coincidence of wire accompanies every setting for distance. Sometimes a set of coincidences accompanies a set of measures; but each set is independent of all others.

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Zero of position circle

Date	No of obs.	Result.
July 2	3	264 17
	3	84 15
3	1	263 55
	1	83 54
11	1	84 25
26	2	264 28
	2	84 25
	Mean by weights	84 17

174° 17', 354° 17', & 534° 17' used as minuends in deducing angles of position from July 2 to July 26 inclusive.

31	1	264 34
	2	84 28

174 28 used on July 29 & 31.

Aug 8	2	264 24
	2	84 22

174 25 used on Aug 2, 3, 5, 6 & 8.

13	5	264 21
	5	84 19

174 23 used on Aug 10, 11, & 13.

17	178 46 used on Aug 17	
20	3	260 13
24	3	80 20

170° 26' used for the obsns. after p. 79

result of these and other measures in vol. 2.

May 10	2	283 4
15	1	283 25
June 2	1	289 20
7	2	288 58
9	2	289 48
26	3	283 43
26	3	267 21
July 1	4	267 42

177° 30' used ~~from~~ on June 30 & July 1

Record of change in zero

June 26, p. 10
July 2, p. 14
Aug 15, p. 75
Aug 17, p. 76
Aug 20, pp. 78, 79.
Oct. 11 (original record Vol. 7, p. 66) (copy Vol. 35, p. 80)

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	3	84 15
3	1	263 55
	1	83 54
11	1	84 25
26	2	264 28
	2	84 25
	Mean by weights	84 17

174° 17', 354° 17', & 534° 17' used as minuends in deducing angles of position from July 2 to July 26 inclusive.

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	2	84 28

174 28 used on July 29 & 31.

Aug 8	2	264 24
	2	84 22

174 25 used on Aug 2, 3, 5, 6 & 8.

13	5	264 21
	5	84 19

174 23 used on Aug 10, 11, & 13.

17	178 46	used on Aug 17
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Record of change in zero

June 26, p. 10
July 2, p. 14
Aug 15, p. 75
Aug 17, p. 76
Aug 26, pp. 78, 79.
Oct. 11 (original record Vol. 7, p. 66) (copy Vol. 35, p. 80)

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