1888	Cord. M. T.	$\Delta\alpha$	$\Delta\delta$	Cp.	α app.	$\log p.A$	δ app.	$\log p.A$	Red. ad l. app.	*
Planet (71) Niobe.										
July 10	9 ^h 40 ^m 13 ^s .0	+2 ^m 11 ^s .74	— 9' 5".6	10	19 ^h 48 ^m 27 ^s .14	9.643 _n	—39° 1' 22".6	8.799 _n	+2 ^s .59 +10".9	1
13	10 33 46.6	—2 0.63	+10 43.2	3	19 44 14.80	9.439 _n	—38 41 32.4	9.842	+2.59 +10.9	1
14	8 25 24.0	—1 30.95	+ 5 43.8	10	19 42 59.68	9.723 _n	—38 35 4.5	9.948 _n	+2.63 +10.4	2
16	8 15 25.3	—0 55.44	— 4 21.4	10	19 40 16.77	9.722 _n	—38 20 20.3	9.965 _n	+2.64 + 9.9	3
17	8 20 4.8	—1 53.68	— 5 23.7	9	19 38 54.97	9.712 _n	—38 12 34.6	9.914 _n	+2.65 + 9.8	4
20	7 45 0.4	—1 11.74	— 0 35.2	11	19 34 59.64	9.735 _n	—37 48 31.5	0.075 _n	+2.69 + 9.3	5
21	7 45 20.7	—1 47.40	+ 1 52.4	5	19 33 41.85	9.727 _n	—37 40 0.3	0.045 _n	+2.71 + 9.2	6
22	8 38 25.4	—0 15.72	+ 8 7.1	10	19 32 22.77	9.611 _n	—37 31 3.8	9.368 _n	+2.72 + 8.9	7
25	8 9 16.2	+2 13.34	+ 1 57.5	8	19 28 42.18	9.655 _n	—37 4 6.1	9.681 _n	+2.73 + 8.2	8
25	8 23 21.0	+0 9.24	— 1 12.2	8	19 28 41.27	9.628 _n	—37 4 0.8	9.454 _n	+2.73 + 8.3	9
27	10 3 50.8	—2 11.98	— 4 34.7	9	19 26 15.59	9.195 _n	—36 44 27.7	9.847	+2.72 + 8.1	10

July 13. Through clouds, poor. — July 14. Dense haze. — July 25. Clouds and wind. — July 27. Very faint.

Mean Places of the Comparison Stars for 1888.0.

* Mag.	α 1888.0	δ 1888.0	Authority	* Mag.	α 1888.0	δ 1888.0	Authority
For Encke's Comet 1888 II.							
1 9 ³ / ₄	11 ^h 25 ^m 19 ^s .50	—10° 50' 58".9	Cord. Mer.	4 9	17 ^h 16 ^m 48 ^s .68	—27° 19' 11".0	Cord. Mer. (ZC.1085)
2 10	11 31 33.62	—12 6 22.3	Cp. with W ₁ 11 ^h 439	5 7 ¹ / ₂	17 14 5.08	—27 18 14.2	Cord. GC. 23475
3 9 ¹ / ₄	11 43 3.17	—13 12 16.0	Cord. Mer. (W ₁ 716)	6 8	17 13 54.59	—27 13 40.8	Cord. Mer. (ZC.897)
4 8	11 52 50.02	—14 29 31.8	Cord. Mer. (W ₁ 788)	For (71) Niobe.			
5 8 ¹ / ₄	11 53 41.79	—15 25 40.5	Cord. Mer. (W ₁ 890)	1 9	19 46 12.81	—38 52 27.8	Cord. Mer. (ZC.1897)
6 8 ³ / ₄	12 16 4.92	—17 46 44.0	Cord. Mer. (AO ₂)	2 8 ³ / ₄	19 44 28.00	—38 41 8.5	Cord. Mer.
7 9 ¹ / ₄	12 31 53.81	—19 31 17.7	Cord. Mer. (AO ₂)	3 8 ¹ / ₂	19 41 9.57	—38 16 8.8	Cord. Mer. (ZC.1711)
8 6 ³ / ₄	14 45 53.10	—30 6 52.0	Cord. GC. 20135	4 7 ³ / ₄	19 40 45.99	—38 7 20.8	Cord. GC. 27093
9 7	14 52 44.01	—30 15 42.4	Cord. GC. 20313	5 6	19 36 8.68	—37 48 5.6	Cord. GC. 26987
10 6 ¹ / ₂	14 59 45.46	—30 28 57.1	Cord. GC. 20484	6 7 ¹ / ₄	19 35 26.54	—37 42 1.9	Cord. GC. 26971
For (26) Proserpina.				7 8	19 32 35.77	—37 39 19.8	Cord. GC. 26896
1 8 ¹ / ₄	17 33 51.23	—27 20 0.5	Cord. GC. 23949	8 9	19 26 26.11	—37 6 11.8	Cord. GC. 26775
2 8 ³ / ₄	17 30 4.09	—27 1 36.3	Cord. Mer. (ZC.1981)	9 7 ¹ / ₂	19 28 29.30	—37 2 56.9	Cord. GC. 26813
3 9 ¹ / ₄	17 23 33.63	—27 6 49.9	Cord. Mer. (ZC.1542)	10 9 ¹ / ₂	19 28 28.45	—36 40 1.1	Cord. Mer. (ZC.1177)

Cordoba 1889 June 30.

John M. Thome.

Observations of Faye's Comet 1888 IV

by E. E. Barnard, Astronomer of the Lick Observatory.

The following observations of Faye's Comet have been made with the filar micrometer of the 12 inch. equatorial. It was very difficult to observe and has required the utmost care and patience throughout.

It was easily found the same night that the dispatch announcing its discovery at Nice was received, and, I think, it could have been seen here probably from one to two months earlier, had its place been known.

Absence on our eclipse expedition prevented observations during most of December and January, and work on the photographic results of that expedition has delayed the preparation of the observations for printing until now.

Several attempts to refind the comet after the February moon proved futile, as no ephemeris was at hand, and

later, when an ephemeris was received, our bad weather had set in and it was not seen again.

When first looked for on Feb. 4 the comet could not be found at 11^h, but upon very close examination a 9^m star — used later for comparison — was seen to be apparently nebulous, a faint glow almost symmetrically surrounding it. At 11^h15^m54^s M^t Ham. m. t. by careful estimation the center of this nebulosity was certainly not over 2" or 3" following the star, which will give the place with accuracy. Returning to this place later at night the comet was seen to have left the star and was some little distance n. p. where it was observed with the micrometer.

In the observation of Aug. 10 the comet was carefully

watched, until it and the comparison star were exactly on the same parallel — as bisected by the wire — this was then corrected for motion to the epoch of $\Delta\alpha$.

The smallness of the comet has been quite striking. It was at no time over 30" in diameter — a little brighter in the middle — its light being more like that of one of the small indefinite nebulae than that of a comet. It was brightest and easiest to observe about the first part of December.

The comparison star of Feb. 4 was inadvertently compared with the star DM. +2°1734 instead of with W₁ 7^h983, as was at first supposed.

In A. N. 2859, in the Nice Observations, the seconds of right ascension for Aug. 14 should be 59 instead of 49,

as will be seen by applying the $\Delta\alpha$ to the star's place.*)

The value of a revolution of the micrometer screw adopted and used in these observations is $14^{\circ}057 \pm 0^{\circ}004$. The observed $\Delta\alpha$ have been recorded by eye and ear.*

In our micrometer there are but two spider threads, and in observing, a set of $\Delta\delta$ was made and the micrometer revolved 90° and a set of $\Delta\alpha$ taken over the two wires, the micrometer revolved back and another set of $\Delta\delta$ made. With care, the mean of the times for the two sets of $\Delta\delta$ almost always agreed with the mean of the times for $\Delta\alpha$ to one minute. These were then corrected by the known motion to the same epoch.

The observations have been corrected for differential refraction.

Filar Micrometer Observations of Faye's Comet 1888 IV
made with the 12 inch. Equatorial of the Lick Observatory by *E. E. Barnard*.

1888-89	M ^h H. M. T.	$\Delta\alpha$	$\Delta\delta$	Cp.	α app.	$\log p.A$	δ app.	$\log p.A$	Red. ad l. app.	*
Aug. 10	15 ^h 1 ^m 48 ^s	-0 ^m 27 ^s 0.3	- 0' 0".8	8	5 ^h 4 ^m 7 ^s 97	9.672 _n	+19° 58' 12".0	0.622	+0 ^s 52 -2".6	1
11	15 18 44	-1 41.50	+ 0 9.9	9.5	5 6 52.79	9.657 _n	+19 55 49.4	0.604	+0.52 -2.6	2
12	15 15 59	+0 59.89	- 2 23.0	16.12	5 9 34.21	9.660 _n	+19 53 12.0	0.609	+0.55 -2.6	2
13	15 12 32	-1 50.16	- 0 5.8	7.1	—	9.651 _n	—	0.609	+0.55 -2.6	3
14	14 59 38	+0 34.81	+ 5 26.6	7.5	5 14 55.01	9.669 _n	+19 47 24.3	0.619	+0.57 -2.6	4
15	15 15 29	+3 16.77	+ 2 24.3	8.4	5 17 37.01	9.651 _n	+19 44 22.1	0.600	+0.61 -2.5	4
16	15 44 51	+0 27.40	+ 1 2.4	10.3	—	9.624 _n	—	0.563	+0.62 -2.6	5
17	15 30 27	-0 10.88	- 3 36.6	31.4	—	9.638 _n	—	0.588	+0.64 -2.5	6
18	15 38 29	+0 33.51	+ 0 27.3	10.4	5 25 37.61	9.628 _n	+19 33 22.6	0.586	+0.66 -2.5	7
Oct. 7	16 4 0	-0 3.66	+ 3 54.3	12.5	—	9.401 _n	—	0.589	+1.23 -2.8	8
8	16 33 34	-0 20.67	+ 5 50.8	4.3	7 22 14.31	9.283 _n	+12 27 56.5	0.582	+1.41 -3.0	9
15	16 46 50	+0 9.46	+ 6 42.4	16.5	7 33 8.22	9.121 _n	+11 8 10.1	0.593	+1.57 -4.2	10
Nov. 4	16 4 42	+0 41.33	- 4 9.9	14.6	7 58 48.72	9.045 _n	+ 7 10 49.8	0.648	+1.97 -4.8	11
10	15 2 31	-1 3.65	- 5 35.5	12.6	8 4 3.12	9.276 _n	+ 6 2 50.8	0.666	+2.14 -5.5	12
28	12 59 28	-2 36.37	- 0 34.1	10.7	8 12 18.02	9.477 _n	+ 3 0 24.1	0.705	+2.57 -7.4	13
Dec. 1	12 46 11	-0 7.30	- 2 36.8	12.6	8 12 32.76	9.480 _n	+ 2 34 27.4	0.708	+2.66 -7.9	14
2	12 31 21	-0 41.66	- 1 35.1	6.5	8 12 32.92	9.599 _n	+ 2 26 53.5	0.712	+2.68 -8.1	15
5	12 22 30	-1 18.39	+ 6 43.1	8.6	8 12 22.44	9.498 _n	+ 2 3 47.9	0.714	+2.78 -8.5	16
6	12 9 29	-1 26.51	- 0 26.2	8.3	8 12 14.34	9.517 _n	+ 1 56 38.4	0.713	+2.80 -8.7	16
Jan. 21	9 51 3	+0 26.66	+ 6 15.0	6.6	7 41 53.80	9.318 _n	+ 1 17 39.3	0.716	+0.58 -5.3	17
22	10 18 .7	+0 16.31	+ 2 58.3	16.6	7 41 7.00	9.149 _n	+ 1 23 0.0	0.713	+0.56 -5.4	18
23	9 42 54	-0 26.96	+ 8 1.6	14.8	7 40 23.75	9.307 _n	+ 1 28 3.0	0.714	+0.58 -5.6	18
25	10 20 46	-1 6.05	- 0 48.4	10.7	7 38 55.52	9.057 _n	+ 1 39 21.1	0.711	+0.59 -5.9	19
26	11 2 44	-0 55.41	+ 0 39.7	12.9	7 38 13.32	8.279 _n	+ 1 45 25.4	0.710	+0.59 -6.0	20
27	12 39 37	+0 24.13	- 0 9.0	12.6	7 37 29.66	9.262	+ 1 51 59.7	0.710	+0.59 -6.1	21
Feb. 2	10 53 28	-0 16.44	- 2 30.4	12.6	7 33 57.80	7.903	+ 2 29 41.1	0.702	+0.61 -6.6	22
3	10 9 51	-0 45.94	+ 4 7.2	12.9	7 33 28.29	8.851 _n	+ 2 36 18.6	0.700	+0.60 -6.7	22
4	14 36 18	-0 3.13	+ 1 11.6	10.5	—	9.616	—	0.713	+0.59 -6.7	23
5	12 22 46	-0 6.47	+ 0 35.4	10.7	—	9.358	—	0.701	+0.58 -6.8	24
7	13 53 38	-1 25.26	- 0 47.5	6.4	7 31 35.99	9.571	+ 3 4 58.2	0.708	+0.57 -7.0	25

The observation of the 14th of August made with a ring micrometer.

*) Vergl. die Berichtigung Bd. 120 S. 271. *Kts.*

Astr.Nachr.Nr.2919 Bd.122.E.E.Barnard.Comet 1889---(Brooks July 6)and Companions.
36 inch. Equatorial of the Lick Observatory,1889 August 4.

Astr. Nachr. Nr. 2922. Bd. 122. E. Weiss. Erscheinungen am Cometen Brooks. Aug. 5. 14¹/₂ h M 2. Wien.

Lith. Anst. v. E. A. Funke, Leipzig.

Mean Places of the Comparison Stars for the Beginning of the Year of Observation.

*	α 1888.0	δ 1888.0	Authority	*	α 1888-89.0	δ 1888-89.0	Authority
1	5 ^h 4 ^m 34.48	+19° 58' 15".4	10 ^m . Cp. with W ₂ 5 ^h 168	14	8 ^h 12 ^m 37.40	+ 2° 37' 12".1	Cp. with W ₁ 8 ^h 233
2	5 8 33.77	+19 55 42.1	W ₂ 5 ^h 168	15	8 13 11.90	+ 2 28 36.7	Cp. with BB.VI +2°1933
3	5 14 5	+19 50	DM. +19°901	16	8 13 38.05	+ 1 57 13.3	Cp. with W ₁ 8 ^h 333
4	5 14 19.63	+19 42 0.3	1/2 (Gl. 1302+W ₂ 5 ^h 345)	17	7 41 26.56	+ 1 11 29.4	W ₁ 7 ^h 1205
5	5 19 52	+19 41	DM. +19°926	18	7 40 50.13	+ 1 20 7.0	Cp. with W ₁ 7 ^h 1205
6	5 23 9	+19 41	DM. +19°937	19	7 40 0.98	+ 1 40 15.4	Cp. with BB.VI +1°1907
7	5 25 3.44	+19 32 57.8	Rü. 1452	20	7 39 8.14	+ 1 44 51.7	Cp. with * 19
8	7 20 34	+12 35	DM. +12°1546	21	7 37 4.94	+ 1 52 14.8	1/5 (W ₁ 7 ^h 1080+4Sj.2803)
9	7 22 33.57	+12 22 8.7	W ₁ 7 ^h 622	22	7 34 13.63	+ 2 32 18.1	Cp. with W ₁ 7 ^h 972
10	7 32 57.19	+11 1 31.9	W ₁ 7 ^h 955	23	7 32 56	+ 2 43	Cp. with DM. +2°1734
11	7 58 5.42	+ 7 15 4.5	Cp. with BB.VI +7°1903	24	7 32 34	+ 2 50	Cp. with * 23
12	8 5 4.63	+ 6 8 31.8	Cp. with W ₁ 8 ^h 8	25	7 33 3.68	+ 3 5 52.7	Cp. with W ₁ 7 ^h 886
13	8 14 51.82	+ 3 1 5.6	Lal. 16341				

Micrometer-Comparisons.

	$\Delta\alpha$	$\Delta\delta$	Cp.		$\Delta\alpha$	$\Delta\delta$	Cp.
* 1 — W ₂ 5 ^h 168	—3 ^m 38.92	+ 2' 33".6	6.3	* 19 — BB.VI +1°1907	—1 ^m 53.94	— 0' 38".2	10.5
* 11 — BB.VI +7°1903	+0 51.47	+ 9 58.8	6.3	* 20 — * 19	—0 52.84	+ 4 36.3	12.4
* 12 — W ₁ 8 ^h 8	+1 29.88	— 6 57.2	6.3	* 22 — W ₁ 7 ^h 972	+0 56.32	+ 5 55.3	10.4
* 14 — W ₁ 8 ^h 233	+1 6.83	— 3 12.7	8.3	* 23 — DM. +2°1734	—1 34.06	+ 1 10.3	12.3
* 15 — BB.VI +2°1933	—0 3.97	+ 4 54.7	10.4	* 24 — * 23	—0 21.48	+ 6 40.8	10.3
* 16 — W ₁ 8 ^h 333	—1 22.44	+12 40.9	10.3	* 25 — W ₁ 7 ^h 886	+2 22.97	— 0 57.9	16.5
* 18 — W ₁ 7 ^h 1205	—0 36.43	+ 8 37.6	6.3				

In determining the place of the comparison star of Nov. 4, I compared it with W₁ 7^h1633 as well as with BB.VI +7°1903. The place of the star from comparison with these two differed by 10" in the declination. To find which of the comparison stars was in error I compared BB.VI +7°1903 with BB.VI +7°1898 and found that the error was in the Weisse star. The following are my measures of the apparent $\Delta\delta$ on 1889 April 18-24: BB.VI +7°1903 — W₁ 7^h1633 = —21' 17".7 (12 obs.) using the intermediate comparison star. This difference from the brought up places of the two stars = 21' 27".7. On April 25 my measures of the apparent $\Delta\delta$: BB.VI +7°1903 — BB.VI +7°1898 = —5' 0".6 (3 obs.). The difference from the brought up places = —4' 59".1. So it is evident that the Decl. of W₁ 7^h1633 is to be corrected by —10".*)

M^t Hamilton 1889 May 31.

E. E. Barnard.

*) W₁ 7^h1633 = B. Z. 49 7^h53^m8^s50 ist richtig reducirt. K7s.

Ueber die Erscheinungen am Cometen 1889... (Brooks Juli 6).

Von Prof. Dr. E. Weiss.

[Mit einer Tafel.]*)

Als in der Nacht vom 4. auf 5. August die Depesche der Centralstelle über die Theilung des Brooks'schen Cometen einlief, war der Himmel zwar verschleiert, doch immerhin in einem so geringen Maasse, dass eine Wahrnehmung dieses interessanten Phänomens nicht als ganz hoffnungslos erschien. Wir richteten daher den grossen Refractor auf den Cometen und bemerkten sofort, dass ihm zwei Nebelmassen in der Entfernung von 15^s und 24^s etwas nördlich folgten. Der Kern erschien für den ersten flüchtigen Anblick bloss sehr in die Länge gezogen und stark granulirt. Bei aufmerksamerer Betrachtung erkannte man jedoch, dass auch er aus zwei getrennten, allerdings

noch durch eine blasse Nebelmasse mit einander verbundenen Kernen bestehe, der Comet sich daher eigentlich in 4 Theile gespalten habe. Da nun in der Depesche des Lick Observatory angegeben war, er habe sich in 3 Theile getrennt, meldete ich nach Kiel, dass derselbe bereits vierfach sei; dem in Nr. 2914 der A. N. abgedruckten Ergänzungstelegramme zufolge scheint indess die Trennung in 4 Theile schon am 1. August bestanden zu haben.

Für das Feststellen des Zeitpunktes der Trennung dürfte es nicht ohne Interesse sein zu bemerken, dass Herr Spitaler bei seinen Beobachtungen des Cometen am 30. und 31. Juli an demselben, ebenfalls am grossen Refractor, und

*) Die Tafel wird den Abonnenten nachgeliefert. K7s.