earliest opportunity of examining this most interesting object." *****

M. J. Maury, U. S. N.

To Comms. Wm. M. Crane,

Chief Buró Ordnance & Hydrography &c. &c.

The discovery was made here with the 14 foot Equatorial (9 inches aperture). — The acolyte was seen by Professors *Kendall & Walker*, with their 9 foot Equatorial at Philadelphia on the 19th., and at Cambridge Mass. by Mr. *Bond & Peirce* with a 5 foot Telescope on the 24th.

Last night was the first clear night since its first discovery that the acolyte could not be seen here. — The moon was 4 days old, but I judge from the appearance of Nr. 2 on the 21st. inst. when it was last observed here, that even without the moon, it is no longer visible through the great refractor. —

As everything connected with this extraordinary pheno-

menon possesses a high degree of interest among your readers, I beg you will assist me in laying our account of it before them. —

The most satisfactory way of doing this will, I suppose, be to give our observations and remarks free from any discussion, and as they were made at the time. — Accordingly I enclose to you with this the differentiated positions of the two Comets during their binary term, extracts from official letters, and from the Equatorial book, just as they are entered there — or written at the time.

M. J. Maury, U. S. N.

NB. I send also the only observation made here on *Encke's Comet* during its last visit. — The only observations I have heard of at all being one at Philadelphia, at Rome, and the one herewith sent. —

Biela's Comet 1846.

Extracts from Equatoreal notebook, Observatory Washington.

Janr. 12th. 1846. Commenced Observations on *Biela's comet* — does not bear illumination — measurements difficult and not reliable — Observer Lieut. *Maury* assisted by Professor *Hubbard*.

Janr. 13th. The Comet appears double, or rather a nebula or a fainter comet is in the same field 1' or 2' to the north and perhaps 4s to the west of *Biela* by estimation. This object is too faint for accurate measurement, or to enable me to settle the question by the observations of one night as to its character, nebulous or Cometary. Observer Lieut. *Maury*, assisted by Professor *Hubbard*.

Janr. 14th. Clear night— calm— hazy about horizon— observed before Moon rise. *Biela* has a companion close aboard! The acolyte is about as faint as *Biela* was in the moon light of the 12th. Looking through the corner of my eye I can catch glimpses of a tail to each, *Biela's* tail reaches off N. E. and his companion's is nearly parallel with, but slightly inclined towards, it.

Measurements to night, though better than their predecessors, are by no means satisfactory. Order: Call the acolyte No. 2 Observer Lieut. *Maury*, assisted by Professor *Hubbard*.

Janr. 18th. Night clear, cold and windy. Comets distinct — Observations to night better than they have been — tail of *Biela* only a few minutes of arc long extending towards N. E. Tail of Nr. 2 not so long, but nearly parallel. *Biela's* tail, lancet like — a star, say of the 17th. mag, between the two Comets. Nuclei, decidedly condensed towards

the center, but not resolvable into points of light except perhaps *Biela's* by glimpses. The centers of condensation look ragged as though several nuclei were grouped about it. Tried to make out a second tail to No. 2 reaching towards *Biela* — Observer — Lieut. *Maury*, assisted by Professor *Hubbard*.

Janr. 19th. Not a favorable night for observations — Interrupted in them by persons calling, whom I am not at liberty to keep in waiting — Observer Lieut. *Maury*.

Janr. 22d. Ground covered with snow, Potomac river frozen over, windy and clear. — Observations good — Comets in better view for observations, a star of 10th. or 11th. magn. between the Comets, when observations commenced it was seen through *Biela's* tail. Observer Lt. *Maury*, assisted by Mr. *Hubbard*.

Janr. 23d. Clear night, atmosphere unsteady — Comets perceptibly plainer. There is an appearance of 2 tails from No. 2, one nearly parallel to *Biela's*, the other reaching over to his nucleus, or rather just to the south of it. Very faint tho' is this tail. Observer Lieut. *Maury*, assisted by Mr. *Hubbard*.

Janr. 26th. Hazy — Comets in good view — See nothing remarkable to night except as to the nucleus of *Biela* (the more eastwardly of the two Comets) which presents more distinctly a fiery concentration of light in the center, side glimpses catching it occasionally as a star of the 9th. or 10th. magn. — Observer Lt. *Maury*, assisted by Mr. *Ransom*.

Janr. 28th. Clear — more certain than ever of a pointed nucleus to *Biela*; caught glimpses also of a point of condensed light in nucleus to No. 2. — Observer Lieut. *Maury*, assisted by Mr. *Worden*.

Febr. 4th. See a star of the 14th. or 15th. mag, in Neb. of *Biela*, a decided stellar nucleus to each comet. Mr. *Walker* could see no condensation of light. Tails reaching almost across the field and nearly parallel. The two Comets are judged both by Lt. *Maury* and Mr. *Walker* to be nearly equal as to intensity of light. The nucleus to each appearing to M. like a sharp point of light — that of *Biela* flashing out and by glimpses with considerable brilliancy. Observer Lt. *Maury* assisted by Professor *Walker*.

Febr. 9. Very bright moon light — Observations difficult — Mem. No. 2 has the greatest intensity, and has $\frac{2}{3}$ the light of *Biela*. Observer Lt. *Maury*, assisted by Mr. *Walker*.

Febr. 11th. The nucleus of No. 2 decidedly stellar, that of *Biela* diffused and by no means as bright. No. 2 appears the brightest — Hazy, No. 2 has $\frac{1}{3}$ more brilliancy than *Biela*. Observer Lieut. *Maury*, assisted by Mr. *Walker*.

Febr. 12th. *Biela* is the larger mass of light, get glimpses of two nuclei in it — tail full one third across the field. No. 2 more intense and has more light than *Biela* — Decided stellar nucleus of *Biela* — No. 2 more fiery, tail nearly parallel with *Biela's* — Catch glimpses of another tail extending towards *Biela* just above a straight line between the two, and in a sort of arch — think there are glimpses of a 2nd. tail from *Biela* — extends opposite from No. 2 and nearly in a straight line with it just before moon rise. With power No. 3, filarmicrometer Lieut. *Maury* saw in No. 2 a second head which appears to shoot off a tail towards *Biela*. Decided appearance of two tails to *Biela*, second going off in a direction opposite from No. 2. and think I catch a glimpse of a third nucleus to *Biela* sending a tail to No. 2, making three tails to *Biela*. *Biela* has whiter light extending over a larger space, and a whiter tail than No. 2. Observer Lieut. *Maury* assisted by Prof. *Walker*.

Febr. 16th. In twilight — No. 2 became visible first having $\frac{1}{3}$ more light than *Biela* — perceive a diamond-like nucleus. Observer Lt. *Maury* assisted by Prof. *Walker*. Note. See letter of 19th.

Febr. 18th. When the two Comets were first seen in the twilight, *Biela* was twice as bright as No. 2 — seen both by *Maury* and *Walker* confirming each other — nucleus of *Biela* sending out corruscations by flashes quite like a star. power No. 2.

Dark — No. 2 half as bright as *Biela*, star between them of the 16th. mag. Tails distinct and nearly parallel. Tail from No. 2 to *Biela* arched. Bright white diamond-like nucleus to *Biela* by glimpses. Nucleus to No. 2 not so distinct as I have seen it before — think I see the fragment of a nucleus above *Biela*. The two Comets almost bright enough to illuminate the wires. Mr. *Walker* saw *Biela's* tail extending across the field, and caught glimpses of his diamond like nucleus. Lt. *Maury* saw both Comets with a common spy Glass. Light airs, clear, good night for observations. Observer Lt. *Maury* ast. Prof. *Walker*.

Febr. 21st. Comets pearly white — No. 2 $\frac{1}{2}$ *Biela* in magn. and $\frac{2}{3}$ in intensity — ragged condensation of light in nucleus of *Biela* — both comets very white — Mr. *Walker* saw once or twice a diamond-like nucleus of *Biela* — thought *Biela* $\frac{1}{3}$ brighter than No. 2 both white tails parallel, extending across the field. Observer Leut. *Maury* assisted by Prof. *Walker*.

Febr. 22d. Comets seen in twilight — bright nucleus to No. 2 — *Biela* the larger — No. 2, most intense — Comets pearly white. Star in tail of No. 2, and star in end of tail of *Biela* — a band of nebulous matter, a little arched, joins the two — No. 2 the more intense — *Biela* the more light — appearance of a double nucleus about *Biela* — *Biela* sends out a second tail higher up in field inclined 120° to the other. Appearance of 3 tails to *Biela* radiating at angles of 120° to each other! An arch way of cometary matter between the two nuclei. The tail of *Biela* extends 3 times the field, say $45'$. Nucleus of No. 2 sharp. Observer Lt. *Maury*, assisted by Prof. *Walker*.

Febr. 23d. The two Comets seen, *Biela* the brightest. Observer Mr. *Maury*.

Febr. 26th. Early twilight — *Biela* was judged to be twice greater in magn. and $\frac{2}{3}$ greater in intensity of No. 2 — *Biela* has a tripod tail — the one extending off opposite to No. 2 very distinct — observed with dew cap and three inch circular dish — *Biela* nearly twice the magn. of No. 2 and greater in brilliancy — No. 2 has a sharp stellar nucleus of the 17th. magn. *Biela* pearly white, No. 2 dirty reddish. Star of the 17th. magn. in the nebulous matter of No. 2. *Biela* sending out quite a strong tail nearly opposite to No. 2 and darting an other one at No. 2. Confused appearance about the nucleus of *Biela* as though there were several nuclei. Observer Lieut. *Maury*, assisted by Psd. Midu. *Kennard*.

March 3d. *Biela* six times as bright as No. 2 pearly white. Observer Lieut. *Maury*, assisted by Lieut. *Blunt*.

March 4th. *Biela* not seen very well. No. 2 too faint for tolerable observations. Observer Lt. *Maury*, assisted by Lieut. *Blunt*.

March 5th. No. 2 No apparent nucleus, exceedingly faint without any mark of condensation. Observer Lt. *Maury*, assisted by Psd. Midn. *Ransom*.

March 8th. Mr. *Maury* observed one of *Biela's* tails point directly east — the other remains as it was. Lt. *Blunt* saw but two — Nr. 2 faint reddish muddy light with a bright spark towards the center. Observer Lt. *Maury*, assisted by Lieut. *Blunt*.

March 10th. Both Comets seen, no stellar nucleus of either, No. 2 one twentieth of the brightness of *Biela*. No tail to *Biela* by the moon light. March 11th. Hazy, saw *Biela's* Comet, too faint to be observed — could not see No. 2. — Observer Mr. *Walker*, assisted by Lt. *Blunt*.

March 14th. After Moonrise, Nr. 2 disappeared; before, it was seen with a very faint reddish nucleus. Think I discover cometary fragments about *Biela*. There appear to me to be three and they are more distinctly marked to night than I have seen them before. Lt. *Blunt* thinks he sees five fragments in this ($\begin{smallmatrix} * & * \\ * & * \end{smallmatrix}$) position. Observer Lieut. *Maury*, assist. Lieut. *Blunt*.

March 17th. Nr. 2 is so faint that, but for No. 1 as a guide, should not be able to see it: it is a very diffused

mass of exceedingly faint nebulous matter and I am surprised from the faintness of No. 2, at the observations, for particular pains were taken every time to destroy the readings. A star in the western tail of *Biela* which looks very like another Comet. Cannot account for the disagreement in the measurements of *Biela* of to night. Bad night for observing, though perfectly clear. No appearance of fragments about *Biela*. Observer Lieut. *Maury*, Assistant, Psd. Midn. *Worden*.

March 21st. No. 2 was seen first, though very faint, muddy, a shining point in a dim patch of light about its nucleus.

Biela not so white as it used to be. The measurements of No. 2 are good approximations only. Observer Lieut. *Maury*, Assistant Mr. *Walker*.

(Professor *Coffin* saw nucleus of *Biela*: saw quite a display of light around *Biela*, shading off, and elongated towards E. N. E.)

March 30th. Lieut. *Maury* saw the two tails to *Biela* as formerly. Lieut. *M.* & Prof. *Walker* both searched for Nr. 2 but could not see it, though the moon was about setting, and circumstances more favorable than they are likely to be during the lunation.

Observatory Febr. 19. 1846.

Sir,

„Since their perihelion passage, the two Comets have exhibited a most singular appearance presenting the Phenomenon of alternating their light.“

„At the time of the first discovery of their binary character, Nr. 2 was by estimation judged to be $\frac{1}{3}$ the magnitude, and $\frac{1}{4}$ the intensity of its Companion. From that time Nr. 2 increased rapidly, both in magnitude & brilliancy, exhibiting under the light of a full moon of Febr. 11th. a sharp diamond-like point of light near its centre; which at moments appeared to flash, with much brilliancy.“

„On the 16th. as I turned the Telescope upon the Comets in the early twilight of the evening I was surprised to find No. 2 coming into the field with almost a blaze of whitish light, (its colour had been uniformly reddish,) while *Biela* was barely visible — No. 2 was estimated to be equal to *Biela* as to magnitude, but to have $\frac{1}{3}$ more intensity.“

„The next evening was cloudy. And yesterday being clear I hastened up early to test their relative magnitudes

and brilliancy again in early twilight. The contrast was so striking as to call forth an exclamation that *Biela* surpassed his Companion both in magnitude and intensity: by estimation it exceeded at least two fold both in quantity and intensity of its light. *Biela* was brighter than it had ever appeared before, giving light enough to show the wire of the micrometer across its nucleus, while No. 2 had assumed its former muddy appearance; excepting that no bright point of concentrated light could be seen in its nucleus notwithstanding the moon was absent and atmospherical condition favorable.“

„No. 2 appears to have thrown a light arch of Cometary matter from its head over to that of the other; and their tails stretching off below in the field and nearly in a parallel direction, give these two objects the singular and beautiful appearance of an arched way in the heavens, through which the stars are sometimes seen to pass.“

M. F. Maury, N. S. N.

Hon. George Bancroft,
Secretary of the Navy.

Observations on *Biela's* Comets.With the Fraunhofer Equatoreal. Intervals of transit for Δa . Micrometrical meas^{ts} for Δd .

(The differences of de Ascension & Declination have been corrected for the effect of Refraction; and the observed intervals of transit of the two Comets for their rate of motion.

Wash. Sid. Time		No. 2 from Biela.		Biela from *of Comp.		*of Comp.	
1846		Δa	Δd	Δa	Δd		
Jan.	13	3 ^h 09 ^m 10 ^s		—1 ^m 35 ^s 03	3 meas ^{ts}	+0' 02" 11 (?)	3 meas ^{ts} 1 unknown (9 mag.)
	14	1 59,03	(comes seen but too faint for meas ^{ts})	+1 09,50	7 "	—3 09,30	7 " 1 " "
				+1 04,52	7 "	—6 37,61	7 " 2 " (9 "
	15	2 27,56	—4 ^s 00 5 ms ^{ts} +1' 17" 91 5 ms ^{ts}	—0 54,84	4 "	—2 14,41	4 " 3 " (9,10)
				—5 57,24	4 "	+1 28,64	4 " 4 " (8,9)
				—5 56,34	1 "	+3 09,56	1 " 5 " (8,9)
	19	2 37,42	4,53 6 "	—0 30,20	3 "	—2 23,92	3 " 6 " (9)
				—3 29,57	3 "	+2 04,38	3 " a Bes. Z. 136. 23** (9)
	20	2 33,41	4,33 6 "	—0 22,417	6 "	—2 03,11	6 " a " (8)
				—5 07,700	6 "	+0 33,78	6 " 7 unknown (9)
	23	3 08,36	5,34 5 "	+1 25,920	5 "	+2 46,53	5 " b B. Z. 136. 33 (9)
	24	3 12,44	5,14 12 "	+1 47,123	6 "	+5 06,29	6 " c " 37 (9)
				—0 55,373	6 "	+8 29,59	6 " d " 41 (6,7)
				—3 28,923	6 "	+8 24,23	6 " e Brit. As. Cat. 163 (7)
				+0 54,000	6 "	—0 30,64	6 " 8 unknown (9)
	25	3 39,00	5,49 7 "	—0 02,113	6 "	+3 00,92	6 " e B. A. Cat. 163 (7)
	27	3 15,56	5,48 6 "	+6 50,24	2 "	—8 04,07	2 " e " "
		2 40,11		—3 33,7	1 "	—9 10,3	1 " f B. Z. 136. 61 (8)
				—6 30,0	1 "	—6 28,1	1 " g " 66 (9)
	29	3 18,08	5,64 8 "	+6 06,270	5 "	—2 45,00	5 " h " 56 (9)
				+5 27,690	5 "	—0 51,04	5 " i " 57 (9)
Febr.	5	4 00,55	6,24 4 "	+7 28,0	1 "	+13 18,20	1 " j " 100 (9)
				+5 22,5	1 "	+5	1 " k " 102 (9)
				+5 51,5	1 "	+7	1 " 9 unknown (9)
	6	3 52,03	6,475 10 "	+0 54,53	3 "	+4 29,8	3 " l B. Z. 136. 112 (9)
				+0 31,67	3 "	—1 29,5	3 " m " 113 (9)
	10	4 10,00	7,09 6 "	—0 07,248	6 "	—6 46,93	4 " n Rümker 375 (8,9)
				—1 16,360	4 "	—0 46,62	4 " o B. Z. 128. 7 (8)
	12	5 31,30	7,695 6 "	+1 00,600	6 "	—7 42,86	6 " p " 16 (8)
	13	4 23,05	7,965 4 "	+5 48,25	1 "	—7 10,9	1 " q " 15 (8)
				+5 13,35	1 "	+0 25,4	1 " r " 17 (9)
				+0 04,92	4 "	—7 31,86	4 " s " 23 (9)
	14	4 48,44	8,63 3 "	—2 44,41	3 "	—6 17,75	3 " t " 33 (7,8)
	17	4 40,42	9,664 12 "	+4 42,07	3 "	+3 11,74	3 " u " {128. 43 (8)
				—4 12,3	1 "	—5 09,54	1 " v " {260. 5 (8,9)
				—6 31,3	1 "	—5 06,84	1 " w " {128. 59 (9)
	19	4 58,14	9,934 8 "	+0 27,096	12 "	—2 51,88	8 " x " 29 (9)
				—3 19,86	4 "	+2 56,84	4 " 10 unknown (9)
	22	5 36,58	11,720 7 "	+3 28,85	4 "	+6 55,60	4 " y B. Z. 260. 39 Dup. (8,8)*
				+2 03,70	3 "	+8 50,53	3 " z " 41 (9)
	23	5 11,26	12,070 9 "	+2 50 53	5 "	—7 39,60	5 " a' " 47 (9)
	27	5 39,17	14,762 11 "	+2 35,54	4 "	+5 05,86	4 " 11 unknown (9)
				+3 28,09	4 "	—2 45,30	4 " 12 " (9)
March	4	7 23,42	19,360 5 "	+5 55,63	2 "	—8 35,03	2 " b' B. Z. 267. 41 (8)
				+3 05,31	2 "	—11 09,23	2 " 13 unknown (9)
				+2 22,20	1 "	—6 42,00	1 " 14 " (10)

*) Febr. 22. Compared with the Northern Star.

**) The number of the Star in the Zone is given after the number of the Zone.

Wash. Sid. Time.		No. 2 from Biela.		Biela from *of Comp.		*of Comp.	
		Δa	Δd	Δa	Δd		
March 5	7 ^h 43 ^m 00 ^s	-21°39'3	3 msts +8'10"58	1 msts +0 ^m 48 ^s 34	1 msts — 0' —	15 unknown	(9 mag)
				-0 06,31	3 ,, — 4 32,51	c' B. Z. 267. 62	(9)
				-0 47,50	3 ,, — 5 32,66	d' ,, 63	(8)
6	7 14,22	22,53	2 ,, 8 06,67	2 ,, +2 21,11	2 ,, + 1 56,18	16 unknown	(9)
				-2 38,02	2 ,, + 4 23,06	e' B. Z. 267. 76	(7)
9	7 19,47	25,120	9 ,, 8 27,70*	4 ,, +0 11,79	9 ,, — 4 57,20	f' B. Z. 267. 118	(7,8)
				-0 41,49	3 ,, —13 22,20*	g' B.A.C. 39 Eridani	(5)
11	7 54,20	26,623**	3 ,, 8 52,23**	3 ,, +1 17,29	5 ,, — 1 15,92	h' Hist. Cel. p. 562	(7)
				+1 05,77	5 ,, + 1 40,19	i' ,, "	(8,9)
				+0 10,897	14 ,, — 5 38,03	17 unknown	(8,9)
15	7 43,21	32,695	3 ,, 9 09,98	2 ,, +1 10,437	7 ,, + 8 13,12	j' B. A. C. 64 Eridani	(5)
No. 2 from *of Comp.							
18	8 16,48			+0 52,845	8 ,, — 5 23,77	k' B. Z. 214. 59	(7)
—	8 41,42			+1 01,748	8 ,, — 5 37,40	k'	
—	7 55,33	+0 ^m 06 ^s 684	6 ,, +3'34"62	3 ,,		k'	
22	8 13,38			+0 51,21	3 ,, + 6 17,79	m' B. Z. 214. 145	(8)
e	—			-3 05,00	3 ,, — 0 02,37	n' ,, 155	(7)
	—			-3 27,18	1 ,, — 3 27,57	o' ,, 156	(8)
	—			-3 45,43	3 ,, + 1 50,65	p' ,, 157	(8)
No. 2 from Biela.							
—	8 41,26	-42°85'8	3 ,, +8'44"21	3 ,,			
—	9 09,15			+5 01,66	3 ,, + 6 35,54	l' B.A.C. η Leporis	(4)
31	10 48,31			+3 50,637	6 ,, —12 13,54	q' B. Z. 272. 157	(7)
	—			+2 53,907	6 ,, —18 15,35	r' ,, 159	(7)
	—			+1 52,181	7 ,, — 1 43,09	s' ,, 162	(7)

*) March 9. No. 2 compared in Declination directly with *f' & g'. Biela with *f' only.

**) „ 11. No. 2 compared directly with *17, both in a & d.

From the foregoing Differential Measurements, and the places of the Stars of Comparison, as given in the Catalogues referred to, have been deduced the following Apparent Places of the two Comets.

1846.		Wash. Mean Time.	No. 2 or preceeding ☿		Biela or following Comet.		*of Comp.
			a	d	a	d	
Janr.	18	6 ^h 45 ^m 42 ^s	0 ^h 10 ^m 24 ^s 23	—0°47'42"9	0 ^h 10 ^m 28 ^s 76	—0°49'29"5	a
	19	6 37 45	13 32,17	0 51 48,8	13 36,50	0 53 37,1	a
	22	7 00 47	23 18,80	1 05 44,9	23 24,14	1 07 41,6	b
	23	7 00 58	26 38,56	1 10 39,9	26 43,70	1 12 40,0	e
	24	7 23 14	30 05,01	1 16 00,0	30 10,50	1 18 03,4	e
	26	6 34 33	36 57,33	1 26 50,3	37 02,82	1 29 09,1	e
	28	6 46 42	44 03,86	1 39 07,2	44 09,50	1 41 33,8	h & i
Febr.	4	7 01 51	1 10 46,33	2 31 55,7	1 10 52,57	2 35 06,2	j & k
	5	6 49 04	14 46,18	2 40 30,1	14 52,65	2 43 51,5	l & m
	9	6 51 15	31 34,57	3 21 08,3	31 41,66	3 25 09,4	n
	11	8 04 40	40 37,38	3 44 33,9	40 45,07	3 48 35,0	p
	12	6 52 30	44 56,26	3 55 57,1	45 04,23	4 00 26,4	q & s
	13	7 14 09	49 36,06	4 08 45,1	49 44,69	4 13 22,7	t
	16	6 54 20	2 03 50,69	4 48 56,6	2 04 00,35	4 54 31,0	u, v & w
	18	7 03 58	17 41,87	5 24 21,0	17 51,80	5 29 37,6	x
	21	7 30 48	29 45,25	6 06 05,4	29 56,97	6 11 57,9	y & z
	22	7 01 24	35 06,18	6 22 19,9	35 18,25	6 28 19,5	a'
March	3	8 47 33	3 30 33,18	9 08 13,7	3 30 52,54	9 15 48,8	b'
	4	8 53 14	37 24,02	9 27 10,0	37 45,42	9 35 20,6	c' & d'
	5	8 20 45	44 12,16	9 46 25,2	44 34,69	9 54 31,8	e'
	8	8 14 21	4 05 58,54	10 43 42,2	4 06 23,66	10 52 09,9	g'

Wash. Mean Time.		No. 2 or preceeding ☿		Biela or following Comet.		*of Comp.
1846		a	d	a	d	
March 10	8 ^h 40 ^m 57 ^s	4 ^h 21 ^m 23 ^s 00	—11°21'00"2	4 ^h 21 ^m 49 ^s 62	—11°29'52"4	h' & i'
14	8 14 16	53 25,36	12 28 56,8	53 58,06	12 38 06,8	j'
17	8 14 38	5 18 41,11	13 13 03,5			k'
—	8 35 50			5 19 27,27	13 22 01,9	k'
—	9 00 40			19 36,18	13 22 15,5	k'
21	8 16 57			54 07,70	14 05 19,1	{ n' p' for a* m' n' p' for d Biela (m. Pos.)
—	8 44 41	53 34,18	13 56 46,1			
—	9 12 25			54 26,37	14 05 41,7	
30	10 16 01			7 11 58,09	14 33 13,8	l' q' r' s.

*) March 21. AR from *m' is 1^s less.

Approximate Positions of the unknown Stars of Comparison.

	a	d			a	d
1	23 ^h 54 ^m 05 ^s	—0°27'6		5	0 ^h 04 ^m 10 ^s	—0°37'3
2	23 54 10	0 23,3		11	2 54 35	7 38,0
3	23 59 08	0 32,0		12	2 55 00	7 45,9
4	0 04 10	0 35,7				

Observation on *Encke's* Comet, with the Fraunhofer Equatoreal.

1845 July 10. Morning clear: haze about the horizon. Comet presents a nebulous appearance, elliptical, 3" or 4" in Diam. very faint in the twilight which was rapidly advancing and prevented further Observations.

Wash. Mean Time. July 10. 15^h29^m13^s3

Prof. Coffin, Observer

Comet from *a (9) Δa +12^s25 2 measts

Δd. 0'00"0 2 measts

" " *b (8) " — 9,75 2 "

+1 15,9 1 "

corrected for Refraction.

Position of *s of Comparison: from Wash. Observ. 1846.

	Mean a 1845.		Mean d 1845.	
*a	5 ^h 39 ^m 01 ^s 474	1 Obs. Med. Circle	+29°41'22"70	{ 1 Obs. with Mural Circle. 1 Comp. with b.
*b	5 39 23,517	1 " " "	+29 40 06,23	

Concluded Appt. Place of *Encke's* Comet.

1845. July 10. 15^h29^m13^s3 Mean T. Wash.

a 5^h39^m14^s22

d +29°41'16"5

Positionen von Sternen in der Bahn des 1^{sten} *Brorsen'schen* Cometen, von Herrn *Rümker* am *Repsold'schen* Meridiankreis bestimmt.

	Mittl. AR. 1846. Jan. 1.	Zahl der Beob.	Mittl. Decl. 1846. Jan. 1.	Zahl der Beob.		Mittl. AR. 1846. Jan. 1.	Zahl der Beob.	Mittl. Decl. 1846. Jan. 1.	Zahl der Beob.
	21 ^h 56 ^m 58 ^s 97	1	69°36'19"8	1		23 ^h 0 ^m 54 ^s 35	1	67° 0' 51"3	1
	22 16 0,14	1	70 1 47,2	1		23 1 31,90	1	67 4 59,2	1
	22 16 23,5 :	1	69 51 20,8	1		23 6 13,93	2	63 57 55,7	2
	22 24 58,96	2	68 37 59,2	2		23 8 34,32	1	64 35 19,2	1
	22 35 21,88	1	67 41 58,7	1		23 11 0,40	1	65 22 2,1	1
	22 35 38,04	1	65 42 10,3	1		23 11 14,59	2	63 54 38,5	2
dupl.	22 43 46,80	2	67 45 12,8	2		23 13 30,33	1	64 40 2,8	1
	22 52 50,60	1	66 57 21,9	1		23 14 35,82	1	63 53 52,6	1
	22 55 57,06	2	66 57 58,3	2		23 16 29,65	2	64 39 0,8	2