XV. *The Parallax of α Centauri, deduced from Mr. Maclear's Observations at the Cape of Good Hope, in the Years 1839 and 1840.* *By Thomas Henderson, F.R.SS.L. and E., Professor of Practical Astronomy in the University of Edinburgh.*

Read April 8, 1842.

On Mr. Maclear receiving my paper on the parallax of α *Centauri* (*Memoirs of Royal Astronomical Society*, Vol. XI. page 61), he immediately commenced a series of observations of that double star, with the view of ascertaining whether the supposed parallax would be confirmed or not. He has lately communicated to me his observations made with the mural circles of the Cape Observatory, extending from March 26th, 1839, to August 12th, 1840. From March 26th to June 28th, 1839, the observations were made with the old mural circle (the instrument with which my observations of declination were made), which is now at the Royal Observatory, Greenwich. Subsequently the observations were made with the new mural circle, formerly at Greenwich, and there known by the name of Jones's circle. Generally, both stars, α^1 and α^2, were observed by direct and reflected vision at the same meridian transit, in the mode adopted at the Observatories of Greenwich, Cambridge, and the Cape, which it is unnecessary to describe here.

The following is a copy of the observations transmitted to me by Mr. Maclear. The letters D and R, in the second column, denote whether the observation has been made by direct or by reflected vision. The fourth column, entitled "Concluded Reading of Circle," contains the mean of the readings of the six microscopes, corrected by the quantities expressing the distance of the micrometer wire from the fixed wire, and the reduction to the meridian, and, as stated by Mr. Maclear, in the Introduction to the first volume of his Observations, p. xxv., "is the same that would have been obtained if the object had been bisected by the fixed wire at the moment of passing the middle vertical wire." The other columns require no explanation. The notes are by Mr. Maclear, except those having my signature annexed, which are by me.

Observations of α^1 and α^2 Centauri, made with the old Circle.

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1839.				Inches.		
Mar. 26	D	α^2	299° 50′ 37″·08	30·048	68°·0	65°·8
	D	α^1	299 50 25·79			
30	D	α^1	299 50 25·28	29·958	68·5	68·0
	D	α^2	299 50 37·42			
April 5	D	α^1	299 50 24·52	30·141	68·0	65·6
	D	α^2	299 50 35·33			
6	D	α^1	299 50 23·81	30·128	68·5	65·5
	D	α^2	299 50 34·62			
7	D	α^1	299 50 22·97	30·143	68·2	65·6
	D	α^2	299 50 34·02			
15	D	α^1	299 50 21·84	30·261	65·0	61·0
	D	α^2	299 50 31·92			
(*a*) 16	R	α^1	172 17 50·26	30·198	54·5	55·6
	R	α^2	172 17 39·63			
	D	α^2	299 50 33·75			
	D	α^1	299 50 21·51			
19	R	α^1	172 17 50·30	30·452	61·0	63·9
	R	α^2	172 17 39·33			
	D	α^1	299 50 21·79			
	D	α^2	299 50 32·28			
20	R	α^2	172 17 40·97	30·241	60·5	49·2
	R	α^1	172 17 51·64			
	D	α^2	299 50 30·77			
	D	α^1	299 50 20·44			

(*a*) Perhaps the barometer should be 30·098, a figure being indistinct. 30·198 has been adopted in the reductions.—T. Henderson.

Observations made with the old Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1839.				Inches.		
April 22	R	α^1	172° 17′ 51″·41	30·215	61°·2	57°·4
	R	α^2	172 17 40·35			
	D	α^1	299 50 19·96			
	D	α^2	299 50 30·65			
23	R	α^1	172 17 52·13	30·204	62·0	58·8
	R	α^2	172 17 41·28			
	D	α^2	299 50 30·35			
	D	α^1	299 50 19·86			
24	R	α^2	172 17 41·45	30·042	62·0	67·2
	R	α^1	172 17 52·91			
	D	α^1	299 50 20·55			
	D	α^2	299 50 31·12			
27	R	α^1	172 17 54·14	30·170	63·0	58·9
	R	α^2	172 17 41·88			
	D	α^2	299 50 28·50			
	D	α^1	299 50 18·53			
28	R	α^1	172 17 52·32	30·133	62·3	50·0
	R	α^2	172 17 42·20			
	D	α^2	299 50 29·75			
	D	α^1	299 50 20·35			
May 6	R	α^1	172 17 56·64	30·280	64·5	61·2
	R	α^2	172 17 46·07			
	D	α^2	299 50 27·95			
	D	α^1	299 50 15·97			
7	R	α^2	172 17 45·84	30·283	64·4	53·8
	R	α^1	172 17 59·31			
	D	α^2	299 50 27·71			
	D	α^1	299 50 17·50			
8	R	α^1	172 17 58·01	30·254	64·8	59·5
	R	α^2	172 17 46·15			
	D	α^1	299 50 15·79			
	D	α^2	299 50 24·83			

Observations made with the old Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1839.				Inches.		
May 9	R	α^1	172° 17′ 57″·94	30·300	64°·2	60°·0
	R	α^2	172 17 47·25			
	D	α^1	299 50 14·89			
	D	α^2	299 50 27·31			
10	R	α^1	172 17 57·22	30·291	63·2	57·3
	R	α^2	172 17 46·09			
	D	α^1	299 50 14·54			
	D	α^2	299 50 28·09			
11	D	α^1	299 50 16·72	30·316	62·2	56·5
	D	α^2	299 50 26·56			
12	R	α^1	172 17 58·15	30·193	63·0	58·0
	R	α^2	172 17 47·58			
	D	α^2	299 50 27·53			
	D	α^1	299 50 12·37			
13	R	α^1	172 17 57·70	30·035	62·2	50·0
	R	α^2	172 17 45·95			
	D	α^2	299 50 29·28			
	D	α^1	299 50 16·66			
14	R	α^1	172 17 58·48	30·045	61·2	53·2
	R	α^2	172 17 46·62			
	D	α^2	299 50 26·50			
	D	α^1	299 50 16·86			
21	R	α^1	172 17 59·29	30·456	58·5	53·0
	R	α^2	172 17 49·08			
	D	α^2	299 50 24·79			
	D	α^1	299 50 13·82			
22	R	α^1	172 18 2·78	30·362	59·0	52·8
	R	α^2	172 17 49·06			
	D	α^2	299 50 23·81			
	D	α^1	299 50 12·71			
23	R	α^1	172 18 0·55	30·080	59·6	52·2
	R	α^2	172 17 49·21			

Observations made with the old Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1839.				Inches.		
May 23 (continued).	D	α^2	299° 50′ 23″·37	30·080	59°·6	52°·2
	D	α^1	299 50 11·55			
June 6	R	α^1	172 18 3·04	30·235	59·2	51·0
	R	α^2	172 17 51·01			
	D	α^2	299 50 20·30			
	D	α^1	299 50 8·60			
7	R	α^1	172 18 4·98	30·213	59·2	56·5
	R	α^2	172 17 53·04			
	D	α^2	299 50 19·35			
	D	α^1	299 50 7·65			
9	R	α^1	172 18 4·44	30·294	59·7	56·4
	R	α^2	172 17 53·26			
	D	α^2	299 50 19·97			
	D	α^1	299 50 7·67			
(*a*) 10	R	α^1	172 18 3·76	30·268	69·7	50·5
	R	α^2	172 17 52·67			
	D	α^1	299 50 8·72			
	D	α^2	299 50 19·09			
13	R	α^1	172 18 5·07	30·249	60·0	56·2
	R	α^2	172 17 52·97			
	D	α^2	299 50 19·60			
	D	α^1	299 50 7·66			
15	R	α^1	172 18 4·67	30·558	57·0	46·4
	R	α^2	172 17 53·29			
	D	α^2	299 50 21·27			
	D	α^1	299 50 9·73			
16	R	α^1	172 18 4·35	30·581	57·4	52·6
	R	α^2	172 17 53·66			
	D	α^2	299 50 21·20			
	D	α^1	299 50 9·38			

(*a*) It is supposed that the in-thermometer should be 59°·7 or 60°·7; 59°·7 has been adopted in the reductions.—T. HENDERSON.

Observations made with the old Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1839.				Inches.	°	°
June 19	R	α^2	172° 17′ 52″·92	30·405	59·0	52·5
	R	α^1	172 18 3·21			
20	D	α^1	299 50 5·94	30·389	59·7	51·0
	D	α^2	299 50 16·10			
28	D	α^1	299 50 8·72	30·576	58·7	56·7
	D	α^2	299 50 18·40			
	Observations of α^1 and α^2 Centauri made with the new Circle.					
Aug. 4	R	α^1	187 41 57·20	30·446	57·2	53·4
	R	α^2	187 42 8·35			
	D	α^2	60 9 49·01			
	D	α^1	60 10 1·97			
8	D	α^1	60 9 50·02	30·431	56·6	51·8
	D	α^2	60 9 39·27			
10	R	α^1	187 41 46·77	30·295	57·5	56·0
	R	α^2	187 41 57·44			
	D	α^1	60 9 51·99			
	D	α^2	60 9 40·23			
15	R	α^2	187 41 57·36	29·777	59·5	57·6
	R	α^1	187 41 46·97			
17	D	α^1	60 9 50·83	29·862	59·0	58·4
	D	α^2	60 9 40·40			
22	R	α^2	187 41 59·61	30·348	57·4	54·0
	R	α^1	187 41 49·02			
25	D	α^1	60 9 49·90	30·083	58·2	60·0
	D	α^2	60 9 39·55			
Oct. 15	D	α^1	60 9 39·49	30·190	64·4	67·6
	D	α^2	60 9 29·59			

Observations of α^1 and α^2 Centauri made with the new Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1839.				Inches.		
Oct. 16	R	α^1	187° 41′ 59″·20	30·150	64°·2	70°·0
	R	α^2	187 42 8·62			
	D	α^1	60 9 38·18			
	D	α^2	60 9 28·18			
17	R	α^2	187 42 9·84	30·023	65·6	76·5
19	R	α^1	187 41 58·11	29·990	66·0	67·0
	R	α^2	187 42 7·53			
	D	α^2	60 9 29·40			
	D	α^1	60 9 39·69			
24	R	α^1	187 42 19·30	30·089	61·3	66·0
	R	α^2	187 42 29·52			
	D	α^1	60 9 57·10			
	D	α^2	60 9 46·67			
29	R	α^2	187 42 30·25	30·125	62·6	67·8
	D	α^2	60 9 45·52			
	D	α^1	60 9 55·63			
Nov. 1	R	α^1	187 42 20·63	29·900	65·0	74·5
	R	α^2	187 42 30·54			
	D	α^1	60 9 56·06			
	D	α^2	60 9 44·34			
12	R	α^1	187 42 24·34	30·037	66·2	81·8
	R	α^2	187 42 35·13			
	D	α^2	60 9 44·18			
	D	α^1	60 9 55·94			
13	R	α^1	187 42 22·63	29·946	66·7	73·6
	R	α^2	187 42 36·32			
	D	α^2	60 9 42·91			
14	R	α^1	187 42 22·32	30·051	66·3	65·5
	R	α^2	187 42 34·76			
	D	α^2	60 9 40·83			
	D	α^1	60 9 51·50			

Observations made with the new Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1839.				Inches.		
Nov. 15	R	α^1	187° 42′ 22″·87	30·075	64°·9	69°·0
	R	α^2	187 42 35·68			
	D	α^2	60 9 40·50			
	D	α^1	60 9 51·77			
17	R	α^1	187 42 23·04	30·100	65·5	70·0
	R	α^2	187 42 34·95			
	D	α^2	60 9 42·68			
	D	α^1	60 9 52·26			
21	R	α^1	187 42 25·39	30·004	68·0	87·8
	R	α^2	187 42 35·46			
	D	α^1	60 9 51·52			
	D	α^2	60 9 41·25			
Dec. 6	R	α^2	187 42 38·02	30·191	65·2	68·6
	R	α^1	187 42 25·92			
	D	α^2	60 9 37·76			
	D	α^1	60 9 47·95			
8	R	α^1	187 42 26·17	29·922	65·5	67·2
	R	α^2	187 42 36·80			
	D	α^2	60 9 37·51			
	D	α^1	60 9 47·66			
12	R	α^1	187 42 26·02	30·032	65·0	66·4
	R	α^2	187 42 37·97			
	D	α^2	60 9 37·87			
	D	α^1	60 9 47·77			
13	R	α^1	187 42 27·19	29·899	65·8	67·5
	R	α^2	187 42 38·62			
	D	α^2	60 9 37·64			
	D	α^1	60 9 48·11			
17	R	α^1	187 42 25·89	29·992	68·2	67·4
	R	α^2	187 42 37·97			
	D	α^2	60 9 37·19			
	D	α^1	60 9 47·58			

Observations made with the new Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1839.				Inches.		
Dec. 18	D	α^2	60° 9′ 37″·30	30·091	68°·6	70°·6
	D	α^1	60 9 46·72			
(*a*) 19	R	α^1	187 42 25·54	30·077	68·3	71·8
	R	α^2	187 42 38·99			
	D	α^2	60 9 35·02			
	D	α^1	60 9 46·45			
20	R	α^1	187 42 26·07	29·944	68·0	67·2
	R	α^2	187 42 37·10			
	D	α^2	60 9 37·46			
	D	α^1	60 9 47·40			
23	D	α^2	60 9 38·15	30·126	66·6	67·6
	D	α^1	60 9 47·25			
24	R	α^1	187 42 39·83	30·122	68·3	69·8
	R	α^2	187 42 50·58			
	D	α^2	60 9 49·86			
	D	α^1	60 10 0·13			
25	R	α^1	187 42 40·63	29·985	68·3	70·7
	R	α^2	187 42 52·10			
	D	α^2	60 9 51·81			
	D	α^1	60 10 3·00			
(*b*) 28	R	α^1	187 42 41·01	30·203	66·6	61·4
	R	α^2	187 42 52·65			
	D	α^2	60 9 48·96			
	D	α^1	60 9 59·31			
29	R	α^1	187 42 44·16	30·226	66·3	61·4
	R	α^2	187 42 54·63			
	D	α^2	60 9 51·29			
	D	α^1	60 10 1·68			
30	R	α^1	187 42 42·68	30·023	67·7	70·0
	R	α^2	187 42 52·75			

(*a*) Very indistinct.

(*b*) Cloudy at bisections.

Observations made with the new Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1838.				Inches.	°	°
Dec. 30	D	α^2	60 9 51·40	30·023	67·7	70·0
(Continued).	D	α^1	60 10 2·19			
31	R	α^1	187 42 43·37	29·997	68·6	70·8
	R	α^2	187 42 53·52			
	D	α^2	60 9 51·84			
	D	α^1	60 10 1·51			
1840.						
Jan. 1	R	α^1	187 42 42·76	30·175	69·4	69·9
	R	α^2	187 42 53·22			
	D	α^2	60 9 50·60			
	D	α^1	60 10 1·39			
2	R	α^1	187 42 42·15	29·990	68·2	71·5
	R	α^2	187 42 51·89			
	D	α^1	60 10 2·10			
	D	α^2	60 9 51·95			
3	R	α^1	187 42 42·52	29·950	69·3	68·5
	R	α^2	187 42 52·15			
	D	α^2	60 9 52·07			
	D	α^1	60 10 2·30			
5	R	α^1	187 42 43·31	30·222	68·0	65·2
	R	α^2	187 42 53·37			
	D	α^2	60 9 51·51			
	D	α^1	60 10 2·06			
7	R	α^1	187 42 43·19	30·040	67·7	68·5
	R	α^2	187 42 53·42			
	D	α^2	60 9 52·26			
	D	α^1	60 10 2·97			
8	R	α^1	187 42 42·72	29·973	68·6	65·5
	R	α^2	187 42 52·39			
	D	α^2	60 9 51·78			
	D	α^1	60 10 2·93			
10	R	α^1	187 42 42·77	30·114	68·4	65·3
	R	α^2	187 42 53·00			

Observations made with the new Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1840.				Inches.	°	°
Jan. 10 (Continued).	D	α^2	60 9 53·22	30·114	68·4	65·3
	D	α^1	60 10 3·57			
11	R	α^1	187 42 42·04	30·008	68·6	62·3
	R	α^2	187 42 51·94			
	D	α^2	60 9 54·51			
	D	α^1	60 10 4·45			
13	R	α^1	187 42 42·33	30·174	68·2	64·3
	R	α^2	187 42 52·60			
	D	α^2	60 9 52·19			
	D	α^1	60 10 2·82			
(*a*) 14	R	α^1	187 42 41·73	30·137	68·8	69·1
	R	α^2	187 42 52·04			
	D	α^2	60 9 51·97			
	D	α^1	60 10 3·28			
(*b*) 15	R	α^1	187 42 40·20	30·064	70·2	68·7
	R	α^2	187 42 51·47			
	D	α^2	60 9 53·55			
	D	α^1	60 10 4·14			
16	R	α^1	187 42 41·59	30·023	70·4	72·4
	R	α^2	187 42 53·26			
	D	α^2	60 9 55·70			
	D	α^1	60 10 5·77			
18	R	α^1	187 42 41·78	30·061	70·3	66·8
	R	α^2	187 42 51·85			
	D	α^2	60 9 53·04			
	D	α^1	60 10 3·19			
20	R	α^1	187 42 40·67	29·997	72·3	65·4
	R	α^2	187 42 51·43			
	D	α^2	60 9 55·20			
	D	α^1	60 10 5·75			

(*a*) Reflected observations read from divisions 45′ instead of divisions 40′, as at all other times.

(*b*) Bad observing night. Stars woolly, and more or less obscured by clouds.

Observations made with the new Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1840.				Inches.		
Jan. 24	R	α^1	187° 42′ 40″·53	30·148	68°·5	66°·4
	R	α^2	187 42 52·81			
	D	α^2	60 9 54·41			
	D	α^1	60 10 5·36			
25	R	α^1	187 42 40·80	30·072	69·6	61·2
	R	α^2	187 42 51·87			
	D	α^2	60 9 54·03			
	D	α^1	60 10 4·78			
26	R	α^1	187 42 41·20	30·050	70·3	66·5
	R	α^2	187 42 52·48			
	D	α^2	60 9 55·53			
	D	α^1	60 10 6·60			
27	R	α^1	187 42 41·72	30·109	70·4	64·3
	R	α^2	187 42 52·79			
	D	α^2	60 9 53·95			
	D	α^1	60 10 5·14			
29	R	α^1	187 42 40·87	30·026	68·8	63·4
	R	α^2	187 42 51·74			
	D	α^2	60 9 54·41			
	D	α^1	60 10 5·64			
30	D	α^2	60 9 58·06	30·117	68·8	63·8
	D	α^1	60 10 9·45			
31	R	α^1	187 42 40·79	30·020	69·8	68·0
	R	α^2	187 42 50·37			
	D	α^2	60 9 54·09			
	D	α^1	60 10 5·36			
Feb. 1	R	α^1	187 42 40·98	30·046	70·7	65·2
	R	α^2	187 42 51·29			
	D	α^2	60 9 55·06			
	D	α^1	60 10 5·85			

Observations made with the new Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1840.				Inches.		
Feb. 3	D	α^2	60° 9′ 55″·11	29·934	68°·4	63°·5
	D	α^1	60 10 5·58			
(*a*) 5	R	α^1	187 42 38·81	30·030	69·0	65·0
	R	α^2	187 42 51·89			
	D	α^2	60 9 54·68			
	D	α^1	60 10 5·95			
6	R	α^1	187 42 40·16	30·108	68·0	64·4
	R	α^2	187 42 51·80			
	D	α^2	60 9 57·02			
	D	α^1	60 10 8·13			
(*b*) 7	R	α^1	187 42 39·30	29·944	68·6	62·8
	R	α^2	187 42 49·77			
	D	α^2	60 9 56·53			
	D	α^1	60 10 7·76			
(*c*) 8	R	α^1	187 42 39·83	29·939	67·8	60·4
	R	α^2	187 42 50·70			
	D	α^2	60 9 54·81			
	D	α^1	60 10 6·04			
(*c*) 9	R	α^1	187 42 39·67	29·807	68·4	58·5
	R	α^2	187 42 49·13			
	D	α^2	60 9 56·88			
	D	α^1	60 10 7·19			
11	R	α^1	187 42	29·968	68·8	63·5
	R	α^2	187 42			
	D	α^2	60 9 56·40			
	D	α^1	60 10 7·59			
12	R	α^1	187 42 37·41	29·930	68·3	58·2
	R	α^2	187 42 48·32			
	D	α^2	60 9 55·61			
	D	α^1	60 10 6·48			

(*a*) Large, faint, undefined blotches. (*b*) Horrid images. (*c*) Bad images.

Observations made with the new Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1840.				Inches.		
Feb. 13	R	α^1	187° 42′ 38″·22	30·062	67°·8	58°·4
	R	α^2	187 42 48·00			
	D	α^2	60 9 56·38			
	D	α^1	60 10 7·17			
(*a*) 14	R	α^1	187 42 37·35	29·915	67·3	58·3
	R	α^2	187 42 49·10			
	D	α^2	60 9 56·48			
	D	α^1	60 10 6·83			
18	D	α^2	60 9 58·69	30·181	65·2	62·7
	D	α^1	60 10 9·28			
19	R	α^1	187 42 37·94	30·189	64·9	59·0
	R	α^2	187 42 48·08			
	D	α^2	60 9 58·66			
	D	α^1	60 10 9·81			
20	R	α^1	187 42 36·97	30·147	66·5	61·9
	R	α^2	187 42 47·84			
	D	α^2	60 9 59·68			
	D	α^1	60 10 9·71			
21	R	α^1	187 42 36·58	30·006	68·2	67·2
	R	α^2	187 42 47·65			
	D	α^2	60 9 58·80			
	D	α^1	60 10 8·87			
22	D	α^2	60 10 1·52	29·977	70·3	67·2
	D	α^1	60 10 12·51			
23	R	α^1	187 42 35·63	30·026	72·4	71·5
	R	α^2	187 42 47·10			
	D	α^2	60 9 59·02			
	D	α^1	60 10 10·49			

(*a*) The two stars form one large undefined blotch.

Observations made with the new Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1840.				Inches.		
(*a*) Feb. 24	R	α^1	187° 42′ 38″·26	30·067	71°·7	65°·5
	R	α^2	187 42 48·60			
	D	α^2	60 9 59·75			
	D	α^1	60 10 10·02			
25	R	α^1	187 42 36·85	30·049	70·0	56·7
	R	α^2	187 42 49·17			
	D	α^2	60 10 0·33			
	D	α^1	60 10 11·44			
26	R	α^1	187 42 36·06	30·058	70·0	58·8
	R	α^2	187 42 46·61			
	D	α^2	60 10 0·93			
	D	α^1	60 10 11·52			
Mar. 1	D	α^2	60 10 2·15	30·086	68·8	63·0
	D	α^1	60 10 12·26			
2	R	α^1	187 42 35·65	30·009	68·8	64·7
	R	α^2	187 42 45·31			
	D	α^2	60 10 2·14			
	D	α^1	60 10 12·29			
3	R	α^1	187 42 35·32	29·984	68·8	66·5
	R	α^2	187 42 46·79			
	D	α^2	60 10 3·76			
	D	α^1	60 10 13·74			
5	R	α^1	187 42 35·05	30·052	70·0	66·5
	R	α^2	187 42 45·80			
	D	α^2	60 10 3·60			
	D	α^1	60 10 15·03			
6	R	α^1	187 42 34·24	30·053	69·7	66·8
	R	α^2	187 42 45·43			
	D	α^2	60 10 4·55			
	D	α^1	60 10 15·62			

(*a*) In a much better state for observing than it has been for a long time.

Observations made with the new Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1840.				Inches.		
Mar. 8	R	α^1	187° 42′ 33″·66	30·085	69°·5	65°·0
	R	α^2	187 42 44·33			
	D	α^2	60 10 4·60			
	D	α^1	60 10 15·07			
(*a*) April 6	R	α^1	187 42 30·58	29·897	66·6	60·0
	R	α^2	187 42 39·88			
	D	α^2	60 10 16·45			
	D	α^1	60 10 27·56			
(*b*) 9	R	α^1	187 42 27·35	30·077	64·4	57·7
	R	α^2	187 42 38·63			
	D	α^2	60 10 16·39			
	D	α^1	60 10 28·03			
10	R	α^1	187 42 26·69	30·147	65·8	62·6
	R	α^2	187 42 37·16			
	D	α^2	60 10 15·05			
	D	α^1	60 10 24·75			
11	R	α^1	187 42 25·27	30·060	66·5	63·4
	R	α^2	187 42 36·14			
	D	α^2	60 10 16·51			
	D	α^1	60 10 25·57			
12	R	α^1	187 42 24·69	30·001	67·2	66·0
	R	α^2	187 42 35·88			
	D	α^2	60 10 16·88			
	D	α^1	60 10 27·71			
14	R	α^1	187 42 24·70	30·076	66·6	62·1
	R	α^2	187 42 35·33			
	D	α^2	60 10 15·65			
	D	α^1	60 10 25·63			
(*c*) 15	R	α^1	187 42 24·48	30·218	67·0	56·5
	R	α^2	187 42 36·88			

(*a*) Obscured during the greater part of the transit.

(*b*) Of little or no use, from the crabby nature of the stars.

(*c*) Good observing night.

Observations made with the new Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1840.				Inches.		
April 15 (Continued).	D	α^2	60° 10′ 16″·96	30·218	67°·0	56°·5
	D	α^1	60 10 27·35			
(*a*) 16	R	α^1	187 42 25·16	30·226	65·7	61·5
	R	α^2	187 42 35·59			
	D	α^2	60 10 16·53			
	D	α^1	60 10 26·92			
17	R	α^1	187 42 24·46	30·164	65·3	58·2
	R	α^2	187 42 34·68			
	D	α^2	60 10 15·53			
	D	α^1	60 10 25·68			
20	R	α^1	187 42 23·50	30·015	66·3	59·8
	R	α^2	187 42 34·17			
	D	α^2	60 10 17·63			
	D	α^1	60 10 28·22			
22	R	α^1	187 42 23·70	29·843	64·8	55·7
	R	α^2	187 42 33·28			
	D	α^2	60 10 17·10			
	D	α^1	60 10 27·37			
24	R	α^1	187 42 22·50	30·305	63·0	55·6
	R	α^2	187 42 32·89			
	D	α^2	60 10 18·81			
	D	α^1	60 10 28·27			
26	R	α^1	187 42 21·86	30·281	63·3	58·0
	R	α^2	187 42 32·33			
	D	α^2	60 10 18·22			
	D	α^1	60 10 29·69			
27	R	α^1	187 42 21·12	30·118	63·8	61·0
	R	α^2	187 42 32·43			
	D	α^2	60 10 20·30			
	D	α^1	60 10 30·77			

(*a*) Good observing night.

Observations made with the new Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1840.				Inches.		
April 30	R	α^1	187° 42′ 21″11	30·161	63°·7	55°·5
	R	α^2	187 42 31·82			
	D	α^2	60 10 19·58			
	D	α^1	60 10 30·13			
May 1	R	α^1	187 42 21·49	30·158	63·4	59·8
	R	α^2	187 42 31·03			
	D	α^2	60 10 21·16			
	D	α^1	60 10 30·62			
8	R	α^1	187 42 20·55	30·128	60·3	49·4
	R	α^2	187 42 30·69			
	D	α^2	60 10 23·01			
	D	α^1	60 10 33·60			
9	R	α^1	187 42 18·95	30·179	59·3	49·8
	R	α^2	187 42 29·26			
	D	α^2	60 10 23·92			
	D	α^1	60 10 34·03			
(*a*) 14	R	α^1	187 42 17·97	30·295	61·4	58·3
	R	α^2	187 42 28·44			
	D	α^2	60 10 23·64			
	D	α^1	60 10 34·23			
15	R	α^1	187 42 16·85	30·208	62·3	58·8
	R	α^2	187 42 26·92			
	D	α^2	60 10 24·15			
	D	α^1	60 10 34·22			
16	R	α^1	187 42 17·44	30·186	62·3	56·4
	R	α^2	187 42 28·27			
	D	α^2	60 10 24·53			
	D	α^1	60 10 34·39			
18	R	α^1	187 42 16·78	30·397	60·7	56·3
	R	α^2	187 42 27·17			
	D	α^2	60 10 24·51			
	D	α^1	60 10 35·02			

(*a*) Good observing night.

Observations made with the new Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1840.				Inches.		
May 19	R	α^1	187° 42′ 16″·86	30·256	61°·0	57°·5
	R	α^2	187 42 27·53			
	D	α^2	60 10 25·51			
	D	α^1	60 10			
20	R	α^1	187 42 15·78	30·142	62·4	59·5
	R	α^2	187 42 25·76			
	D	α^2	60 10 26·18			
	D	α^1	60 10 35·92			
21	R	α^1	187 42 15·93	30·135	62·6	60·0
	R	α^2	187 42 25·80			
	D	α^2	60 10 26·11			
	D	α^1	60 10 36·46			
23	R	α^1	187 42 15·23	30·134	63·7	59·2
	R	α^2	187 42 25·69			
	D	α^2	60 10 26·95			
	D	α^1	60 10 36·33			
30	R	α^1	187 42 14·60	30·314	58·8	47·5
	R	α^2	187 42 24·87			
	D	α^2	60 10 26·46			
	D	α^1	60 10 36·85			
31	R	α^1	187 42 14·40	30·143	59·5	48·5
	R	α^2	187 42 25·39			
	D	α^2	60 10 28·09			
	D	α^1	60 10 39·00			
June 3	R	α^1	187 42 14·04	30·143	59·5	48·5
	R	α^2	187 42 27·56			
	D	α^2	60 10 30·92			
	D	α^1	60 10 41·91			
6	R	α^1	187 42 13·10	30·279	58·7	49·5
	R	α^2	187 42 22·76			
	D	α^2	60 10 29·60			
	D	α^1	60 10 41·48			

Observations made with the new Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1840.			° ′ ″	Inches.	°	°
			Changed the object-glass.			
	Put	in the	object-glass of	the old	Circle.	
June 12	R	α^1	187 41 36·83	30·554	56·5	47·2
	R	α^2	187 41 46·49			
	D	α^2	60 9 54·20			
	D	α^1	60 10 4·14			
16	R	α^1	187 41 35·55	30·314	57·3	48·8
	R	α^2	187 41 46·14			
	D	α^2	60 9 55·41			
	D	α^1	60 10 6·56			
17	R	α^1	187 41 36·16	30·251	58·3	53·0
	R	α^2	187 41 46·67			
	D	α^2	60 9 56·62			
	D	α^1	60 10 7·05			
20	R	α^1	187 41 36·31	30·325	57·7	51·3
	R	α^2	187 41 46·50			
	D	α^2	60 9 57·20			
	D	α^1	60 10 6·86			
23	R	α^1	187 41 36·00	30·517	57·0	52·5
	R	α^2	187 41 46·27			
	D	α^2	60 9 57·00			
	D	α^1	60 10 7·63			
24	R	α^1	187 41 36·00	30·402	58·2	55·3
	R	α^2	187 41 45·50			
	D	α^2	60 9 57·10			
	D	α^1	60 10 8·13			
25	R	α^1	187 41 35·38	30·342	58·3	53·5
	R	α^2	187 41 45·24			
	D	α^2	60 9 58·19			
	D	α^1	60 10 8·21			

Observations made with the new Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1840.				Inches.		
(*a*)June 26	R	α^1	187° 41′ 35″·71	30·268	57°·7	47°·7
	R	α^2	187 41 45·69			
	D	α^2	60 9 56·70			
	D	α^1	60 10 7·85			
27	R	α^1	187 41 34·82	30·289	58·3	54·8
	R	α^2	187 41 45·17			
	D	α^2	60 9 58·06			
	D	α^1	60 10 8·13			
July 1	R	α^1	187 41 32·79	30·217	60·6	55·5
	R	α^2	187 41 43·41			
	D	α^2	60 9 58·91			
	D	α^1	60 10 9·54			
2	R	α^1	187 41 33·99	30·127	59·7	52·0
	R	α^2	187 41 43·65			
	D	α^2	60 9 59·13			
	D	α^1	60 10 9·60			
9	R	α^1	187 41 33·33	30·175	57·3	49·0
	R	α^2	187 41 43·55			
	D	α^2	60 9 58·61			
	D	α^1	60 10 9·44			
10	R	α^1	187 41 34·14	30·287	57·8	52·2
	R	α^2	187 41 44·61			
	D	α^2	60 9 58·61			
	D	α^1	60 10 9·76			
27	R	α^1	187 41 32·83	30·134	57·2	53·4
	R	α^2	187 41 41·36			
	D	α^2	60 9 59·61			
	D	α^1	60 10 10·40			
Aug. 10	R	α^1	187 41 34·72	30·295	54·8	52·0
	R	α^2	187 41 45·39			

(*a*) Crabby.

Observations made with the New Circle (continued).

Date.	How observed.	Star.	Concluded Reading of Circle.	Barometer.	Thermometer. In.	Thermometer. Out.
1840.				Inches.	°	°
Aug. 10 (Continued).	D	α^2	60 10 0·45	30·295	54·8	52·0
	D	α^1	60 10 11·16			
11	R	α^1	187 41 34·76	30·208	57·5	56·4
	R	α^2	187 41 44·83			
	D	α^2	60 10 0·71			
	D	α^1	60 10 11·22			
12	R	α^1	187 41 34·62	30·206	56·7	54·3
	R	α^2	187 41 45·01			
	D	α^2	60 10 0·46			
	D	α^1	60 10			

For the investigation of parallax the observations in the foregoing series are employed in which the same star was observed by direct and reflected vision at the same transit, so that its double meridian altitude was obtained. For the reasons which are assigned in the Notes the observations of 1840, February 11, 14, and April 9, have not been used.

The observed double meridian altitudes have been reduced to the mean values for January 1, 1840, by applying the corrections for refraction, aberration, precession, nutation, and proper motion. The refractions have been calculated according to Bessel's *Tabulæ Regiomontanæ*. In the computations of aberration and nutation the values of the constant coefficients adopted in the Astronomical Society's Catalogue have been employed; and the term of the nutation depending on twice the moon's longitude (the greatest effect of which on the double altitude is 0″·17) has been included. The annual precession in declination has been determined from the *Tabulæ Regiomontanæ* to be −15″·97; and from preliminary computations of the zenith-distances of the two stars resulting from the present series of observations, and compared with those observed by me in 1832 and 1833, I have assumed the annual proper motion in declination of α^1 to be +1″·33, and of α^2, +0″·67.

The annexed tables shew the observed double altitudes of both stars, the corrections applied for refraction and reduction to January 1, 1840

(the latter comprehending the aberration, precession, nutation, and proper motion), and the resulting mean double altitudes for the epoch. The corrections of the double altitudes are twice the corrections of the declination.

Double Altitudes of α^1 Centauri.

Date.	Observed Double Altitude.	Refraction.	Reduction.	Mean Double Altitude for January 1, 1840.
	OLD	CIRCLE.		
1839.				
April 16	127° 32′ 31″·25	−57″·16	− 6″·87	127° 31′ 27″·22
19	31·49	56·70	4·99	29·80
20	28·80	57·93	4·34	26·53
22	28·55	56·96	3·13	28·46
23	27·73	56·79	2·57	28·37
24	27·64	55·59	2·04	30·01
27	24·39	56·71	0·55	27·13
28	28·03	57·62	− 0·07	30·34
May 6	19·33	56·66	+ 4·57	27·24
7	18·19	57·48	5·11	25·82
8	17·78	56·80	5·63	26·61
9	16·95	56·83	6·10	26·22
10	17·32	57·11	6·55	26·76
12	14·22	56·85	7·44	24·81
13	18·96	57·44	7·93	29·45
14	18·38	57·11	8·46	29·73
21	14·53	57·93	12·25	28·85
22	9·93	57·77	12·68	24·84
23	11·00	56·24	13·10	27·86
June 6	5·56	57·73	19·30	27·13
7	2·67	57·08	19·62	25·21
9	3·23	57·24	20·28	26·27
10	4·96	57·85	20·65	27·76
13	2·59	57·18	21·95	27·36
15	5·06	58·89	22·81	28·98
16	127 32 5·03	−58·22	+23·17	127 31 29·98

Double Altitudes of α^1 Centauri (continued.)

Date.	Observed Double Altitude.	Refraction.	Reduction.	Mean Double Altitude for January 1, 1840.
	New	Circle.		
1839.				
Aug. 4	127° 31′ 55″·23	−57″·88	+30″·33	127° 31′ 27″·68
10	54·78	57·30	30·19	27·67
Oct. 16	32 21·02	55·48	7·33	32·87
19	18·42	55·49	6·01	28·94
24	22·20	55·80	+ 3·36	29·76
Nov. 1	24·57	54·56	− 0·02	29·99
12	28·40	54·06	5·27	29·07
14	30·82	55·76	5·99	29·07
15	31·10	55·44	6·39	29·27
17	30·78	55·38	7·29	28·11
21	33·87	53·40	8·87	31·60
Dec. 6	37·97	55·69	13·22	29·06
8	38·51	55·34	13·52	29·65
12	38·25	55·63	14·16	28·46
13	39·08	55·27	14·38	29·43
17	38·31	55·44	15·21	27·66
19	39·09	55·14	15·47	28·48
20	38·67	55·37	15·49	27·81
24	39·70	55·43	15·61	28·66
25	37·63	55·08	15·69	26·86
28	41·70	56·48	15·97	29·25
29	42·48	56·52	16·06	29 90
30	40·49	55·22	16·10	29·17
31	41·86	55·09	16·13	30·64
1840.				
Jan. 1	41·37	55·51	16·13	29·73
2	40·05	55·01	16·06	28·98
3	40·22	55·24	15·98	29·00
5	41·25	56·10	15·73	29·42
7	40·22	55·41	15·52	29·29
8	39·79	55·60	15·43	28·76
10	39·20	55·88	15·32	28·00
11	127 32 37·59	−56·00	−15·30	127 31 26·29

Double Altitudes of α^1 Centauri (continued).

Date.	Observed Double Altitude.	Refraction.	Reduction.	Mean Double Altitude for January 1, 1840.
1840.				
Jan. 13	127° 32′ 39″·51	−56″·10	−15″·20	127° 31′ 28″·21
14	38·45	55·52	15·09	27·84
15	36·06	55·42	14·94	25·70
16	35·82	54·96	14·72	26·14
18	38·59	55·62	14·21	28·76
20	34·92	55·64	13·73	25·55
24	35·17	55·83	13·04	26·30
25	36·02	56·24	12·87	26·91
26	34·60	55·63	12·69	26·28
27	36·58	55·97	12·48	28·13
29	35·23	55·92	11·95	27·36
31	35·43	55·42	11·28	28·73
Feb. 1	35·13	55·76	10·93	28·44
5	32·86	55·76	9·56	27·54
6	32·03	55·97	9·28	26·78
7	31·54	55·84	9·01	26·69
8	33·79	56·09	8·74	28·96
9	32·48	56·04	8·45	27·99
12	30·93	56·30	7·35	27·28
13	31·05	56·53	6·90	27·62
19	28·13	56·72	4·31	27·10
20	27·26	56·32	3·94	27·00
21	27·71	55·49	3·60	28·62
23	25·14	55·06	2·85	27·23
24	28·24	55·76	2·41	30·07
25	25·41	56·68	1·96	26·77
26	24·54	56·47	− 1·47	26·60
March 2	23·36	55·76	+ 1·17	28·77
3	21·58	55·52	1·67	27·73
5	20·02	55·64	2·54	26·92
6	18·62	55·61	2·95	25·96
8	18·59	55·86	3·84	26·57
April 6	127 32 3·02	−56·07	+19·64	127 31 26·59

Double Altitudes of α^1 Centauri (continued).

Date.	Observed Double Altitude.	Refraction.	Reduction.	Mean Double Altitude for January 1, 1840.
1840.				
April 10	127° 32′ 1″·94	−56″·26	+22″·20	127° 31′ 27″·88
11	31 59·70	56·01	22·82	26·51
12	56·98	55·62	23·41	24·77
14	59·07	56·18	24·45	27·34
15	57·13	57·05	24·96	25·04
16	58·24	56·53	25·45	27·16
17	58·78	56·77	25·97	27·98
20	55·28	56·31	27·60	26·57
22	56·33	56·44	28·83	28·72
24	54·23	57·34	30·07	26·96
26	52·17	57·02	31·27	26·42
27	50·35	56·39	31·80	25·76
30	50·98	57·07	33·24	27·15
May 1	50·87	56·60	33·71	27·98
8	46·95	57·71	37·71	26·95
9	44·92	57·77	38·25	25·40
14	43·74	57·03	40·56	27·27
15	42·63	56·81	41·01	26·83
16	43·05	57·03	41·49	27·51
18	41·76	57·45	42·53	26·84
20	39·86	56·61	43·61	26·86
21	39·47	56·54	44·16	27·09
23	38·90	56·62	45·22	27·50
30	37·75	58·29	48·05	27·51
31	35·40	57·85	48·49	26·04
June 3	32·13	57·85	49·98	24·26
6	127 31 31·62	−58·00	+51·28	24·90
	Object-glass	changed.		
12	127 31 32·69	−58·80	+53·24	27·13
16	28·99	58·16	54·74	25·57
17	29·11	57·55	55·14	26·70
20	29·45	57·89	56·21	27·77
23	127 31 28·37	−58·13	+56·96	127 31 27·20

Double Altitudes of α^1 Centauri (continued).

Date.	Observed Double Altitude.	Refraction.	Reduction.	Mean Double Altitude for January 1, 1840.
1840.				
June 24	127° 31′ 27″·87	−57″·59	+57″·16	127° 31′ 27″·44
25	27·17	57·67	57·36	26·86
26	27·86	58·19	57·58	27·25
27	26·69	57·43	57·83	27·09
July 1	23·25	57·20	59·07	25·12
2	24·39	57·43	59·34	26·30
9	23·89	57·87	60·36	26·38
10	24·38	57·72	60·51	27·17
27	22·43	57·30	62·01	27·14
Aug. 10	23·56	57·77	61·21	27·00
11	127 31 23·54	−57·10	+61·16	127 31 27·60

Double Altitudes of α^2 Centauri.

1839.	OLD	CIRCLE.		
April 16	127 32 54·12	−57·16	− 7·81	127 31 49·15
19	52·95	56·69	5·91	50·35
20	49·80	57·92	5·26	46·62
22	50·30	56·96	4·05	49·29
23	49·07	56·78	3·49	48·80
24	49·67	55·58	2·94	51·15
27	46·62	56·70	1·45	48·47
28	47·55	57·62	− 0·97	48·96
May 6	41·88	56·65	+ 3·71	48·94
7	41·87	57·47	4·25	48·65
8	38·68	56·79	4·77	46·66
9	40·06	56·82	5·26	48·50
10	42·00	57·10	5·71	50·61
12	39·95	56·84	6·60	49·71
13	43·33	57·43	7·09	52·99
14	39·88	57·10	7·62	50·40
21	35·71	57·92	11·43	49·22
22	127 32 34·75	−57·76	+11·86	127 31 48·85

Double Altitudes of α^2 Centauri (continued).

Date.	Observed Double Altitude.	Refraction.	Reduction.	Mean Double Altitude for January 1, 1840.
1839.				
May 23	127° 32′ 34″·16	−56″·24	+12″·28	127° 31′ 50″·20
June 6	29·29	57·72	18·54	50·11
7	26·31	57·07	18·86	48·10
9	26·71	57·23	19·54	49·02
10	26·42	57·84	19·91	48·49
13	26·63	57·17	21·23	50·69
15	27·98	58·88	22·09	51·19
16	127 32 27·54	−58·21	+22·45	51·78
	New	Circle.		
Aug. 4	127 32 19·34	−57·87	+29·79	51·26
10	17·21	57·29	29·67	49·59
Oct. 16	40·44	55·48	7·05	52·01
19	38·13	55·49	5·73	48·37
24	42·85	55·80	3·10	50·15
29	44·73	55·67	+ 1·06	50·12
Nov. 1	46·20	54·55	− 0·24	51·41
12	50·95	54·06	5·45	51·44
13	53·41	54·71	5·81	52·89
14	53·93	55·75	6·17	52·01
15	55·18	55·43	6·55	53·20
17	52·27	55·38	7·45	49·44
21	54·21	53·40	9·01	51·80
Dec. 6	33 0·26	55·69	13·32	51·25
8	32 59·29	55·34	13·62	50·33
12	33 0·10	55·62	14·24	50·24
13	0·98	55·26	14·46	51·26
17	0·78	55·43	15·27	50·08
19	3·97	55·13	15·53	53·31
20	32 59·64	55·36	15·53	48·75
24	33 0·72	55·42	15·65	49·65
25	0·29	55·07	15·71	49·51
28	3·69	56·47	15·99	51·23
29	127 33 3·34	−56·51	−16·08	127 31 50·75

Double Altitudes of α^2 Centauri (continued).

Date.	Observed Double Altitude.	Refraction.	Reduction.	Mean Double Altitude for January 1, 1840.
1839. Dec. 30	127° 33′ 1″·35	−55″·22	−16″·10	127° 31′ 50″·03
31	1·68	55·08	16·13	50·47
1840. Jan. 1	2·62	55·50	16·13	50·99
2	32 59·94	55·00	16·06	48·88
3	33 0·08	55·23	15·98	48·87
5	1·86	56·09	15·71	50·06
7	1·16	55·40	15·50	50·26
8	0·61	55·59	15·41	49·61
10	32 59·78	55·88	15·28	48·62
11	57·43	56·00	15·26	46·17
13	33 0·41	56·10	15·16	49·15
14	0·07	55·52	15·03	49·52
15	32 57·92	55·42	14·88	47·62
16	57·56	54·96	14·66	47·94
18	58·81	55·61	14·15	49·05
20	56·23	55·63	13·65	46·95
24	58·40	55·82	12·94	49·64
25	57·84	56·23	12·77	48·84
26	56·95	55·62	12·59	48·74
27	58·84	55·96	12·38	50·50
29	57·33	55·91	11·85	49·57
31	56·28	55·41	11·18	49·69
Feb. 1	56·23	55·75	10·81	49·67
5	57·21	55·75	9·44	52·02
6	54·78	55·96	9·16	49·66
7	53·24	55·83	8·89	48·52
8	55·89	56·08	8·60	51·21
9	52·25	56·03	8·31	47·91
12	52·71	56·30	7·21	49·20
13	51·62	56·52	6·74	48·36
19	49·42	56·71	4·13	48·58
20	48·16	56·32	3·76	48·08
21	127 32 48·85	−55·48	− 3·42	127 31 49·95

Double Altitudes of α^2 Centauri (continued).

Date.	Observed Double Altitude.	Refraction.	Reduction.	Mean Double Altitude for January 1, 1840.
1840.				
Feb. 23	127° 32′ 48″·08	−55″·05	− 2″·65	127° 31′ 50″·38
24	48·85	55·76	2·21	50·88
25	48·84	56·68	1·76	50·40
26	45·68	56·46	− 1·27	47·95
March 2	43·17	55·75	+ 1·39	48·81
3	43·03	55·51	1·89	49·41
5	42·20	55·63	2·78	49·35
6	40·88	55·60	3·19	48·47
8	39·73	55·86	4·08	47·95
April 6	23·43	56·06	19·98	47·35
10	22·11	56·25	22·56	48·42
11	19·63	56·00	23·18	46·81
12	19·00	55·61	23·77	47·16
14	19·68	56·17	24·83	48·34
15	19·92	57·04	25·34	48·22
16	19·06	56·52	25·83	48·37
17	19·15	56·76	26·35	48·74
20	16·54	56·31	28·00	48·23
22	16·18	56·44	29·23	48·97
24	14·08	57·33	30·49	47·24
26	14·11	57·02	31·69	48·78
27	12·13	56·38	32·22	47·97
30	12·24	57·06	33·68	48·86
May 1	9·87	56·59	34·15	47·43
8	7·68	57·70	38·17	48·15
9	5·34	57·76	38·71	46·29
14	4·80	57·02	41·04	48·82
15	2·77	56·80	41·49	47·46
16	3·74	57·02	41·97	48·69
18	2·66	57·44	43·03	48·25
19	2·02	57·04	43·57	48·55
20	31 59·58	56·60	44·11	47·09
21	127 31 59·69	−56·53	+44·66	127 31 47·82

Double Altitudes of α^2 Centauri (continued).

Date.	Observed Double Altitude.	Refraction.	Reduction.	Mean Double Altitude for January 1, 1840.
1840.				
May 23	127° 31′ 58″·74	−56″·61	+45″·74	127° 31′ 47″·87
30	58·41	58·29	48·59	48·71
31	57·30	57·84	49·03	48·49
June 3	56·64	57·84	50·54	49·34
6	127 31 53·16	−57·99	+51·84	47·01
	Object-glass	changed.		
12	127 31 52·29	−58·80	+53·84	47·33
16	50·73	58·15	55·34	47·92
17	50·05	57·55	55·76	48·26
20	49·30	57·88	56·83	48·25
23	49·27	58·12	57·60	48·75
24	48·40	57·58	57·80	48·62
25	47·05	57·67	58·00	47·38
26	48·99	58·18	58·22	49·03
27	47·11	57·42	58·49	48·18
July 1	44·50	57·20	59·73	47·03
2	44·52	57·42	60·02	47·12
9	44·94	57·86	61·06	48·14
10	46·00	57·71	61·21	49·50
27	41·75	57·29	62·77	47·23
Aug. 10	44·94	57·77	62·01	49·18
11	44·12	57·10	61·98	49·00
12	127 31 44·55	−57·33	+61·90	127 31 49·02

From the mean double altitudes for January 1, 1840, given in the last columns of the preceding tables, the parallax of the stars is to be deduced; and as the observations are equally favourable for determining the correction of the assumed co-efficient of aberration, it is also made the subject of investigation.

Supposing the instrumental mean double altitude of α' *Centauri* to be $= 127° 31' 20'' + x$, the total annual parallax of the star to be denoted by π, the coefficient of aberration to be $20''·36 + \Delta$, and the annual proper

motion of the star in declination to be $= +1''{\cdot}33 + \mu$; then from each mean double altitude given in the foregoing table we obtain an equation of this form,

$$a = x + p\pi + q\Delta + 2t\mu;$$

in which a is the excess of the tabular mean double altitude above 127° 31′ 20″,

p, the coefficient of parallax, $= 1{\cdot}493\, r \cos(\odot + 157° 43')$

q, the coefficient of aberration, $= 1{\cdot}493 \sin(\odot + 157° 43')$

t = the time from January 1, 1840, expressed in parts of a year, negative before the epoch.

r = earth's distance from the sun, the mean distance being = 1.

$\odot$ = sun's longitude.

In these equations x can be assumed to remain constant so long only as the instrument remains the same, and no change is made upon any of the important parts, which may cause an alteration in the instrumental double altitude. In the present series of observations two circles were employed, and the object-glass of the new circle was changed. For these reasons three different quantities are supposed to be represented by x; the first denoted by x' remaining constant from the commencement of the series to June 16, 1839, when the circle was changed; the second, denoted by x'', remaining constant from August 4, 1839, to June 6, 1840, when the object-glass was changed; and the third, denoted by x''', remaining constant from June 12, 1840, to the end of the series.

In like manner, supposing the instrumental mean double altitude of α^2 *Centauri* to be $= 127° 31' 40'' + y$, and the annual proper motion of the star in declination to be $= +0''{\cdot}67 + \mu'$, then equations of this form are obtained:

$$b = y + p\pi + q\Delta + 2t\mu',$$

b being the excess of the tabular mean double altitude above 127° 31′ 40″, and π, Δ, p, and q denoting the same quantities as in the observations of α^1 *Centauri*. For the reasons above mentioned, three different quantities are supposed to be represented by y, and are denoted by y', y'', and y''', which remain constant for the same periods as the corresponding values of x.

From Mr. Maclear's notes it appears that the observations of De-

cember 19 and 28, 1839, and January 15, February 5, 7, 8, and 9, and June 26, 1840, are liable to greater inaccuracies than the others, and a less weight is therefore to be assigned to them in resolving the equations by the method of *minimum* squares. This weight is estimated at $\frac{1}{2}$ or 0·5, that of the others being 1; but, for the convenience of calculation, the original equations for these days are multiplied by 0·7, whence the weight actually assigned to them is 0·49.

The equations for both stars are contained in the annexed Table. In the column titled α^1 there are given the terms represented by a and x, which are applicable to that star only; and in the column titled α^2, the terms represented by b and y, which are applicable to it alone, are given. The other terms depending on π and Δ, and the coefficients of μ and μ' are common to both stars. For an illustration of the Table the equations of April 16, 1839, are, for α^1,

$$7''{\cdot}22 = x' - 1{\cdot}50\,\pi - 0{\cdot}10\,\Delta - 1{\cdot}42\,\mu,$$

and for α^2,

$$9''{\cdot}15 = y' - 1{\cdot}50\,\pi - 0{\cdot}10\,\Delta - 1{\cdot}42\,\mu'.$$

Equations.

Date.	α^1	α^2		Coefficient of μ and μ'.
1839.				
April 16	$7''{\cdot}22 = x'$	$9''{\cdot}15 = y'$	$-1{\cdot}50\,\pi - 0{\cdot}10\,\Delta$	$-1{\cdot}42$
19	$9{\cdot}80 = x'$	$10{\cdot}35 = y'$	$-1{\cdot}49\,\pi - 0{\cdot}18\,\Delta$	$-1{\cdot}40$
20	$6{\cdot}53 = x'$	$6{\cdot}62 = y'$	$-1{\cdot}49\,\pi - 0{\cdot}20\,\Delta$	$-1{\cdot}40$
22	$8{\cdot}46 = x'$	$9{\cdot}29 = y'$	$-1{\cdot}48\,\pi - 0{\cdot}26\,\Delta$	$-1{\cdot}38$
23	$8{\cdot}37 = x'$	$8{\cdot}80 = y'$	$-1{\cdot}48\,\pi - 0{\cdot}28\,\Delta$	$-1{\cdot}38$
24	$10{\cdot}01 = x'$	$11{\cdot}15 = y'$	$-1{\cdot}47\,\pi - 0{\cdot}30\,\Delta$	$-1{\cdot}38$
27	$7{\cdot}13 = x'$	$8{\cdot}47 = y'$	$-1{\cdot}46\,\pi - 0{\cdot}35\,\Delta$	$-1{\cdot}36$
28	$10{\cdot}34 = x'$	$8{\cdot}96 = y'$	$-1{\cdot}45\,\pi - 0{\cdot}37\,\Delta$	$-1{\cdot}36$
May 6	$7{\cdot}24 = x'$	$8{\cdot}94 = y'$	$-1{\cdot}38\,\pi - 0{\cdot}59\,\Delta$	$-1{\cdot}32$
7	$5{\cdot}82 = x'$	$8{\cdot}65 = y'$	$-1{\cdot}37\,\pi - 0{\cdot}62\,\Delta$	$-1{\cdot}30$
8	$6{\cdot}61 = x'$	$6{\cdot}66 = y'$	$-1{\cdot}36\,\pi - 0{\cdot}64\,\Delta$	$-1{\cdot}30$
9	$6{\cdot}22 = x'$	$8{\cdot}50 = y'$	$-1{\cdot}35\,\pi - 0{\cdot}66\,\Delta$	$-1{\cdot}30$

Equations (continued).

Date.	α^1	α^2		Coefficient of μ and μ'.
1839.				
May 10	$6''.76 = x'$	$10''.61 = y'$	$-1{\cdot}34\,\pi - 0{\cdot}68\,\Delta$	$-1{\cdot}30$
12	$4{\cdot}81 = x'$	$9{\cdot}71 = y'$	$-1{\cdot}32\,\pi - 0{\cdot}73\,\Delta$	$-1{\cdot}28$
13	$9{\cdot}45 = x'$	$12{\cdot}99 = y'$	$-1{\cdot}31\,\pi - 0{\cdot}75\,\Delta$	$-1{\cdot}28$
14	$9{\cdot}73 = x'$	$10{\cdot}40 = y'$	$-1{\cdot}29\,\pi - 0{\cdot}77\,\Delta$	$-1{\cdot}26$
21	$8{\cdot}85 = x'$	$9{\cdot}22 = y'$	$-1{\cdot}20\,\pi - 0{\cdot}92\,\Delta$	$-1{\cdot}24$
22	$4{\cdot}84 = x'$	$8{\cdot}85 = y'$	$-1{\cdot}18\,\pi - 0{\cdot}94\,\Delta$	$-1{\cdot}22$
23	$7{\cdot}86 = x'$	$10{\cdot}20 = y'$	$-1{\cdot}16\,\pi - 0{\cdot}95\,\Delta$	$-1{\cdot}22$
June 6	$7{\cdot}13 = x'$	$10{\cdot}11 = y'$	$-0{\cdot}91\,\pi - 1{\cdot}19\,\Delta$	$-1{\cdot}14$
7	$5{\cdot}21 = x'$	$8{\cdot}10 = y'$	$-0{\cdot}89\,\pi - 1{\cdot}21\,\Delta$	$-1{\cdot}14$
9	$6{\cdot}27 = x'$	$9{\cdot}02 = y'$	$-0{\cdot}85\,\pi - 1{\cdot}24\,\Delta$	$-1{\cdot}12$
10	$7{\cdot}76 = x'$	$8{\cdot}49 = y'$	$-0{\cdot}83\,\pi - 1{\cdot}25\,\Delta$	$-1{\cdot}12$
13	$7{\cdot}36 = x'$	$10{\cdot}69 = y'$	$-0{\cdot}76\,\pi - 1{\cdot}29\,\Delta$	$-1{\cdot}10$
15	$8{\cdot}98 = x'$	$11{\cdot}19 = y'$	$-0{\cdot}72\,\pi - 1{\cdot}32\,\Delta$	$-1{\cdot}10$
16	$9{\cdot}98 = x'$	$11{\cdot}78 = y'$	$-0{\cdot}70\,\pi - 1{\cdot}33\,\Delta$	$-1{\cdot}08$
Aug. 4	$7{\cdot}68 = x''$	$11{\cdot}26 = y''$	$+0{\cdot}50\,\pi - 1{\cdot}41\,\Delta$	$-0{\cdot}82$
10	$7{\cdot}67 = x''$	$9{\cdot}59 = y''$	$+0{\cdot}64\,\pi - 1{\cdot}35\,\Delta$	$-0{\cdot}78$
Oct. 16	$12{\cdot}87 = x''$	$12{\cdot}01 = y''$	$+1{\cdot}49\,\pi + 0{\cdot}00\,\Delta$	$-0{\cdot}42$
19	$8{\cdot}94 = x''$	$8{\cdot}37 = y''$	$+1{\cdot}48\,\pi + 0{\cdot}08\,\Delta$	$-0{\cdot}40$
24	$9{\cdot}76 = x''$	$10{\cdot}15 = y''$	$+1{\cdot}48\,\pi + 0{\cdot}21\,\Delta$	$-0{\cdot}38$
29	.....	$10{\cdot}12 = y''$	$+1{\cdot}44\,\pi + 0{\cdot}34\,\Delta$	$-0{\cdot}36$
Nov. 1	$9{\cdot}99 = x''$	$11{\cdot}41 = y''$	$+1{\cdot}42\,\pi + 0{\cdot}39\,\Delta$	$-0{\cdot}34$
12	$9{\cdot}07 = x''$	$11{\cdot}44 = y''$	$+1{\cdot}30\,\pi + 0{\cdot}72\,\Delta$	$-0{\cdot}28$
13	.....	$12{\cdot}89 = y''$	$+1{\cdot}29\,\pi + 0{\cdot}73\,\Delta$	$-0{\cdot}26$
14	$9{\cdot}07 = x''$	$12{\cdot}01 = y''$	$+1{\cdot}28\,\pi + 0{\cdot}75\,\Delta$	$-0{\cdot}26$
15	$9{\cdot}27 = x''$	$13{\cdot}20 = y''$	$+1{\cdot}26\,\pi + 0{\cdot}77\,\Delta$	$-0{\cdot}26$
17	$8{\cdot}11 = x''$	$9{\cdot}44 = y''$	$+1{\cdot}24\,\pi + 0{\cdot}82\,\Delta$	$-0{\cdot}24$
21	$11{\cdot}60 = x''$	$11{\cdot}80 = y''$	$+1{\cdot}18\,\pi + 0{\cdot}90\,\Delta$	$-0{\cdot}22$
Dec. 6	$9{\cdot}06 = x''$	$11{\cdot}25 = y''$	$+0{\cdot}90\,\pi + 1{\cdot}18\,\Delta$	$-0{\cdot}14$
8	$9{\cdot}65 = x''$	$10{\cdot}33 = y''$	$+0{\cdot}86\,\pi + 1{\cdot}21\,\Delta$	$-0{\cdot}12$
12	$8{\cdot}46 = x''$	$10{\cdot}24 = y''$	$+0{\cdot}77\,\pi + 1{\cdot}27\,\Delta$	$-0{\cdot}10$
13	$9{\cdot}43 = x''$	$11{\cdot}26 = y''$	$+0{\cdot}75\,\pi + 1{\cdot}29\,\Delta$	$-0{\cdot}10$
17	$7{\cdot}66 = x''$	$10{\cdot}08 = y''$	$+0{\cdot}66\,\pi + 1{\cdot}34\,\Delta$	$-0{\cdot}08$
19	$5{\cdot}94 = 0{\cdot}7\,x''$	$9{\cdot}32 = 0{\cdot}7\,y''$	$+0{\cdot}43\,\pi + 0{\cdot}95\,\Delta$	$-0{\cdot}06$

Equations (continued).

Date.	α^1 .	α^2		Coefficient of μ and μ'.
1839.				
Dec. 20	$7''\cdot81 = x''$	$8''\cdot75 = y''$	$+0\cdot59\,\pi + 1\cdot37\,\Delta$	$-0\cdot06$
24	$8\cdot66 = x''$	$9\cdot65 = y''$	$+0\cdot49\,\pi + 1\cdot41\,\Delta$	$-0\cdot04$
25	$6\cdot86 = x''$	$9\cdot51 = y''$	$+0\cdot46\,\pi + 1\cdot42\,\Delta$	$-0\cdot04$
28	$6\cdot48 = 0\cdot7\,x''$	$7\cdot86 = 0\cdot7\,y''$	$+0\cdot27\,\pi + 1\cdot01\,\Delta$	$-0\cdot02$
29	$9\cdot90 = x''$	$10\cdot75 = y''$	$+0\cdot36\,\pi + 1\cdot45\,\Delta$	$-0\cdot02$
30	$9\cdot17 = x''$	$10\cdot03 = y''$	$+0\cdot34\,\pi + 1\cdot45\,\Delta$	$0\cdot00$
31	$10\cdot64 = x''$	$10\cdot47 = y''$	$+0\cdot31\,\pi + 1\cdot46\,\Delta$	$0\cdot00$
1840.				
Jan. 1	$9\cdot73 = x''$	$10\cdot99 = y''$	$+0\cdot29\,\pi + 1\cdot46\,\Delta$	$0\cdot00$
2	$8\cdot98 = x''$	$8\cdot88 = y''$	$+0\cdot26\,\pi + 1\cdot47\,\Delta$	$0\cdot00$
3	$9\cdot00 = x''$	$8\cdot87 = y''$	$+0\cdot24\,\pi + 1\cdot47\,\Delta$	$+0\cdot02$
5	$9\cdot42 = x''$	$10\cdot06 = y''$	$+0\cdot18\,\pi + 1\cdot48\,\Delta$	$+0\cdot02$
7	$9\cdot29 = x''$	$10\cdot26 = y''$	$+0\cdot13\,\pi + 1\cdot49\,\Delta$	$+0\cdot04$
8	$8\cdot76 = x''$	$9\cdot61 = y''$	$+0\cdot11\,\pi + 1\cdot49\,\Delta$	$+0\cdot04$
10	$8\cdot00 = x''$	$8\cdot62 = y''$	$+0\cdot06\,\pi + 1\cdot49\,\Delta$	$+0\cdot06$
11	$6\cdot29 = x''$	$6\cdot17 = y''$	$+0\cdot03\,\pi + 1\cdot49\,\Delta$	$+0\cdot06$
13	$8\cdot21 = x''$	$9\cdot15 = y''$	$-0\cdot02\,\pi + 1\cdot49\,\Delta$	$+0\cdot08$
14	$7\cdot84 = x''$	$9\cdot52 = y''$	$-0\cdot05\,\pi + 1\cdot49\,\Delta$	$+0\cdot08$
15	$3\cdot99 = 0\cdot7\,x''$	$5\cdot34 = 0\cdot7\,y''$	$-0\cdot05\,\pi + 1\cdot04\,\Delta$	$+0\cdot06$
16	$6\cdot14 = x''$	$7\cdot94 = y''$	$-0\cdot10\,\pi + 1\cdot49\,\Delta$	$+0\cdot08$
18	$8\cdot76 = x''$	$9\cdot05 = y''$	$-0\cdot15\,\pi + 1\cdot48\,\Delta$	$+0\cdot10$
20	$5\cdot55 = x''$	$6\cdot95 = y''$	$-0\cdot20\,\pi + 1\cdot48\,\Delta$	$+0\cdot10$
24	$6\cdot30 = x''$	$9\cdot64 = y''$	$-0\cdot31\,\pi + 1\cdot46\,\Delta$	$+0\cdot12$
25	$6\cdot91 = x''$	$8\cdot84 = y''$	$-0\cdot33\,\pi + 1\cdot46\,\Delta$	$+0\cdot14$
26	$6\cdot28 = x''$	$8\cdot74 = y''$	$-0\cdot36\,\pi + 1\cdot45\,\Delta$	$+0\cdot14$
27	$8\cdot13 = x''$	$10\cdot50 = y''$	$-0\cdot38\,\pi + 1\cdot44\,\Delta$	$+0\cdot14$
29	$7\cdot36 = x''$	$9\cdot57 = y''$	$-0\cdot43\,\pi + 1\cdot43\,\Delta$	$+0\cdot16$
31	$8\cdot73 = x''$	$9\cdot69 = y''$	$-0\cdot48\,\pi + 1\cdot41\,\Delta$	$+0\cdot16$
Feb. 1	$8\cdot44 = x''$	$9\cdot67 = y''$	$-0\cdot51\,\pi + 1\cdot40\,\Delta$	$+0\cdot18$
5	$5\cdot28 = 0\cdot7\,x''$	$8\cdot41 = 0\cdot7\,y''$	$-0\cdot42\,\pi + 0\cdot95\,\Delta$	$+0\cdot14$
6	$6\cdot78 = x''$	$9\cdot66 = y''$	$-0\cdot63\,\pi + 1\cdot35\,\Delta$	$+0\cdot20$
7	$4\cdot68 = 0\cdot7\,x''$	$5\cdot96 = 0\cdot7\,y''$	$-0\cdot46\,\pi + 0\cdot94\,\Delta$	$+0\cdot14$
8	$6\cdot27 = 0\cdot7\,x''$	$7\cdot85 = 0\cdot7\,y''$	$-0\cdot47\,\pi + 0\cdot93\,\Delta$	$+0\cdot16$
9	$5\cdot59 = 0\cdot7\,x''$	$5\cdot53 = 0\cdot7\,y''$	$-0\cdot49\,\pi + 0\cdot92\,\Delta$	$+0\cdot16$

Equations (continued).

Date.	α^1	α^2		Coefficient of μ and μ'.
1840.				
Feb. 12	$7''\cdot28 = x''$	$9''\cdot20 = y''$	$-0\cdot77\,\pi + 1\cdot28\,\Delta$	$+0\cdot24$
13	$7\cdot62 = x''$	$8\cdot36 = y''$	$-0\cdot79\,\pi + 1\cdot26\,\Delta$	$+0\cdot24$
19	$7\cdot10 = x''$	$8\cdot58 = y''$	$-0\cdot92\,\pi + 1\cdot17\,\Delta$	$+0\cdot28$
20	$7\cdot00 = x''$	$8\cdot08 = y''$	$-0\cdot94\,\pi + 1\cdot16\,\Delta$	$+0\cdot28$
21	$8\cdot62 = x''$	$9\cdot95 = y''$	$-0\cdot96\,\pi + 1\cdot14\,\Delta$	$+0\cdot28$
23	$7\cdot23 = x''$	$10\cdot38 = y''$	$-1\cdot00\,\pi + 1\cdot10\,\Delta$	$+0\cdot30$
24	$10\cdot07 = x''$	$10\cdot88 = y''$	$-1\cdot02\,\pi + 1\cdot09\,\Delta$	$+0\cdot30$
25	$6\cdot77 = x''$	$10\cdot40 = y''$	$-1\cdot03\,\pi + 1\cdot07\,\Delta$	$+0\cdot30$
26	$6\cdot60 = x''$	$7\cdot95 = y''$	$-1\cdot05\,\pi + 1\cdot05\,\Delta$	$+0\cdot32$
Mar. 2	$8\cdot77 = x''$	$8\cdot81 = y''$	$-1\cdot14\,\pi + 0\cdot95\,\Delta$	$+0\cdot34$
3	$7\cdot73 = x''$	$9\cdot41 = y''$	$-1\cdot16\,\pi + 0\cdot93\,\Delta$	$+0\cdot34$
5	$6\cdot92 = x''$	$9\cdot35 = y''$	$-1\cdot19\,\pi + 0\cdot89\,\Delta$	$+0\cdot36$
6	$5\cdot96 = x''$	$8\cdot47 = y''$	$-1\cdot20\,\pi + 0\cdot87\,\Delta$	$+0\cdot36$
8	$6\cdot57 = x''$	$7\cdot95 = y''$	$-1\cdot24\,\pi + 0\cdot83\,\Delta$	$+0\cdot36$
April 6	$6\cdot59 = x''$	$7\cdot35 = y''$	$-1\cdot49\,\pi + 0\cdot13\,\Delta$	$+0\cdot52$
10	$7\cdot88 = x''$	$8\cdot42 = y''$	$-1\cdot50\,\pi + 0\cdot03\,\Delta$	$+0\cdot56$
11	$6\cdot51 = x''$	$6\cdot81 = y''$	$-1\cdot50\,\pi + 0\cdot00\,\Delta$	$+0\cdot56$
12	$4\cdot77 = x''$	$7\cdot16 = y''$	$-1\cdot50\,\pi - 0\cdot02\,\Delta$	$+0\cdot56$
14	$7\cdot34 = x''$	$8\cdot34 = y''$	$-1\cdot50\,\pi - 0\cdot07\,\Delta$	$+0\cdot58$
15	$5\cdot04 = x''$	$8\cdot22 = y''$	$-1\cdot50\,\pi - 0\cdot10\,\Delta$	$+0\cdot58$
16	$7\cdot16 = x''$	$8\cdot37 = y''$	$-1\cdot50\,\pi - 0\cdot12\,\Delta$	$+0\cdot58$
17	$7\cdot98 = x''$	$8\cdot74 = y''$	$-1\cdot49\,\pi - 0\cdot15\,\Delta$	$+0\cdot58$
20	$6\cdot57 = x''$	$8\cdot23 = y''$	$-1\cdot48\,\pi - 0\cdot22\,\Delta$	$+0\cdot60$
22	$8\cdot72 = x''$	$8\cdot97 = y''$	$-1\cdot48\,\pi - 0\cdot27\,\Delta$	$+0\cdot62$
24	$6\cdot96 = x''$	$7\cdot24 = y''$	$-1\cdot47\,\pi - 0\cdot32\,\Delta$	$+0\cdot62$
26	$6\cdot42 = x''$	$8\cdot78 = y''$	$-1\cdot46\,\pi - 0\cdot37\,\Delta$	$+0\cdot64$
27	$5\cdot76 = x''$	$7\cdot97 = y''$	$-1\cdot45\,\pi - 0\cdot40\,\Delta$	$+0\cdot64$
30	$7\cdot15 = x''$	$8\cdot86 = y''$	$-1\cdot43\,\pi - 0\cdot47\,\Delta$	$+0\cdot66$
May 1	$7\cdot98 = x''$	$7\cdot43 = y''$	$-1\cdot42\,\pi - 0\cdot49\,\Delta$	$+0\cdot66$
8	$6\cdot95 = x''$	$8\cdot15 = y''$	$-1\cdot36\,\pi - 0\cdot66\,\Delta$	$+0\cdot70$
9	$5\cdot40 = x''$	$6\cdot29 = y''$	$-1\cdot34\,\pi - 0\cdot68\,\Delta$	$+0\cdot70$
14	$7\cdot27 = x''$	$8\cdot82 = y''$	$-1\cdot28\,\pi - 0\cdot79\,\Delta$	$+0\cdot74$
15	$6\cdot83 = x''$	$7\cdot46 = y''$	$-1\cdot27\,\pi - 0\cdot81\,\Delta$	$+0\cdot74$

Equations (continued).

Date.	α^1	α^2		Coefficient of μ and μ'.
1840.				
May 16	$7''.51 = x''$	$8''.69 = y''$	$-1{\cdot}26\,\pi - 0{\cdot}83\,\Delta$	$+0{\cdot}74$
18	$6{\cdot}84 = x''$	$8{\cdot}25 = y''$	$-1{\cdot}23\,\pi - 0{\cdot}87\,\Delta$	$+0{\cdot}76$
19		$8{\cdot}55 = y''$	$-1{\cdot}21\,\pi - 0{\cdot}89\,\Delta$	$+0{\cdot}76$
20	$6{\cdot}86 = x''$	$7{\cdot}09 = y''$	$-1{\cdot}20\,\pi - 0{\cdot}91\,\Delta$	$+0{\cdot}76$
21	$7{\cdot}09 = x''$	$7{\cdot}82 = y''$	$-1{\cdot}18\,\pi - 0{\cdot}93\,\Delta$	$+0{\cdot}78$
23	$7{\cdot}50 = x''$	$7{\cdot}87 = y''$	$-1{\cdot}15\,\pi - 0{\cdot}97\,\Delta$	$+0{\cdot}78$
30	$7{\cdot}51 = x''$	$8{\cdot}71 = y''$	$-1{\cdot}03\,\pi - 1{\cdot}10\,\Delta$	$+0{\cdot}82$
31	$6{\cdot}04 = x''$	$8{\cdot}49 = y''$	$-1{\cdot}01\,\pi - 1{\cdot}11\,\Delta$	$+0{\cdot}82$
June 3	$4{\cdot}26 = x''$	$9{\cdot}34 = y''$	$-0{\cdot}96\,\pi - 1{\cdot}16\,\Delta$	$+0{\cdot}84$
6	$4{\cdot}90 = x''$	$7{\cdot}01 = y''$	$-0{\cdot}90\,\pi - 1{\cdot}21\,\Delta$	$+0{\cdot}86$
12	$7{\cdot}13 = x'''$	$7{\cdot}33 = y'''$	$-0{\cdot}77\,\pi - 1{\cdot}29\,\Delta$	$+0{\cdot}90$
16	$5{\cdot}57 = x'''$	$7{\cdot}92 = y'''$	$-0{\cdot}68\,\pi - 1{\cdot}33\,\Delta$	$+0{\cdot}92$
17	$6{\cdot}70 = x'''$	$8{\cdot}26 = y'''$	$-0{\cdot}66\,\pi - 1{\cdot}34\,\Delta$	$+0{\cdot}92$
20	$7{\cdot}77 = x'''$	$8{\cdot}25 = y'''$	$-0{\cdot}59\,\pi - 1{\cdot}38\,\Delta$	$+0{\cdot}94$
23	$7{\cdot}20 = x'''$	$8{\cdot}75 = y'''$	$-0{\cdot}52\,\pi - 1{\cdot}40\,\Delta$	$+0{\cdot}96$
24	$7{\cdot}44 = x'''$	$8{\cdot}62 = y'''$	$-0{\cdot}50\,\pi - 1{\cdot}41\,\Delta$	$+0{\cdot}96$
25	$6{\cdot}86 = x'''$	$7{\cdot}38 = y'''$	$-0{\cdot}47\,\pi - 1{\cdot}42\,\Delta$	$+0{\cdot}96$
26	$5{\cdot}08 = 0{\cdot}7\,x'''$	$6{\cdot}32 = 0{\cdot}7\,y'''$	$-0{\cdot}31\,\pi - 1{\cdot}00\,\Delta$	$+0{\cdot}68$
27	$7{\cdot}09 = x'''$	$8{\cdot}18 = y'''$	$-0{\cdot}42\,\pi - 1{\cdot}44\,\Delta$	$+0{\cdot}98$
July 1	$5{\cdot}12 = x'''$	$7{\cdot}03 = y'''$	$-0{\cdot}33\,\pi - 1{\cdot}46\,\Delta$	$+1{\cdot}00$
2	$6{\cdot}30 = x'''$	$7{\cdot}12 = y'''$	$-0{\cdot}30\,\pi - 1{\cdot}46\,\Delta$	$+1{\cdot}00$
9	$6{\cdot}38 = x'''$	$8{\cdot}14 = y'''$	$-0{\cdot}13\,\pi - 1{\cdot}49\,\Delta$	$+1{\cdot}04$
10	$7{\cdot}17 = x'''$	$9{\cdot}50 = y'''$	$-0{\cdot}10\,\pi - 1{\cdot}49\,\Delta$	$+1{\cdot}04$
27	$7{\cdot}14 = x'''$	$7{\cdot}23 = y'''$	$+0{\cdot}32\,\pi - 1{\cdot}46\,\Delta$	$+1{\cdot}14$
Aug. 10	$7{\cdot}00 = x'''$	$9{\cdot}18 = y'''$	$+0{\cdot}66\,\pi - 1{\cdot}35\,\Delta$	$+1{\cdot}22$
11	$7{\cdot}60 = x'''$	$9{\cdot}00 = y'''$	$+0{\cdot}68\,\pi - 1{\cdot}34\,\Delta$	$+1{\cdot}22$
12		$9{\cdot}02 = y'''$	$+0{\cdot}70\,\pi - 1{\cdot}32\,\Delta$	$+1{\cdot}22$

These equations being resolved by the method of *minimum* squares, x', x'', x''', y', y'', y''', π and Δ being taken for the unknown quantities, we obtain final equations as follows:

From Observations of α^1 Centauri.

I. From 26 observations of April 16—June 16, 1839.

$$\begin{aligned} 198''.74 &= 26\,x' - 31{\cdot}74\,\pi - 19{\cdot}12\,\Delta - 32{\cdot}90\,\mu \\ -243{\cdot}2671 &= -31{\cdot}74\,x' + 40{\cdot}6332\,\pi + 20{\cdot}7078\,\Delta + 40{\cdot}8928\,\mu \\ -143{\cdot}6064 &= -19{\cdot}12\,x' + 20{\cdot}7078\,\pi + 18{\cdot}0944\,\Delta + 23{\cdot}1146\,\mu \end{aligned}$$

Whence, by eliminating x',

$$\begin{aligned} -0''.6449 &= 1{\cdot}8850\,\pi - 2{\cdot}6338\,\Delta + 0{\cdot}7282\,\mu \quad (1) \\ 2{\cdot}5469 &= -2{\cdot}6338\,\pi + 4{\cdot}0337\,\Delta - 1{\cdot}0798\,\mu \quad (2) \end{aligned}$$

II. From 92 observations of August 4, 1839—June 6, 1840.

$$\begin{aligned} 685''.021 &= 88{\cdot}43\,x'' - 35{\cdot}473\,\pi + 52{\cdot}038\,\Delta + 20{\cdot}526\,\mu \\ -197{\cdot}4325 &= -35{\cdot}473\,x'' + 90{\cdot}2689\,\pi + 11{\cdot}0137\,\Delta - 35{\cdot}5160\,\mu \\ 444{\cdot}9269 &= 52{\cdot}038\,x'' + 11{\cdot}0137\,\pi + 107{\cdot}0904\,\Delta - 3{\cdot}3840\,\mu \end{aligned}$$

Whence, by eliminating x'',

$$\begin{aligned} 77''.3550 &= 76{\cdot}0389\,\pi + 31{\cdot}8885\,\Delta - 27{\cdot}2820\,\mu \quad (3) \\ 41{\cdot}8178 &= 31{\cdot}8885\,\pi + 76{\cdot}4683\,\Delta - 15{\cdot}4630\,\mu \quad (4) \end{aligned}$$

III. From 16 observations of June 12—August 11, 1840.

$$\begin{aligned} 106''.026 &= 15{\cdot}49\,x''' - 4{\cdot}027\,\pi - 21{\cdot}76\,\Delta + 15{\cdot}676\,\mu \\ -\ 26{\cdot}5780 &= -4{\cdot}027\,x''' + 4{\cdot}0790\,\pi + 5{\cdot}6046\,\Delta - 3{\cdot}4044\,\mu \\ -148{\cdot}8287 &= -21{\cdot}76\,x''' + 5{\cdot}6046\,\pi + 30{\cdot}6242\,\Delta - 22{\cdot}0332\,\mu \end{aligned}$$

Whence, by eliminating x''',

$$\begin{aligned} 0''.9864 &= 3{\cdot}0321\,\pi - 0{\cdot}0524\,\Delta + 0{\cdot}6710\,\mu \quad (5) \\ 0{\cdot}1180 &= -0{\cdot}0524\,\pi + 0{\cdot}0562\,\Delta - 0{\cdot}0118\,\mu \quad (6) \end{aligned}$$

From Observations of α^2 Centauri.

I. From 26 observations of April 16—June 16, 1839.

$$\begin{aligned} 246''.90 &= 26\,y' - 31{\cdot}74\,\pi - 19{\cdot}12\,\Delta - 32{\cdot}90\,\mu' \\ -298{\cdot}6090 &= -31{\cdot}74\,y' + 40{\cdot}6332\,\pi + 20{\cdot}7078\,\Delta + 40{\cdot}8928\,\mu' \\ -185{\cdot}5186 &= -19{\cdot}12\,y' + 20{\cdot}7078\,\pi + 18{\cdot}0944\,\Delta + 23{\cdot}1146\,\mu'. \end{aligned}$$

Whence, by eliminating y',

$$\begin{aligned} 2''.8043 &= 1{\cdot}8850\,\pi - 2{\cdot}6338\,\Delta + 0{\cdot}7282\,\mu' \quad (7) \\ -3{\cdot}9519 &= -2{\cdot}6338\,\pi + 4{\cdot}0337\,\Delta - 1{\cdot}0798\,\mu' \quad (8) \end{aligned}$$

II. From 95 observations of August 4, 1839 – June 6, 1840.

$$\begin{aligned} 844''.779 &= 91{\cdot}43\,y'' - 33{\cdot}953\,\pi + 52{\cdot}218\,\Delta + 20{\cdot}666\,\mu' \\ -228{\cdot}8922 &= -33{\cdot}953\,y'' + 95{\cdot}4707\,\pi + 13{\cdot}5219\,\Delta - 37{\cdot}2894\,\mu' \\ 524{\cdot}8335 &= 52{\cdot}218\,y'' + 13{\cdot}5219\,\pi + 108{\cdot}5310\,\Delta - 4{\cdot}3926\,\mu' \end{aligned}$$

Whence, by eliminating y'',

$$\begin{aligned} 84''.8221 &= 82{\cdot}8621\,\pi + 32{\cdot}9133\,\Delta - 29{\cdot}6148\,\mu' \quad (9) \\ 42{\cdot}3668 &= 32{\cdot}9133\,\pi + 78{\cdot}7081\,\Delta - 16{\cdot}1954\,\mu' \quad (10) \end{aligned}$$

III. From 17 observations of June 12 – August 12, 1840.

$$\begin{aligned} 135''.334 &= 16{\cdot}49\,y''' - 3{\cdot}327\,\pi - 23{\cdot}08\,\Delta + 16{\cdot}896\,\mu' \\ -\ 24{\cdot}7299 &= -3{\cdot}327\,y''' + 4{\cdot}5690\,\pi + 4{\cdot}6806\,\Delta - 2{\cdot}5504\,\mu' \\ -189{\cdot}2835 &= -23{\cdot}08\,y''' + 4{\cdot}6806\,\pi + 32{\cdot}3666\,\Delta - 23{\cdot}6436\,\mu' \end{aligned}$$

Whence, by eliminating y''',

$$\begin{aligned} 2''.5751 &= 3{\cdot}8978\,\pi + 0{\cdot}0240\,\Delta + 0{\cdot}8584\,\mu' \quad (11) \\ 0{\cdot}1382 &= 0{\cdot}0240\,\pi + 0{\cdot}0623\,\Delta + 0{\cdot}0048\,\mu' \quad (12) \end{aligned}$$

To obtain the values of π and Δ derived from all the observations of both stars made with both circles, on the assumption that both stars have the same parallax, we add together equations (1), (3), (5), (7), (9), and (11); and also equations (2), (4), (6), (8), (10), and (12). The two sums are the two following equations:

$$\begin{aligned} 167''.8980 &= 169{\cdot}6009\,\pi + 59{\cdot}5058\,\Delta - 25{\cdot}8828\,\mu - 28{\cdot}0282\,\mu' \quad (13) \\ 83{\cdot}0358 &= 59{\cdot}5058\,\pi + 163{\cdot}3623\,\Delta - 16{\cdot}5546\,\mu - 17{\cdot}2704\,\mu' \quad (14) \end{aligned}$$

Whence $\pi = +0''.9306 + 0{\cdot}1344\,\mu + 0{\cdot}1468\,\mu'$. Weight 147·93 observations.
$\Delta = +0{\cdot}1693 + 0{\cdot}0508\,\mu + 0{\cdot}0540\,\mu'$. —— 142·47 ——

The values of π and Δ, deduced from the observations of each star taken separately, are found by adding together equations (1), (3), and (5); and also equations (2), (4), and (6); whence we obtain two equations for the determination of π and Δ, derived from the observations of α^1 *Centauri;* and by adding together equations (7), (9), and (11), and also equations (8), (10), and (12); whence we obtain other two equations derived from the observations of α^2 *Centauri.* The first set of equations are

$$\begin{aligned} 77''.6965 &= 80{\cdot}0560\,\pi + 29{\cdot}2023\,\Delta - 25{\cdot}8828\,\mu \quad (15) \\ 44{\cdot}4827 &= 29{\cdot}2023\,\pi + 80{\cdot}5582\,\Delta - 16{\cdot}5546\,\mu \quad (16) \end{aligned}$$

Whence $\pi = +0''.8750 + 0.2826\,\mu$. Weight 70·37 observations,
$\Delta = +0.2350 + 0.1032\,\mu$. —— 70·02 ——

deduced from the observations of α^1 *Centauri* made with both circles.

The second set of equations are

$$90''.2015 = 88.6449\,\pi + 30.3035\,\Delta - 28.0282\,\mu' \qquad (17)$$
$$38.5531 = 30.3035\,\pi + 82.8041\,\Delta - 17.2704\,\mu' \qquad (18)$$

Whence $\pi = +0''.9811 + 0.2800\,\mu'$. Weight 77·56 observations,
$\Delta = +0.1065 + 0.1062\,\mu'$. —— 72·45 ——

deduced from the observations of α^2 *Centauri* made with both circles.

The observations made with the old circle extend over a period of two months only, and are therefore insufficient of themselves to determine the values of π and Δ with the requisite accuracy. From the observations made with the new circle they are thus deduced:—

I. *Observations of both Stars.*

Equations (3) + (5) + (9) + (11) =

$$165''.7386 = 165.8309\,\pi + 64.7734\,\Delta - 26.6110\,\mu - 28.7564\,\mu' \qquad (19)$$

Equations (4) + (6) + (10) + (12) =

$$84.4408 = 64.7734\,\pi + 155.2949\,\Delta - 15.4512\,\mu - 16.1906\,\mu' \qquad (20)$$

Whence $\pi = +0''.9403 + 0.1548\,\mu + 0.1584\,\mu'$. Weight 138·81 observations,
$\Delta = +0.1517 + 0.0326\,\mu + 0.0406\,\mu'$. —— 129·97 ——

II. *Observations of α^1 Centauri.*

Equations (3) + (5) =

$$78''.3414 = 79.0710\,\pi + 31.8361\,\Delta - 26.6110\,\mu \qquad (21)$$

Equations (4) + (6) =

$$41.9358 = 31.8361\,\pi + 76.5245\,\Delta - 15.4512\,\mu \qquad (22)$$

Whence $\pi = +0''.9251 + 0.3266\,\mu$. Weight 65·83 observations,
$\Delta = +0.1631 + 0.0664\,\mu$. —— 63·71 ——

III. *Observations of α^2 Centauri.*

Equations (9) + (11) =

$$87''.3972 = 86.7599\,\pi + 32.9373\,\Delta - 28.7564\,\mu' \qquad (23)$$

Equations (10) + (12) =

$$42.5050 = 32.9373\,\pi + 78.7704\,\Delta - 16.1906\,\mu' \qquad (24)$$

Whence $\pi = +0''.9539 + 0.3012\,\mu'$. Weight 72·99 observations,
$\Delta = +0.1407 + 0.0796\,\mu'$. —— 66·27 ——

If the coefficient of aberration be assumed 20″·36, as in the Astronomical Society's Catalogue, then Δ is to be put = 0 in the equations, and the value of π is then determined as follows:

I. *From the Observations with both Circles.*

1. *Of both Stars.*

From Equation (13).

$$167''.8980 = 169.6009\,\pi - 25.8828\,\mu - 28.0282\,\mu'.$$

Whence $\pi = +0''.9899 + 0.1526\,\mu + 0.1653\,\mu'$. Weight 169·60 observations.

2. *Of α^1 Centauri.*

From Equation (15).

$$77''.7965 = 80.9560\,\pi - 25.8828\,\mu.$$

Whence $\pi = +0''.9597 + 0.3198\,\mu$. Weight 80·96 observations.

3. *Of α^2 Centauri.*

From Equation (17).

$$90''.2015 = 88.6449\,\pi - 28.0282\,\mu'.$$

Whence $\pi = +1''.0176 + 0.3162\,\mu'$. Weight 88·64 observations.

II. *From the Observations with the new Circle.*

1. *Of both Stars.*

From Equation (19).

$$165''.7386 = 165.8309\,\pi - 26.6110\,\mu - 28.7564\,\mu'.$$

Whence $\pi = +0''.9994 + 0.1605\,\mu + 0.1734\,\mu'$. Weight 165·83 observations.

2. *Of α^1 Centauri.*

From Equation (21).

$$78''.3414 = 79.0710\,\pi - 26.6110\,\mu.$$

Whence $\pi = +0''.9908 + 0.3366\,\mu$. Weight 79·07 observations.

3. *Of α^2 Centauri.*

From Equation (23).

$$87''.3972 = 86.7599\,\pi - 28.7564\,\mu'.$$

Whence $\pi = +1''.0073 + 0.3314\,\mu'$. Weight 88·76 observations.

The values of x', x'', x''', y', y'', and y''', found, after substituting in the

equations obtained from all the observations of both stars the values of π and Δ deduced from the same equations, are

x'	$= 8''.905$	y'	$= 10''.757$
x''	$= 8.019$	y''	$= 9.489$
x'''	$= 7.294$	y'''	$= 8.632$

Whence it is inferred that the difference of the declinations of the two stars for January 1, 1840, was $10''.76$; and that their mean double altitudes for the same epoch were

α^1	$127^\circ\ 31'\ 28''.1$
α^2	$127\ 31\ 49.6$

Their zenith distances were, consequently,

α^1	$26^\circ\ 14'\ 15''.95$
α^2	$26\ 14\ 5.20$

On comparing these with the zenith distances for the beginning of 1833, obtained from my observations, the variations of the declinations in seven years are found to be

α^1	$-\ 1'\ 43''.29$
α^2	$-\ 1\ 47.44$

Whence the annual proper motions in declination are

α^1	$+\ 1''.23$
α^2	$+\ 0.64$

Consequently, μ is $= -0''.10$ and $\mu' = -0''.03$.

Substituting these quantities in the values of π and Δ, obtained from all the observations of both stars made with both circles, we obtain

$$\pi = +\ 0''.9128$$
$$\Delta = +\ 0.1626$$

as the most probable values deduced from all the observations. The coefficient of aberration is consequently $= 20''.36 + 0''.16 = 20''.52$.

On substituting the values of π and Δ in the 272 equations of condition, the sum of the squares of the residual errors is 361·21; whence the probable

error of one observation of double altitude is 0″·779; and the probable errors of the values of π and Δ last given are

$$\text{of } \pi = \frac{0''\cdot779}{\sqrt{147\cdot93}} = 0''\cdot0640$$

$$\text{of } \Delta = \frac{0''\cdot779}{\sqrt{142\cdot47}} = 0''\cdot0652$$

The results given in the abstract of these investigations published in the *Monthly Notice* of the Society for March 1842, differ sometimes two or three hundredths of a second from those given in this memoir. The cause of the difference is that the former were obtained before the corrections were applied for nutation, depending on twice the moon's longitude, and for the proper motions of the stars or the quantities μ and μ'.

The two stars appear to be approaching each other. The earliest observations of α *Centauri* made with a telescope, which I have found, are those of RICHER at Cayenne, in 1673; but neither he, nor HALLEY, who observed it at St. Helena in 1677, mentions it as being double. Their telescopes were of course unachromatic, and probably not of much power. FEUILLÉE appears to have been the first person who observed the star to be double. In the Journal of his observations made in South America he states, that being at Conception, in Chili, in July 1709, "J'observai avec une lunette de 18 pieds l'étoile de la première grandeur, qui est au pied boréal du devant du *Centaure;* je trouvai cette étoile composée de deux, dont l'une est de la troisième grandeur, et l'autre de la quatrième. Celle de la quatrième grandeur est la plus occidentale, et leur distance est égale au diamétre de cette étoile." (*Journal des Observations Physiques*, &c., par LOUIS FEUILLÉE, Tome I. p. 425. Paris, 1714). LA CONDAMINE observed the star during the scientific expedition to Peru for measuring an arc of the meridian; and he states (*Philosophical Transactions* for 1749, p. 142): "Pes sequens sive orientalior *Centauri* α, stella primæ quoque magnitudinis, quæ *Capellam* videtur æmulari, imò fulgore et magnitudine superare, etiam duplex est, constatque duabus stellis, quarum minor e majoris sinu emergere vix notatur optimo telescopio tripedali. Hæc etiam illa borealior est, ac paulò australior."* From LA CAILLE's observations in 1751–2, the distance of the two stars appears to have been then 22″·5. MASKELYNE, who observed them at

* *Australior* is supposed to be a typographical error for *orientalior*.

St. Helena in 1761, says (*Philosophical Transactions* for 1764, p. 383), "The bright star in the foot of the *Centaur*, marked α in the catalogues, when viewed through a telescope, becomes divided into two stars, one of which is about the second, and the other about the fourth magnitude. They were both observed by the Abbé de la Caille. I found their distance by the divided object-glass micrometer, fitted to the reflecting telescope, to be 15″ or 16″. But it is in a manner impossible to measure the distance of two stars very accurately with this micrometer, for being similar lucid objects when brought very near each other, their light will be confounded together before they exactly coincide." I have not found any observations of the distance of the two stars made between 1761 and the institution of the Paramatta Observatory. Mr. Dunlop, in the end of 1825 or beginning of 1826, found the distance to be 23″ (*Memoirs of Astronomical Society*, Vol. III. p. 265), since which time it has been decreasing at the rate of more than half a second *per annum*. The angle of position scarcely appears to have changed since La Caille's time. Whence it may be inferred, that the relative orbit is seen projected into a straight line or very eccentric ellipse; that an apparent maximum of distance was attained in the end of the last or the beginning of the present century; and that about twenty years hence the stars will probably be seen very near each other, or in apparent contact; but the *data* are at present insufficient to give even an approximation to the major axis of the orbit and time of revolution.

T. HENDERSON.

Edinburgh, March 29, 1842.

XVI. *Extract from a letter from M. Marian Köller, Director of the Observatory at Kremsmünster, to Francis Baily, Esq., accompanying a Catalogue of* 208 *Stars.*

Read March 11, 1842.

MONSIEUR,

J'ai eu l'honneur de vous présenter à Londres une partie des observations faites au cercle méridien de notre observatoire pour constater ou corriger les positions des étoiles que vous avez bien voulu publier dans " l'Address to Astronomical Observers, relative to the improvement and extension of the Astronomical Society's Catalogue of 2881 principal stars," et j'ai eu le plaisir de vous promettre le reste et les valeurs moyennes de toutes les observations aussitôt que possible. Etant de retour chez moi, j'avois le plaisir de trouver bientôt la Cométe d'Encke, dont les observations et les calculs me coutoient assez de tems ; d'ailleurs les observations des étoiles étant nombreuses, je ne pouvais en achever les reductions qu'avant peu de jours. Excusez donc, Monsieur, que je m'acquitte de ma promesse plus tard que je ne le désirois. Les reductions ont été faites selon la première formule de Mr. Bessel alleguée dans *Berliner Astronomisches Jahrbuch,* p. 188, et en faisant usage des constantes qu'on trouve p. 196 du même ouvrage. Toutes les étoiles sont reduites au commencement de l'année 1838. Dans le calcul de la refraction je me servais des tables contenues dans Bessel's *Tabulæ Regiomontanæ.* Les observations confirmérent ce que vous avez avancé; c'est à dire, que les étoiles 337 *Fornacis,* 42 *Virginis,* et 2460 *Capricorni,* ne peuvent plus être retrouvées. L'harmonie entre les observations d'une même étoile me prouva suffisamment l'exactitude et la bonté des observations, et je regrette seulement de n'avoir pas pu faire de quelques étoiles un plus grand nombre d'observations. Espérant que vous, Monsieur, trouverez les observations