

Decl.  $-52^\circ$ . The original negative was taken on June 6, 1896, with an exposure of 62 minutes. The cluster in the lower part of the plate is NGC. 6067. Plate II represents the region whose centre is in RA.  $10^h 40^m$ , Decl.  $-59^\circ$ . The original negative was taken on June 1, 1896, with an exposure of 240 minutes. The images are elongated, and this plate is issued as an example of the enormous number of stars which can be shown upon a single map, while Plate I illustrates the character of the images at the centres and corners, and the quality of maps to be expected.\*) It is proposed to issue, from time to time, maps of other portions of the sky, such as the Magellanic Clouds. According to the original plan a map of the entire sky on the scale here represented was to be published. To avoid duplication of work this plan has been abandoned, since the Astrophotographic Congress has undertaken to supply this want. It is believed that a less expensive and more useful scheme will be to furnish contact prints on glass from the original negatives, to such astronomers as will

make use of them. A double contact print so closely resembles the original negative that it can only be distinguished from it with difficulty, and for purposes of measurement or exact study is, of course, far more valuable than any paper print.

While announcing the successful completion of the Bruce Photographic Telescope, attention should be called to the courage of the donor who permitted an experiment to be tried on a scale never before attempted, and whose liberality, both in the amount of her gift and in the terms on which it was made, rendered every aid to secure success. It is a great satisfaction to be able to show by these photographs that the results obtained are exactly as expected, and that no unforeseen difficulty interfered with the success of the experiment. Excellent results have already been obtained in photographing the spectra of very faint stars with prisms placed over the object glass of this instrument, and they will be made the subject of a subsequent communication.

Harvard College Observatory, 1896 Dec. 30.

*Edward C. Pickering.*

\*) Beide Tafeln sind der Redaction zugegangen. Ich bin gern bereit, dieselben den Lesern auf Wunsch zur Ansicht zu übersenden. *Kr.*

## First List of Double Stars

discovered at the Royal Observatory Cape of Good Hope.

(Communicated by *David Gill*, C. B., LL. D., F. R. S., H. M. Astronomer).

Star	1900		P.-A.	Dist.	Mags.	Notes
	RA.	S. Decl.				
Lac. 9755	$0^h 5^m 44^s$	$73^\circ 47' 0''$	$340^\circ$	$0''.8$	7.3, 8.3	
Lac. 95	0 23 27	55 10.6	250	0.75	7.9, 9.1	
Lac. 236	0 47 12	44 15.1	355	1.8	7.3, 8.1	
Cord. ZC. $1^h 293$	1 12 42	37 48.4	140	1.0	9.4, 10.4	
Lac. 460	1 30 6	46 12.4	20	1.2	7.1, 10.0	
Cord. ZC. $1^h 1092$	1 43 31	44 28.2	180	1.0	8.5, 9.0	
Cord. DM. $-40^\circ 686$	2 35 40	40 23.6	320	2.0	10.1, 10.6	
Cord. ZC. $3^h 123$	3 5 0	41 44.7	320	0.7	9.4, 9.6	
P. III. 19	3 8 55	44 47.7	185	0.8	6.8, 7.3	a
Cord. ZC. $3^h 426$	3 15 6	43 0.4	260	2.5	8.6, 10.5	
B Velorum	8 19 27	48 10.2	s. f.	1.0	5.6, 7.6	
Cord. ZC. $8^h 2571$	8 32 52	30 28.9	f.	4.0	8.8, 10.3	
P. VIII. 148	8 36 39	39 54.5	n. f.	2	6.3, 9.0	
Bris. 2199	8 42 57	42 12.0	n. p.	1.5	7.7, 9.5	
Lac. 3539	8 43 57	38 34.4	s. f.	1.5	7.2, 9.2	
Bris. 2285	8 53 44	49 17.7	n. p.	5	7.7, 9.2	
Anon.	9 23 2	52 56.7	...	3	9	b
Lac. 4315	10 24 52	48 28.6	s. p.	3	7.2, 10.0	
			n. f.	20	10.5	
Bris. 3101	10 31 33	63 36.7	s. p.	2	8.9, 10.5	
Anon.	10 34 12	64 30	s. f.	3	9.0, 9.5	
Cord. DM. $-30^\circ 9211$	11 23 23	30 11.3	n. f.	3	10.0, 10.5	
$\alpha^1$ Centauri	11 27 8	58 53.4	s. f.	7	5.2, 9.0	
P. XI. 105	11 28 45	40 2.1	$90^\circ$	1	6.5, 6.5	
Cord. ZC. $11^h 3331$	11 49 46	41 50.2	...	0.8	8.6, 8.6	
Cord. ZC. $11^h 3367$	11 50 20	41 20.8	n. p.	2	8.3, 8.3	

Star	1900		P.-A.	Dist.	Mags.	Notes
	RA.	S. Decl.				
Cord. ZC. 12 <sup>h</sup> 548	12 <sup>h</sup> 9 <sup>m</sup> 46 <sup>s</sup>	29° 12.9	n.	1"	9.4 , 10.4	
Bris. 4084	12 25 57	40 57.1	n. p.	1	8.3 , 9.3	
Bris. 4251	12 50 59	47 8.7	p.	0.8	7.5 , 8.0	
Lac. 6183	14 48 41	36 1.3	s. p.	4	7.7 , 9.7	
Cord. ZC. 14 <sup>h</sup> 3624	14 58 34	35 32.1	181°	1.5	8.9 , 10.0	
Cord. DM. —37°10168	15 14 58	37 54.3	p.	1	9.9 , 10.9	
Cord. ZC. 15 <sup>h</sup> 1167	15 15 48	38 23.2	p.	1	9.9 , 10.0	
Lac. 6437	15 31 23	52 2.6	290°	1.8	9.5 , 10.1	c
Lac. 6471	15 34 29	39 39.4	s. f.	1	7.0 , 9.0	
Lac. 6530	15 41 55	25 40.6	10°	1	7.4 , 10.4	
P. XVI. 37	16 13 47	39 11.2	290	6	6.4 , 10.6	
Lac. 6796	16 15 0	33 3.0	n. p.	6	7.4 , 10.0	
Lac. 6822	16 19 28	47 49.0	300°	0.8	7.8 , 10.0	
Lac. 6837	16 19 31	29 41.5	195	1	7.9 , 9.9	
Lac. 6835	16 19 37	34 45.1	100	2	8.8 , 8.9	
Lac. 6871	16 26 32	33 19.1	350	1.5	7.5 , 9.5	
Lac. 6912	16 33 51	48 34.0	180	9	5.6 , 12.0	d
Cord. ZC. 16 <sup>h</sup> 2233	16 33 56	48 33.5	n. f.	2	8.6 , 11.3	
Lac. 6933	16 35 48	36 53.0	85°	1	7.3 , 8.3	
Cord. ZC. 16 <sup>h</sup> 2834	16 42 22	43 46.0	n. f.	1	7.9 , 8.9	
Lac. 6969	16 47 39	73 15.8	s. f.	0.8	7.0 , 8.5	
Cord. ZC. 16 <sup>h</sup> 3270	16 47 55	40 53.5	355°	1	9.4 , 10.4	
Lac. 7120	17 0 7	44 18.4	130	4	7.4 , 9.9	
Cord. ZC. 17 <sup>h</sup> 480	17 9 3	33 43.2	320	0.7	8.4 , 9.4	e
Lac. 7146	17 9 7	69 55.8	s. f.	2	7.1 , 10.0	
Cord. ZC. 17 <sup>h</sup> 1604	17 25 11	30 12.9	173°	2	9.1 , 9.3	
Lac. 7344	17 29 35	49 10.8	150	1	8.1 , 9.1	
Cord. GC. 10 [Mess. 6]	17 33 0	32 17.5	130	1.5	9.3 , 10.3	
Cord. DM. —40°11849	17 40 59	40 5.8	...	1.5	9.8 , 10.5	
Cord. ZC. 17 <sup>h</sup> 3241	17 49 24	28 3.6	s. p.	2.7	9.7 , 10.5	
Lac. 7503	17 51 52	47 45.8	125°	1.5	7.7 , 9.7	
Lac. 7593	18 7 37	56 40.7	310	1	7.3 , 9.8	
Lac. 7889	18 46 33	47 23.7	s.	2	6.8 , 10.0	
Bris. 6535	18 51 18	48 38.4	225°	3	6.9 , 11.0	
Cord. GC. 26377	19 10 32	63 4.5	280	0.7	8.2 , 9.0	
1 <sup>st</sup> Melb. 983	19 16 37	62 22.5	315	3	8.0 , 11.0	
Lac. 8102	19 23 26	60 28.6	180	1	7.3 , 8.3	
Lac. 8124	19 25 32	36 59.0	137	1	7.1 , 9.6	
Lac. 8163	19 34 0	59 14.2	175	1.2	7.7 , 9.0	
Lac. 8194	19 40 14	62 3.5	185	0.8	7.6 , 8.1	f
Lac. 8207	19 42 16	59 26.6	80	0.7	5.7 , 7.7	
Lac. 8352	20 3 30	47 1.6	177	6	7.2 , 11.0	
Bris. 6817	20 9 30	63 28.0	45	2	7.8 , 10.5	
Cord. ZC. 20 <sup>h</sup> 252	20 9 32	46 12.8	40	1	8.6 , 9.4	
Cord. ZC. 20 <sup>h</sup> 438	20 15 19	57 25.6	p.	1	9.5 , 10.0	
Anon.	20 27	44 50	100	0.6	9.5 , 10.0	g
Bris. 6902	20 36 18	52 9.4	325	2.3	7.9 , 10.4	
Rü. 529	20 48 34	59 39.2	30	1	8.1 , 10.1	
Lac. 8650	20 57 15	48 21.3	313	3.2	7.1 , 11.0	
Anon.	21 14 57	52 12.3	n.	1	9.5 , 10.0	
Lac. 8779	21 16 5	52 22.0	300°	1.3	7.6 , 10.0	
Cord. ZC. 21 <sup>h</sup> 664	21 23 4	39 15.9	...	4	8.5 , 11.0	
Lac. 9188	22 32 0	40 22.6	290	2.5	6.7 , 11.0	
AOe <sub>2</sub> 22432	22 43 51	20 47.3	n. p.	2	9.6 , 10.1	
Lac. 9405	23 9 36	60 14.3	5°	2.5	7.3 , 10.5	
Lac. 9641	23 49 54	37 55.2	215	0.8	7.8 , 8.3	

Notes.

- a. The chief star of h 3556.
- b. Position given is that of I Velorum, the comes 50" distant is double.
- c. The comes of the old pair Dunlop 189.
- d. A quadruple star :
  - B = 9.5 mag. 12° 2" Melbourne 1878
  - C = New Companion
  - D = h 4876.
- e. One night's observation only.

- f. The chief star of h 5141.
- g.  $\nu$  Microscopii is 65" s. p.

The above new double stars were discovered by Mr. R. T. A. Innes, with the 6.9 in. Equatoreal of the Cape Observatory between the months of April and October 1896.

The position angles and distances are estimations as the driving of the telescope by the clock is not steady enough to allow of micrometrical measures.

Royal Observatory, Cape of Good Hope, 1896 Oct. 27.

**Zusatz.** Im Anschluss an das vorstehende Verzeichniss macht Herr R. T. A. Innes d. d. 12. Jan. 1897 noch die folgenden Bemerkungen.

- P. III. 19. The duplicity of the chief star of this triple was suspected by Jacob in 1856.
- Bris. 2199. This was discovered by Jacob in 1856.
- Lac. 6835. This is not new being Hough 404.

Ausserdem theilt Herr Innes die folgenden Berichtigungen mit.

Innes 1 in M. N. of R. A. S. Vol. LV. This is not Bris. 118 but UA 64 Toucani, and was noted as a double star at Cordoba in 1873.

Innes 42 = Yarn. 9104. In Journal B. Ast. Association Vol. VI April 1896. With the 7 in. equ. of the Cape Observatory this star is not double. — It will be omitted from further lists.

Innes 18. This was wrongly identified as Lac. 8600. It is Lac. 8602, mag. 7.4, RA. 20<sup>h</sup> 47<sup>m</sup> 53<sup>s</sup>, S. Decl. 52° 29' 7 (1900); 1896.7 : 5° ± 4" ±, 7.5 and 11.7.

Kr.

Die gegenwärtige Helligkeit der Nova (T) Aurigae.

Da ich am 26. November Gelegenheit hatte, die Nova Aurigae wieder einmal zu photographiren, so benutzte ich dieselbe, um die Nova bezüglich ihrer Helligkeit an Plejadensterne photographisch anzuschliessen.

Ich habe, da die Durchmesser bei der Kürze der Aufnahmezeiten von jeweils 30 Minuten zu klein waren für mikrometrische Messung, den Anschluss durch Stufenschätzen ausgeführt. Aus einer grösseren Anzahl Vergleichen habe ich die brauchbaren in der folgenden Tabelle zusammengestellt, wobei die Nummern der Sterne diejenigen des Wolf'schen Catalogs, also dieselben wie bei Charlier sind. Es erscheint

Stern	70	um	2	Stufen	heller	als	Nova
»	61	»	1	»	»	»	»
»	90	»	2	»	schwächer	»	»
»	85	»	2	»	heller	»	»
»	88	»	1	»	schwächer	»	»
»	92	»	0	»	»	»	»
»	80	»	2	»	heller	»	»
»	74	»	1	»	schwächer	»	»
»	93	»	2	»	heller	»	»
»	89	»	0	»	schwächer	»	»

Heidelberg, 1896 Dec. 2.

Die Stufe kann ich in diesem Falle als rund 1/4 einer Grössenklasse annehmen, so dass sich für die Nova die folgenden Helligkeiten ergeben :

Stern	Gr. nach Charlier	Helligkeit der Nova
70	12 <sup>m</sup> 5	13 <sup>m</sup> 0
61	12.5	12.7
90	13.5	13.0
85	12.5	13.0
88	13.5	13.0
92	13.0	13.0
80	12.0	12.5
74	13.0	12.7
93	12.5	13.0
89	13.0	13.0

Hieraus folgt für die Nova die Helligkeit 12<sup>m</sup> 9. Man kann also annehmen, dass die Nova Aurigae gegenwärtig (Nov. 26, 1896) fast genau von der dreizehnten Grösse bezüglich ihrer photographischen Helligkeit ist. Es ist noch zu bemerken, dass der Stern 61 gegenwärtig etwas schwächer als der Stern 70 ist, während Charlier und Wolf beide Sterne einander gleich gefunden haben.

Max Wolf.

Bemerkung zu der Abhandlung „Ueber die systematischen Fehler der Distanzmessungen mit neueren Heliometern“, Astr. Nachr. 3397-98.

In genannter Abhandlung sucht Herr Dr. Cohn den etwaigen constanten Fehler der Heliometermessungen dadurch zu ermitteln, dass er die Hauptdistanz zwischen den Endsternen eines Sternbogens mit der Summe der Partialdistanzen, nachdem letztere auf die Hauptdistanz projicirt

sind, vergleicht. Er behandelt dabei diese Projectionen der Partialdistanzen wie direct gegebene Grössen; in Folge dessen glaubt er von den Unsicherheiten der Meridianbestimmungen frei zu werden und die Correctionen der letzteren ableiten zu können. Dies Verfahren ist jedoch nur