Astronomische Nachrichten.

Expedition auf der Königlichen Sternwarte bei Kiel.

Herausgeber: Prof. Dr. C. A. F. Peters.

Band 92.

Nr. 2200

16.

Regulus observed with Graham's Square-Bar Micrometer.

The micrometer with which the ecliptic stars were observed consists of four steel-bars forming a square. The declination and the right-ascension are obtained from the same transits, which is not always the case with the ring-micrometer: and other drawbacks in the latter seem to have been removed in Graham's micrometer. Thus, though some causes of error are avoided by observing the stars on both the outer and the inner side of the ring, it seems to me to be more rigorously the case with the square-bars, notwithstanding that with these as perhaps with all astronomical instruments it is better not to compare objects of very different brightness. Differences of declination to the full extent of the field can easily be obtained, but as with other micrometers it is advisable to select the comparison-star, if there is only one, of as nearly the same declination as can be had. Then they may conveniently be observed both north and south of the centre of the field.

Owing to the length of the refractor, it was in the zone-observations preferred to fix it in a negative eyepiece; — otherwise a positive one would do. The thickness of the bars is much less than their breadth, but they could also be ground to a knife-edge. An apparatus for clamping the micrometer and for giving it a slow-motion in angle of position is wanting. Even a roughly divided position-circle would be useful, if it were only to observe the direction of faint nebulosities. — The construction of these bars seems not to be difficult and there seems no reason, why the micrometer should not come into general use, so much more as it could be used together with a chronograph, which is hardly the case with the ring-micrometer. In particular it must be recommended for smaller telescopes, that are parallaxically mounted. — Klinkerfues observed small planets in the meridian with a somewhat similar apparatus (A. N. 1015), which was made by Repsold out of a brass plate many years after Grahams's invention.

I observed the companion on the south-bars and Regulus on the north-bars (See Introduction to Markree-

Catalogue) and I had the small hole, that is drilled through one of them, in the four different positions on the four nights respectively. I moved the slow-motion in declination a little for fear of using constantly the very same points of the bars, the smoothness and parallelism of which was ascertained by allowing a star to run along them.

Date 1878	Mean-time of Crossing			Mean time Difference	— Number
	Comes	Regulus	Average		
March 31	76 ^s 73	78 ^s 00	77 ^s 36	10 ^s 000	4
April 3	76.79	77.87	77.33	9.511	9
" 5	78.04	76.44	77.24	9.660	10
" 17	76.29	78.07	77.18	9.791	10
April 6	—	—	77.266	9.703	33

The three last were considered equally accurate but to the first result a weight of only one half was attributed. Assuming the average diagonal 82^s 72 in the equator, we get:

$$1878.260 \quad \Delta\alpha = -9^s 729 \quad \Delta\delta = +106'' 47$$

It appears in consequence that this system has not changed perceptibly since it was observed by Christian Mayer, several of whose other stars I intend to reobserve.

The observations were made west of the meridian (0^h0—1^h5) with a mean time chronometer. — A tower, in which the small equatoreal was once placed, having been demolished, I have placed on the old foundation the former transit clock, which at present is connected with a chronograph. It can be seen from the yard. The cometseeker is now placed on an ordinary tripod and has been used for looking at variable stars and for eclipses as well as for occasional sweeps.

Markree-Observatory, Colloney, Ireland 1878 Apr. 26.

W. Doberck.

Sternpositionen,

abgeleitet aus Beobachtungen am Meridiankreise Troughton & Simms der Sternwarte in Pola. Von J. Palisa.

Nr.	Grösse	α 1875.0	Praec.	δ 1875.0	Praec.	Epoche
1		0 ^h 8 ^m 39 ^s .46	+ 3 ^s .001	— 35° 35' 59".1	+ 19".99	1877.79
		39.50		58.2		79
		39.48		59.2		80
2		0.27 35.90	+ 2.956	— 35.40.31.5	+ 19.90	79
		36.06		31.8		79
		36.15		30.4		80
3	7	0.44.47.82	+ 3.045	— 5.42.58.5	+ 19.67	80
4	9	0.44.51.20	+ 3.044	— 5.51.47.9	+ 19.66	99
5		0.52.34.91	+ 2.895	— 30. 2. 1.0	+ 19.52	79
		34.84		4.3		80
		34.99		0.9		88
6	9	0.57. 8.80	+ 3.035	— 6.15.27.5	+ 19.43	99
7		0.57.19.47	+ 2.878	— 30.11.51.5	+ 19.42	79
		19.45		51.8		79
		19.54		52.0		80
		19.51		52.0		88
8	9.10	1. 2.20.58	+ 3.029	— 6.37.47.7	+ 19.31	80
9		1. 2.26.07	+ 3.029	— 6.38.38.7	+ 19.30	79
10	8.9	1. 4.11.77	+ 3.027	— 6.45. 4.5	+ 19.27	88
		11.76		5.7		97
		11.72		4.7		80
11	9.10	1. 7.10.58	+ 3.025	— 6.51.45.7	+ 19.19	79
		10.75		47.5		80
12	9	1.12.36.56	+ 3.020	— 6.57. 5.3	+ 19.05	79
		36.60		4.2		80
13		1.14.43.86	+ 3.014	— 7.36.45.9	+ 18.99	79
14	9	1.17.32.69	+ 3.013	— 7.29.45.7	+ 18.91	99
15		1.18. 3.49	+ 3.012	— 7.34. 3.1	+ 18.90	97
16		1.19 51.35	+ 3.013	— 7.18.21.9	+ 18.84	97
		51.27		21.7		99
17	9	1.21.12.72	+ 3.006	— 7.59.37.2	+ 18.80	80
		12.76		36.1		88
18		1.31.24.38	+ 2.988	— 8.21.49.3	+ 18.47	79
		24.40		47.1		79
19		1.34.17.39	+ 3.172	+ 10.39.22.2	+ 18.37	79
		17.43		26.2		80
20		1.34.34.97	+ 3.172	+ 10.34.22.0	+ 18.36	79
		34.84		21.0		88
21	9	1.36.31.91	+ 2.872	— 19.59. 0.0	+ 18.29	99
22	11.12	1.36.40.70	+ 2.868	— 20 20. 9 8	+ 18.29	97
23	10	1.38. 4.96	+ 3.176	+ 10.42. 7.1	+ 18.23	75
24		1.39.47.50	+ 2.800	— 25.40.43.1	+ 18.18	79
		47.57		42.4		80
		47.50		41.6		88

Nr.	Grösse	α 1875.0	Praec.	δ 1875.0	Praec.	Epoche
25		1 ^h 42 ^m 49 ^s .18	+ 2.777	— 26°52'37".6	+ 18'06	1877.79
		49.22		36.9		79
		49.40		37.8		80
26	9	1.43.44.62	+ 2.863	— 19.33.30.2	+ 18.03	99
27		1.43.54.12	+ 2.860	— 19.49.37.4	+ 18.02	97
28		1.44.16.34	+ 3.131	+ 5.47.42.3	+ 18.00	88
29		1.44.25.00	+ 3.132	+ 5.22.37.6	+ 18.00	79
30	8	1.46.35.82	+ 2.929	— 13.20.47.0	+ 17.92	99
31	9	1.47. 1.49	+ 2.909	— 15. 4.40.9	+ 17.90	80
32	8	1.48.12.97	+ 2.937	— 12.28. 6.4	+ 17.85	79
		12.93		6.8		88
33		1.49.14.42	+ 2.910	— 14.43 14.6	+ 17.81	97
34		1.51.56.73	+ 2.904	— 14.53.40.5	+ 17.70	79
		56.73		41.9		99
35	9.10	1.52.19.10	+ 2.907	— 14.38.25.1	+ 17.68	88
36	8	1.52.37.81	+ 2.938	— 11.54.26.0	+ 17.67	97
37	9	2. 2.34.65	+ 3.324	+ 20.19. 6.6	+ 17.25	79
		34.70		9.0		80
38		2. 2.46.65	+ 3.330	+ 19.45 18.0	+ 17.24	79
39		2.18.38.70	+ 3.260	+ 13.58.42.3	+ 16.84	1878.01
40	10	2.21.19.90	+ 3.260	+ 13.45.38.9	+ 16.35	1877.94
41	9.10	2.22.12.50	+ 3.263	+ 13.50.37.4	+ 16.30	94
		12.60		36.2		1878.01
42		2.27. 5.69	+ 2.468	— 36.58.57.3	+ 16.05	1877.07
		5.85		52.2		07
		5.76		52.3		79
		5.81		50.3		79
43		2.28.14.54	+ 3.272	+ 14. 0. 3.9	+ 16.00	94
44	10	2.34.12.87	+ 3.291	+ 14.47. 0.0	+ 15.67	87
		12.80		3.1		88
45		2.38.41.22	+ 2.654	— 26. 1.39.2	+ 15.43	08
		41.21		40.3		79
		41.18		38.5		79
46	9.10	2.38.44.49	+ 3.300	+ 15.12.31.3	+ 15.42	85
		44.43		31.7		88
47		2.40.13.04	+ 3.307	+ 15.20.27.0	+ 15.34	85
		12.98		28.1		87
48		2.43.38.94	+ 3.309	+ 15.12.14.7	+ 15.15	88
49		2.45.18 10	+ 3.313	+ 15.18.21.4	+ 15.05	87
50 praec.	9.10	3. 3.52.44	+ 3.323	+ 14.39.31.0	+ 13.93	87
		52.29		29.0		88
51	9	3.31.58.94	+ 3.431	+ 18.52.45.4	— 12.35	1878.12
52	10	3.39.4.908	+ 3.415	+ 18.34.39.3	— 12.89	12
53	8.9	9.11.14.71	+ 3.329	+ 16. 4.37.9	— 14.86	19
54	10.11	9.11.36.94	+ 3.319	+ 15.32. 5.4	— 14.89	17
		36.92		5.4		18

Nr.	Grösse	α 1875.0	Praec.	δ 1875.0	Praec.	Epoche
55	10	9 ^h 16 ^m 27 ^s .26	+ 3.283	+ 13°37' 15".8	— 15".17	1878.12
56		9.21.43.31	+ 3.263	+ 12.44.34.7	— 15.46	19
		43.38		34.3		19
57	10	9.22.27.42	+ 3.264	+ 12.50.30.2	— 15.50	12
		27.49		27.9		17
58	9	9.25.29.44	+ 3.393	+ 21. 8.42.8	— 15.67	17
		29.40		43.9		19
59	9	9.25.52.69	+ 3.251	+ 12.17. 9.7	— 15.69	12
		52.59		9.0		18
60	10	9.39.27.19	+ 3.317	+ 17.46.41.3	— 16.40	18
		27.36		43.7		19
61	9	10.18.13.82	+ 3.213	+ 13.53.11.3	— 18.11	14
62	10.11	10.20.44.54	+ 3.198	+ 12.46.15.8	— 18.20	12
		44.39		14.8		14
63	7.8	10.22.47.33	+ 3.196	+ 12.49.33.7	— 18.37	12
64	10	20.29. 1.11	+ 2.930	+ 7.32.33.4	+ 12.14	1876.69
		1.19		33.4		1877.73
65		20.29.18.80	+ 2.941	+ 6.57.40.0	+ 12.17	71
		18.66		41.1		75
66	8.9	20.45.56.25	+ 3.019	+ 2.59.28.3	+ 13.28	1876.69
		56.18		28.4		1877.71
		56.29		27.2		73
67	10	20.50.53.81	+ 3.041	+ 1.45.31.8	+ 13.61	71
		53.76		30.6		73
68	8.9	20.54.59.64	+ 3.061	+ 0.34.57.7	+ 13.87	1876.69
		59.58		58.4		1877.74
		59.55		58.2		75
69	9.8	21. 2.43.50	+ 2.702	+ 21.33.15.3	+ 14.35	1876.69
		43.54		14.1		1877.71
		43.57		15.0		73
		43.50		15.4		75
70		21. 9.55.28	+ 3.811	— 39.20.62.1	+ 14.78	71
		55.27		56.6		73
		55.36		58.3		75
71		21.10.28.42	+ 3.061	+ 0.38.41.6	+ 14.81	74
72	9	21.10.41.75	+ 2.745	+ 19.53.20.1	+ 14.82	1876.69
73	8.9	21.19.35.41	+ 2.789	+ 18. 7.13.4	+ 15.34	69
		35.46		14.4		1877.71
		35.38		14.3		73
		35.32		14.1		74
74	9	22. 8.42.77	+ 8.279	+ 17. 8.58.7	+ 17.73	71
		42.85		59.7		73
		42.77		59.1		74
75	9	22.12.56.80	+ 2.840	+ 20.59.49.9	+ 17.91	71
		56.83		51.5		73
		56.93		51.1		74

Nr.	Grösse	α 1875.0	Praec.	δ 1875.0	Praec.	Epoche
76		22 ^h 16 ^m 11 ^s .97	+ 3 ^s 362	— 26°28' 12".1	+ 18".03	1877.71
		12.03		10.8		73
		12.11				74
		12.07		12.0		75
77	11	22.20.32.88	+ 2.698	+ 33.35. 3.0	+ 18.19	74
78		22.21.19.24	+ 3.535	— 39.45.47.8	+ 18.33	71
		19.22		45.8		73
		19.30		51.5		75
79	10	22.22.23.19	+ 2.704	+ 33.35.58.9	+ 18.26	74
		23.32		62.7		75
80		22.31.17.92	+ 3.320	— 26.18.12.8	+ 18.57	71
		17.94		11.9		73
		17.95		12.9		74
		17.98		12.7		75
81		22.40.18.09	+ 3.387	— 34.49.16.5	+ 18.85	71
		18.07		13.1		73
		18.19		17.1		74
		18.07		16.0		75
82	8.9	23.13.26.56	+ 3.089	— 3.46.12.4	+ 19.64	1876.94
		26.82		12.5		1877.74
83	9	23.23.18.90	+ 3.140	— 17.57.28.3		79
		18.97		26.5		79
		18.85		27.4		80
84	10	23.34. 0.45	+ 3.110	— 14.29.54.1	+ 19.92	79
		0.23		53.8		81
85		23.42.50.63	+ 3.125	— 28.32.51.9	+ 19.99	79
86	9.10	23.44.17.64	+ 3.076	— 3.20.13.0	+ 20.00	1876.94
87	9	23.46.10.25	+ 3.075	— 3. 3.46.0	+ 20.01	1877.79
		10.15		45.8		80
88		23 46.29.14	+ 3.087	— 11.30.47.0	+ 20.02	79
		29.12		45.4		81

Ferner wurde durch Anschluss folgender Stern bestimmt:

	2.59.52.25	+ 3.399	+ 19. 8.37.2	+ 14.18
--	------------	---------	--------------	---------

Pola, April 1878.

Schreiben des Herrn Dr. Dunér an den Herausgeber.

Im Anschluss an die Publicationen von D'Arrest zeige ich hiermit einige Sterne an, von welchen mehrere ausgezeichnete Spectra haben von den Secchi'schen dritten und vierten Typen, oder den Typus III a und b nach Vogel. Dass alle bisher unbekannt sein sollten wage ich nicht zu behaupten, da 4 von den Sternen in den Katalogen der rothen Sterne von Schjellerup und Schmidt vorkommen, und verschiedene wichtige Publicationen über Sternspectra mir nicht zugänglich sind.

Ein Paar von den Sternen finden sich unter den rothen Sternen, auf welche Herr Observator Geelmuyden in Christiania aufmerksam gemacht hat; den Rest habe ich selbst aufgefunden.

Schliesslich muss ich bemerken, dass diese Nachforschungen nur bei solchen Gelegenheiten gemacht sind, wo wegen des Luftzustandes an Doppelsternmessungen nicht gedacht werden konnte. Die Aufzeichnungen sind