also dass „die örtliche längere Dauer der fleckenerregenden Ursache“ gemeint ist.]

Schon in den A. N. Nr. 2123/4 haben wir die Jahre

1854 1865 1876

verglichen und daraus geschlossen, dass für 1877 die mittl. hel. Breite etwa 9° sein würde. Vielleicht ist dieser Betrag in Bezug auf das Fleckenminimum noch zu hoch, zumal derselbe im Jahre 1866 bis 8.9 und im Jahre 1855 noch weiter herunterging. Es würden nunmehr die Jahre

1856 1867 1878

zu vergleichen sein, und wie in den Jahren 1856 und 1867 die neuen Fleckengruppen hoher Breiten auftraten,

würde dies auch im Jahre 1878 zu erwarten sein, wie ich auch in den A. N. Nr. 2124 bemerkte; indessen käme die Verspätung in Betracht, welche dem Umstande entspricht, dass die Periode etwas länger als 11 Jahre ist. Dies stimmt auch mit der Vergleichung der mittl. hel. Breite, welche man durch Vereinigung je zweier Jahre erhält:

	1854/55	1865/66	1876/77
Häufigkeitszahlen	322	556	239
mittl. heliogr. Breite	9° 29	9° 43	9° 63

Potsdam 1878 Jan. 15.

Prof. Dr. Spoerer.

Oppositions-Ephemeride von ☿ Melete 1878.

1878 12 ^h Berlin	R.A. in Zeit	Diff.	Declin.	Diff.	log Δ	Aberr. Zeit
Sept. 6	0 ^h 20 ^m 43 ^s .44	— 38 ^s .47	+ 6°49' 13".5	— 8' 19".4	0.096043	10 ^m 21 ^s
7	20. 4.97	39.50	6.40.54.1	8.30.2	0.095352	10.20
8	19.25.47	40.45	6.32.23.9	8.40.6	0.094740	10.19
9	18.45.02	41.35	6.23.43.3	8.50.5	0.094207	10.18
10	18. 3.67	42.18	6.14.52.8	8.59.8	0.093754	10.18
11	17.21.49	42.95	6. 5.53.0	9. 8.7	0.093383	10.17
12	16.38.54	43.65	5.56.44.3	9.17.0	0.093096	10.17
13	15.54.89	44.30	5.47.27.3	9.24.7	0.092893	10.16
14	15.10.59	44.86	5.38. 2.6	9.31.9	0.092775	10.16
15	14.25.73	45.37	5.28.37.7	9.38.4	0.092743	10.16
16	13.40.36	45.80	5.18.52.3	9.44.4	0.092798	10.16
17	12.54.56	46.16	5. 9. 7.9	9.49.8	0.092941	10.16
18	12. 8.40	46.44	4.59.18.1	9.54.3	0.093172	10.17
19	11.21.96	46.66	4.49.23.8	9.58.4	0.093492	10.17
20	10.35.30	46.79	4.39.25.4	10. 1.7	0.093900	10.18
21	9.48.51	46.86	4.29.23.7	10. 4.4	0.094398	10.18
22	9. 1.65	46.84	4.19.19.3	10. 6.3	0.094987	10.19
23	8.14.81	46.74	4. 9.13.0	10. 7.4	0.095665	10.20
24	7.28.07	46.56	3.59. 5.6	10. 8.0	0.096434	10.21
♂ 25	6.41.51	46.32	3.48.57.6	10. 7.7	0.097292	10.23
26	5.55.19	45.99	3.38.49.9	10. 6.7	0.098240	10.24
27	5. 9.20	45.59	3.28.43.2	10. 5.1	0.099276	10.25
28	4.23.61	45.10	3.18.38.1	10. 2.7	0.100401	10.27
29	3.38.51	44.55	3. 8.35.4	9.59.5	0.101613	10.29
30	2.53.96	43.93	2.58.35.9	9.55.8	0.102911	10.31
Oct. 1	2.10.03	43.23	2.48.40.1	9.51.3	0.104294	10.33
2	1.26.80	— 42.48	2.38.48.2	9.46.4	0.105762	10.35
3	0.44.32		+ 2.29. 2.4		0.107312	10.37

1878 12 ^h Berlin		R.A. in Zeit	Diff.	Declin.	Diff.	log Δ	Aberr. Zeit
Oct.	4	9 ^h 0 ^m 2 ^s 65	— 41.67	+ 2° 19' 21" 7	— 9.40.7	0.108943	10 ^m 40 ^s
	5	23.59.21.87	40.78	2. 9.47.2	9.34.5	0.110653	10.42
	6	58.42.01	39.86	2. 0.19.5	9.27.7	0.112442	10.45
	7	58. 3.13	38.88	1.50.59.1	9.20.4	0.114307	10.47
	8	57.25.29	37.84	1.41.46.4	9.12.7	0.116247	10.50
	9	56.48.53	36.76	1.32.42.1	9. 4.3	0.118260	10.53
	10	56.12.89	35.64	1.23.46.6	8.55.5	0.120344	10.57
	11	55.38.44	34.45	1.15. 0.4	8.46.2	0.122498	11. 0
	12	23.55. 5.20	— 33.24	+ 1. 6.23.8	— 8.36.6	0.124720	11. 3

Lichtstärke 2.16. Helligkeit = 10.7 Grösse.

Düsseldorf 1878 Januar 10.

Rob. Luther.

On Double-Star Orbits.

When a couple of calculations, that have not been confirmed, are excluded, there remain orbits of 27 double stars, only 7 of which belong to the southern hemisphere, where a number of quickly revolving stars will easily be found. — Twenty systems are contained in a space of the sky between 9^h 10^m and 17^h 59^m in right-ascension eleven of which are situated between 18° and 38° north declination and between 9^h 10^m and 16^h 36^m in right-ascension, a part of the sky, which is favourable for observations. — The epochs of periastron-passage are all given as occurring 1740 — 1910 and generally the epoch is not above half a century from the present year. We know 5 stars, whose period is below 50 years (Mean $a = 0''89$ and $e = 0.31$), 7 periods are between 50 and 100 years ($a = 1''56$, $e = 0.43$), 6 are between 100 and 200 years ($a = 2''63$, $e = 0.61$), 6 are between 200 and 350 years ($a = 1''70$, $e = 0.61$) 3 are above 400 years ($a = 5''10$, $e = 0.74$), that of Castor, about 1000 years, being the greatest and in consequence least certain, and therefore I excluded the abnormally small eccentricity of its orbit, though it results from the most complete discussion of the measures. Very eccentric orbits for Castor were not long since published in Month. Not. R. A. S. — It appears thus that both semiaxis and eccentricity are increasing with the period.

Exceptions in the value of semiaxis are the three systems, whose parallaxes have been determined. I in consequence respected them as far as this goes. I did not notice any indications of parallax in the others at this way. ζ Herculis would be a poor chance. The sum of the three masses is 9.4 and that of each single star in average $1\frac{1}{2}$ of the sun's mass. I did not find any general regularity in the plans of the orbits, but stars in Boötis and η Coronae revolve in not very divergent orbits and σ Coronae and ζ Herculis agree with them, the direction of their perihels being moreover the same. Other cases might be given f. inst. ε 1424. ε 1523 and ε 1768 but these differ greatly in magnitude. — These conclusions might appear drawn from an insufficient material, so much more as several of the 27 latest orbits have been only provisionally given by calculators, who are still investigating their definitive values, but observations on fixed stars have given signs, that this hitherto so dry field will bear a rich fruit of future discovery, and it was my wish to try whether the double-stars would give similar hints. I shall in future endeavour to render the material more accurate and more strictly uniform.

Markree-Observatory. 1878. January 23.

W. Doberck.