

# New Double Stars

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21.

## List of thirty nine New Double Stars

and Micrometrical Measures of neglected Double Stars between Decl. +30° and +60°.

By *T. E. Espin.*

Part I contains pairs accidentally met with in the course of sweeping companions to some red and variable stars, and new companions to known double stars. Many of them are very difficult objects to measure with the 17<sup>1</sup>/<sub>4</sub> in. Reflector both from their faintness, and because the Reflector does not deal well with double stars.

The second part consists of measures of double stars which have been entirely neglected, or of which only a few

measures are to be found. The measures have been made during 1900 unless otherwise stated. In the first line will be found the star's name as given in vol. XL Memoirs of the R. A. S. In cases where the BD.-number is given, the star was found by the observatories engaged in the Catalogue of the A. G. Some of these stars have been measured by Burnham.

The positions are given for 1880.0.

## Part I.

P.	D.	Mags.	Date	Note	P.	D.	Mags.	Date	Note
No. 1. h 1008.					No. 6. BD. +52°489.				
$\alpha = 0^h 8^m 54^s \quad \delta = +58^\circ 7'.$					$\alpha = 1^h 53^m 15^s \quad \delta = +52^\circ 56'.$				
228°30	10°60	11.5, 13.5	Oct. 21	BC	202°7	5°94	7.8, 10.2	Nov. 21	1899
223.20	10.00	11.0, 13.8	Nov. 18		204.47	6.08	8.0, 11.5	» 12	
228.64	10.40	—, —	Dec. 21		204.80	6.00	—, —	» 13	
125.74	21.24	8.0, 11.5	Oct. 21	AB (h 1008)	No. 7. BD. +54°539.				
124.67	21.20	—, —	Nov. 18		$\alpha = 2^h 16^m 52^s \quad \delta = +54^\circ 42'.$				
126.00	21.32	—, —	Dec. 21		256°30	11°96	7.0, 13.7	Dec. 13	
No. 2. BD. +55°93.					259.12	11.15	7.0, 13.5	» 14	
$\alpha = 0^h 24^m 30^s \quad \delta = +56^\circ 8'.$					260.82	11.20	—, —	» 22	
113°05	6°31	8.0, 8.5	Dec. 26	1892	No. 8. BD. +52°616.				
112.25	6.28	9.0, 9.5	Sept. 18		$\alpha = 2^h 34^m 33^s \quad \delta = +53^\circ 1'.$				
No. 3. BD. +55°109.					42°57	12°77	5, 14	Dec. 21	
$\alpha = 0^h 28^m 17^s \quad \delta = +55^\circ 56'.$					No. 9. BD. +52°624.				
—	8°61	—, —	Nov. 4	1892	$\alpha = 2^h 37^m 55^s \quad \delta = +52^\circ 39'.$				
158°3	8.72	—, —	» 16	1892	29°07	2°40	7.5, 11	Dec. 9	
158.7	—	8.0, 9.0	» 26	1892	32.15	2.76	—, —	» 13	
158.05	8.77	8.4, 9.2	Sept. 18	Yellow, blue	30.45	3.00	—, —	» 21	
No. 4. BD. +42°313.					No. 10. BD. +51°670.				
$\alpha = 1^h 23^m 59^s \quad \delta = +43^\circ 0'.$					$\alpha = 2^h 55^m 27^s \quad \delta = +52^\circ 2'.$				
107°2	—	8.0, 9.5	Dec. 22	Clouds	312°40	9°00	9.5, 9.6	Dec. 2	1899
104.07	3°42	7.5, 10	» 26		311.46	8.52	9.0, 9.2	» 15	1899
103.56	3.53	7.5, 9.5	» 29		312.35	8.42	—, —	Jan. 10	
No. 5. BD. +47°505.					311.63	8.12	9.0, 9.1	» 1	1901
$\alpha = 1^h 41^m 35^s \quad \delta = +47^\circ 50'.$					No. 11. BD. +56°798.				
96°94	1°98	8.7, 9.2	Dec. 13		$\alpha = 3^h 6^m 37^s \quad \delta = +56^\circ 41'.$				
99.92	1.94	—, —	» 29		67°27	15°±	5, 13.7	Dec. 13	
					66.55	10.60	6, 13.8	» 14	
					63.27	11.11	—, —	» 21	

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P.	D.	Mags.	Date	Note
No. 12. $\Sigma$ 446.				
$\alpha = 3^h 40^m 25^s \quad \delta = +52^\circ 17'.$				
254.70	8.40	—, —	Dec. 29	1892 AB
253.48	8.92	7.5, 8.3	» 21	( $\Sigma$ 446)
42.7	11.59	—, 12.5	» 29	1892 AC
38.27	12.89	—, 12	» 21	
42.40	13.70	—, 12	» 22	
No. 13. Es. 146.				
$\alpha = 4^h 36^m 48^s \quad \delta = +43^\circ 33'.$				
218.3	—	7.0, 14	Dec. 27	1899
216.6	17.11	—, —	Jan. 10	Single setting
217.7	18.40	—, —	Febr. 16	Too faint
No. 14. BD. +43°1149.				
$\alpha = 4^h 51^m 18^s \quad \delta = +43^\circ 8'.$				
156.60	33.12	8.0, 8.6	Dec. 26	1899 AB
155.90	32.57	—, —	Jan. 10	
156.60	32.72	—, —	Febr. 16	
156.05	32.94	9.0, 9.5	Nov. 13	
285.05	5.10	—, 11.5	Jan. 10	BC
284.43	5.64	—, 12	Febr. 16	
286.00	5.44	—, 12	Nov. 13	
No. 15. BD. +46°1192.				
$\alpha = 6^h 41^m 10^s \quad \delta = +46^\circ 19'.$				
273.80	26.72	6.8, 10.2	Febr. 9	Yellow, blue
274.30	27.68	—, —	» 11	
No. 16. $\Sigma$ 994.				
$\alpha = 6^h 51^m 20^s \quad \delta = +37^\circ 15'.$				
220.9	9.13	—, 12	Dec. 25	1892 AB
117.98	10.22	—, —	» 21	
56.40	25.74	—, —	» 25	1892 AC
55.50	26.11	—, —	» 21	( $\Sigma$ 994)
No. 17. BD. +40°1776.				
$\alpha = 6^h 53^m 19^s \quad \delta = +40^\circ 0'.$				
248.60	—	9.5, 11.5	Febr. 23	AB Note
246.84	7.99	—, —	Dec. 21	
151.55	—	9.5, 9.6	Febr. 23	AC
151.10	14.03	9.4, 9.5	Dec. 21	
No. 18. BD. +42°1870.				
$\alpha = 8^h 18^m 49^s \quad \delta = +42^\circ 29'.$				
236.65	12.24	8.5, 9.2	Febr. 11	Yellow, blue
No. 19. BD. +52°1792.				
$\alpha = 14^h 16^m 15^s \quad \delta = +52^\circ 13'.$				
32.0 $\pm$	1.0 $\pm$	9.5, 10.5	June 3	AB Note
170.3	40.9	—, 9.5	» 3	AC
No. 20. T Draconis.				
$\alpha = 17^h 54^m 49^s \quad \delta = +58^\circ 13'.$				
227.45	14.32	—, 10.0	July 14	
227.70	14.32	—, —	» 17	

P.	D.	Mags.	Date	Note
No. 21. BD. +41°3084.				
$\alpha = 18^h 29^m 30^s \quad \delta = +41^\circ 53'.$				
103.40	6.74	10, 10	Aug. 14	
102.60	6.41	—, —	» 15	
No. 22. h 1346.				
$\alpha = 18^h 41^m 2^s \quad \delta = +45^\circ 42'.$				
133.40	2.42	9.3, 12	Aug. 12	AB
136.80	3.04	9.3, 12	» 23	
137.40	—	9.0, 13	Sept. 15	
215.90	24.70	—, 10.8	Aug. 12	AC (h 1346)
No. 23. Anonyma.				
$\alpha = 19^h 46^m 14^s \quad \delta = +44^\circ 50'.$				
138.70	7.72	8.5, 12	Oct. 18	1892 AB
138.50	7.52	—, —	» 22	1892 Note
139.20	7.81	—, —	» 24	1892
138.26	7.24	7.8, 12.5	Nov. 14	
327.90	31.15	—, 9.2	Oct. 18	1892 AC
327.90	30.11	—, —	» 22	1892
327.50	—	—, —	» 24	1892
326.70	30.40	—, —	Nov. 14	
No. 24. $O\Sigma\Sigma$ 199.				
$\alpha = 20^h 1^m 9^s \quad \delta = +35^\circ 15'.$				
243.7	11.80	8, 14	Sept. 15	BC
243.7	—	—, —	» 18	Too faint
247 $\pm$	—	—, —	» 19	Too faint
83.03	16.08	—, 13	» 15	BD
81.75	17.76	—, 13	» 18	Faint
85.2	—	—, —	» 19	
323.85	69.61	—, —	» 18	AB( $O\Sigma\Sigma$ 199)
No. 25. Sh. 315.				
$\alpha = 20^h 1^m 31^s \quad \delta = +35^\circ 25'.$				
135.0 $\pm$	10.0 $\pm$	8, 14	Nov. 17	1899 AB
118.7	9.0	—, 14.2	Aug. 23	
128 $\pm$	—	—, —	Nov. 27	Too faint
299.55	10.96	—, 14	Aug. 16	AC
299.30	11.72	—, 13.7	» 23	
237.00	20.60	—, —	Nov. 17	1899 AD
—	21.70	—, —	» 18	1899
236.65	20.28	—, —	Aug. 16	(Sh. 315)
No. 26. $\sigma^1$ Cygni.				
$\alpha = 20^h 9^m 32^s \quad \delta = +46^\circ 27'.$				
251.80	—	5, 14	Sept. 22	1899
251.75	—	—, —	Aug. 14	
252.35	32.94	5, 14	» 16	
252.45	32.91	—, —	Dec. 15	
No. 27. BD. +46°2886.				
$\alpha = 20^h 10^m 32^s \quad \delta = +46^\circ 29'.$				
338.60	3.90	10, 10	Sept. 20	1899
338.40	3.48	9.5, 9.6	July 14	
337.20	4.04	9.2, 9.3	Aug. 12	
337.70	4.04	9.0, 9.2	» 14	

P.	D.	Mags.	Date	Note
No. 28. Es. 458.				
$\alpha = 20^{\text{h}} 16^{\text{m}} 36^{\text{s}} \quad \delta = +35^{\circ} 14'0''$				
256°30	24"32	9.1, 9.8	Sept. 15	A very red
No. 29. h 1510.				
$\alpha = 20^{\text{h}} 18^{\text{m}} 32^{\text{s}} \quad \delta = +47^{\circ} 24'$				
149°00	4"16	8.9, 9.0	Aug. 12	AB (h 1510)
150.55	4.56	8.8, 9.1	» 14	Note
339.15	6.08	—, 13.5	» 12	AC
342.30	6.10	—, 13	» 14	
338.20	6.76	—, 13.5	Nov. 17	
323.20	32.12	—, 10.2	Aug. 12	AD
322.60	31.38	—, —	» 14	

No. 30. RR Cygni.				
$\alpha = 20^{\text{h}} 41^{\text{m}} 56^{\text{s}} \quad \delta = +44^{\circ} 29'4''$				
57°25	18"36	8.5, 12	Dec. 2	1899
58.50	17.83	8.5, 13	» 8	1899

No. 31. Es. 473.				
$\alpha = 20^{\text{h}} 44^{\text{m}} 26^{\text{s}} \quad \delta = +32^{\circ} 47'9''$				
242°8	10"08	8.7, 9.0	Dec. 5	1892 AB
—	9.94	—, —	» 7	1892 A v. red
245.70	9.28	—, —	» 24	1892
245.55	—	—, —	» 27	1892
244.50	9.81	—, —	Nov. 16	
140.40	—	—, 10	Dec. 5	1892 AC
141.40	17.92	—, —	» 7	1892
—	17.80	—, —	» 24	1892
140.8	—	—, —	» 27	1892
—	17.24	—, —	Nov. 16	

No. 32. 63 Cygni.				
$\alpha = 21^{\text{h}} 2^{\text{m}} 28^{\text{s}} \quad \delta = +47^{\circ} 10'0''$				
150°13	15"66	4.5, 13.5	Dec. 1	1899
153.95	15.08	—, 13.5	» 27	1899
152.85	15.84	4.0, 13.8	Sept. 14	
148.45	15.73	4.0, 13.6	Dec. 13	
151.07	15.83	4, 13.5	» 14	

No. 33. BD. +49°3555.				
$\alpha = 21^{\text{h}} 29^{\text{m}} 58^{\text{s}} \quad \delta = +49^{\circ} 56'6''$				
96°30	4"36	9.0, 11.5	Sept. 17	
93.73	4.73	8.7, 10	Dec. 14	

P.	D.	Mags.	Date	Note
No. 34. BD. +49°3568.				
$\alpha = 21^{\text{h}} 32^{\text{m}} 45^{\text{s}} \quad \delta = +49^{\circ} 59'4''$				
140°±	—	8.3, 9.2	Dec. 13	AB
140.03	2"94	—, —	» 14	
140.14	2.36	—, —	» 21	
70.20	39.54	—, 8.7	» 14	AC
69.15	39.45	—, —	» 21	C reddish

No. 35. RU Cygni.				
$\alpha = 21^{\text{h}} 36^{\text{m}} 38^{\text{s}} \quad \delta = +53^{\circ} 46'8''$				
224°20	11"40	var., 11.5	Dec. 1	1899 AB
223.35	11.09	—, —	» 15	1899
223.37	10.80	—, 12	Aug. 14	
29.30	18.99	—, 10.5	Dec. 1	1899 AC
28.45	18.78	—, —	» 15	1899
30.20	18.16	—, 10	Aug. 14	

No. 36. h 1694.				
$\alpha = 21^{\text{h}} 42^{\text{m}} 23^{\text{s}} \quad \delta = +57^{\circ} 14'3''$				
137°44	7"60	9.2, 12.7	Nov. 8	BC
141.30	7.30	—, 11.8	Dec. 21	
14.35	19.88	9.0, 9.2	Nov. 8	AB (h 1694)
13.08	20.29	—, —	Dec. 21	

No. 37. R Cassiopeiae.				
$\alpha = 23^{\text{h}} 52^{\text{m}} 19^{\text{s}} \quad \delta = +50^{\circ} 43'2''$				
277°15	8"75	10.3, 14.5	Dec. 21	AB Note
333.35	27.28	8.9, 10.2	Oct. 21	AC
332.45	—	10.0, 10.2	Dec. 13	
332.50	27.30	10.3, 10.2	» 21	

No. 38. Es. 1423.				
$\alpha = 23^{\text{h}} 53^{\text{m}} 3^{\text{s}} \quad \delta = +56^{\circ} 18'3''$				
337°65	17"92	9.0, 10.5	Sept. 18	B very red
337.95	18.52	9.0, 11.0	Oct. 3	Note

No. 39. BD. +59°2819.				
$\alpha = 23^{\text{h}} 56^{\text{m}} 37^{\text{s}} \quad \delta = +59^{\circ} 17'5''$				
289°10	10"05	9.2, 9.4	Oct. 25	1892
289.50	—	—, —	Nov. 26	1892
289.04	10.21	9.1, 9.2	Dec. 22	

## Notes.

No. 17. AG. Bonn: »dpl. praec.« referring to AC.  
 No. 19. A and C AG. Cambridge (U. S.) Nos. 4499, 4500. The close pair was seen on several nights but it was found impossible to measure in the strong twilight.  
 No. 23. AC found by Webb, and also Dembowski, the closer companion has also been seen by Holmes.

No. 29. The comes AC was detected in measuring AB, there are several other distant ones, one double  $10'' \pm$ .  
 No. 37. The nearer companion is very difficult and the measures uncertain.  
 No. 38. A mistake of  $10^{\circ}$  in the earlier measures.

# ASTRONOMISCHE NACHRICHTEN.

Band 158.

N<sup>o</sup> 3784.

16.

## List of seventy two new double stars.

By *T. E. Espin.*

In the following list the numbers have been continued from A. N. 3717. The stars have all been found during the year 1901, with the exception of Nos. 58 and 59. Most of the stars have been measured on more than one night. The mean results of the measures are here given.

No.	BD.	$\alpha$ 1880	$\delta$ 1880	P.	D.	Mags.	Notes
40	+51° 18	$0^h 5^m.1$	+51° 24'	90°±	4"±	9.0 11.5	AB
				—	20±	— 10	AC
41	+48. 67	0 12.0	+48 51	217.3	5.2	7.5 9.1	
42	+53. 54	0 16.3	+52 56	191.0	10.5	8.2 9.3	
43	+54. 144	0 39.0	+54 19	117.5	13.8	8.0 9.0	Note
				72.6	14.2	— 12.5	
44	+56. 156	0 49.9	+56 51	243.0	5±	8.0 10.0	
45	+48. 320	0 54.5	+48 54	242.0	7.9	6.2 10.0	
46	+54. 340	1 31.0	+54 37	36.8	2.9	9.0 10.0	
				288.1	53.0	— 9.5	
47	+47. 580	2 4.6	+47 41	292.4	4.8	8.4 11.0	AB
				259.1	19.8	— 10.5	AC
48	+42. 456	2 5.0	+42 17	182.9	10.9	7.2 11.0	
49	+46. 566	2 17.1	+46 31	150.3	35.7	8.7 10.0	AB
				94.5±	1.7±	10.7 11.0	BC
50	+54. 601	2 36.3	+54 25	26.0	2.3	9.3 9.4	
51	+53. 578	2 41.6	+53 26	280±	3±	10 10.2	BC
				320±	70±	— 9	AB
52	+60. 673	3 13.8	+60 19	285.7	6.1	8.6 12.0	
53	+59. 650	3 15.7	+59 7	—	2 $\frac{1}{2}$ ±	9.3 9.8	
54	+48. 960	3 28.6	+48 40	249.0	4.0	9.1 11.5	
55	+58. 698	3 56.2	+58 58	261.1	9.3	8.0 13.0	
56	+58. 766	4 32.0	+58 31	205.3	9.9	8.5 8.8	
57	+47.1075	4 47.4	+47 27	—	3±	10 10	Note
58	$\beta$ Camelop.	4 52.7	+60 16	167.5	14.9	7.5 11.5	BC
				208.6	81.0	— 4.0	AB ( $O\Sigma\Sigma$ 57)
59	+33.1005	5 10.8	+33 24	8.4	13.3	7.5 8.2	AB. Note
				326.7	13.0	— 13.8	BC
				355.6	4.8	12 12	DE
				170.4	78.1	— —	AE
60	+40.1261	5 13.1	+40 42	269.4	5.7	9.1 9.1	
61	+40.1263	5 13.7	+40 39	356.7	2.4	9.0 9.2	
62	+40.1277	5 15.8	+40 57	61.9	2.7	9.5 12.0	AB
				306.6	14.2	— —	AC
63	+41.1227	5 30.4	+41 13	169.9	7.9	8.0 11.0	
64	+41.1264	5 36.6	+41 47	70.4	2.5	9.2 10.2	
65	+41.1488	6 17.6	+41 39	87.5	1.6	9.2 10.2	
66	—	6 20.7	+58 32	275.2	2.5	9.1 9.3	Not in BD.
67	+40.1734	6 42.8	+40 38	309.7	6.2	8.2 9.3	
68	+40.1738	6 43.8	+40 33	75.0	8.7	8.0 10.0	
69	+51.1365	6 43.8	+51 47	132.4	5.1	9.2 10.2	

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No.	BD.	$\alpha$ 1880	$\delta$ 1880	P.	D.	Mags.	Notes
70	+51°1391	6 <sup>h</sup> 59 <sup>m</sup> .4	+51° 51'	248°.4 265.8	7 <sup>m</sup> .5 47.7	12.5 13.0 — 4.5	BC AB
71	+53.1223	8 4.4	+53 37	285.1	3.2	9.0 9.1	
72	+49.1798	8 55.2	+49 31	294.0	10.2	8.5 11.5	
73	+55.1515	12 4.3	+55 35	304.7 21.0	3.6 30.6	10 10 — 8.5	BC AB
74	+41.2588	12 12.7	+41 44	120.6	9.3	8.0 12	
75	+46.2054	12 15.9	+46 29	217.6	4.3	9.0 9.4	
76	+50.2324	16 40.9	+50 50	47.0	2.5	9.0 9.5	
77	+51.2178	17 5.3	+51 0	274.0	17.0	6.6 11.8	
78	+51.2283	17 54.6	+51 12	136.5	6.5	8.8 11.5	
79	+55.2014	18 0.5	+55 52	81.4 94.2	5.6 24.6	9.3 11.5 — 9.3	AB AC
80	+32.3418	19 19.5	+32 55	187.1	3.8	8.6 9.0	
81	+39.3766	19 22.5	+39 54	221.1	9.8	8.2 13.5	
82	+40.3728	19 22.7	+40 5	174.8	2.6	8.9 10.5	
83	+44.3241	19 42.4	+44 40	214.7	7.7	9.3 9.5	
84	+38.3772	19 45.2	+38 24	156.3	11.4	6.5 11.6	Another comes 26" sp
85	+43.3471	19 59.9	+43 51	31.9 86.6	2.7 10.1	9.2 10 — 11.5	AB AC, another comes N
86	—	20 1.3	+35 37	288.5 163.2 79.0 318.2	11.5 4.2 11.7 14.8	9.0 10.0 10 11.5 — 12.0 — 11.0	AB. Not in the BD. BC. Note AD AE
87	+36.3917	20 5.7	+36 23	301.5	8.9	8.4 9.0	
88	+50.3150	20 34.3	+50 41	127.7	7.9	8.6 9.0	
89	+47.3154	20 34.4	+47 39	199.1	16.5	6.5 11.2	
90	+47.3159	20 35.8	+47 9	140.1	8.3	7.6 12.0	
91	—	20 38.4	+49 47	187.6 242.1	4.4 16.0	9.5 9.7 — 9.8	AB. Not in the BD. BC. Note
92	+48.3193	20 38.7	+48 50	108.6	10.1	8.3 8.6	Note
93	+51.2954	20 44.3	+51 58	273.0	7.4	6.0 11.1	
94	+49.3386	20 45.8	+49 41	80.1 13.1	2.4 103.1	9.5 10.0 — 6.5	BC. Note AB
95	—	20 51.5	+46 54	280.0 126.0	6.1 12.6	9.0 12 — 11	AB AC (h 1597)
96	+49.3455	21 0.7	+50 0	250.9	8.0	8.0 10.0	
97	+44.3761	21 12.1	+44 19	291.8	6.6	9.1 10.0	
98	+51.3042	21 15.6	+51 49	255.5 86.9 310.6	4.9 29.8 26.6	9.0 13.5 6.5 9.0 — 9.2	CD AC AB
99	+44.3833	21 24.7	+44 29	199.5	4.7	8.6 12.0	
100	+44.3835	21 24.8	+44 41	158.5	3.6	8.9 9.3	
101	—	21 32±	+45 37	13.7	3.2	9.5 11.0	Not in the BD.
102	+47.3505	21 33.6	+47 57	35.5	11.6	8.1 10.0	
103	+53.2782	22 1.1	+53 48	213.6	1.6	9.1 9.3	
104	+44.4117	22 18.3	+44 54	52.3	5.9	8.5 13.8	
105	+49.3886	22 28.1	+49 44	294.7	11.7	8.1 13.8	
106	+48.3795	22 34.1	+48 49	264.8	7.9	8.9 9.5	
107	+49.4038	23 0.4	+49 28	216.6	4.5	8.8 11.0	
108	+51.3606	23 20.1	+52 0	243.1	2.0	9.1 9.2	
109	+53.3182	23 26.3	+53 21	47.3	5.6	8.6 10.7	
110	+48.4092	23 27.9	+48 49	34.0 333.0	4.8 16.2	9.0 11.0 — 10.5	AB. Note AC (h 1891?)
111	+51.3677	23 32.6	+52 1	11.2	3.6	8.8 11.2	
112	+52.3574	23 53.1	+52 49	222.9	1.4	9.0 9.2	Note

## Notes.

43. Found while searching for a pair of Mr. Edwin Holmes with which it may be identical. It is given as two stars in the Catalogue AG. Cambr. Mass. Nos. 320, 321. The distance would seem to have decreased.

57. There are three stars here, the middle one is double.

59. A pair found many years ago with a 3 in. refractor. The distant double comes was found with the 13 in. reflector at the Oxford University Observatory and the comes C with the 17<sup>1</sup>/<sub>4</sub>. AB was measured by Burnham:

P. = 11°9	D. = 13"96	1882.239
8.6	14.09	.244

86. A faint group of stars measured on four nights; measures very discordant.

91. In field S of 51 Cygni.

Tow Law, Darlington, England, 1902 Jan. 1.

92. Noted as double in Argelander's zones 25" apart. The following are the  $\Delta\alpha$ ,  $\Delta\delta$  in Argelander and in the Cat. of the Astr. Gesellschaft:

Argelander 1841 Aug. 29	$\Delta\alpha = +1^{\circ}74$	$\Delta\delta = +1"6$
Bonn 1877.2	$= +1.24$	$= +0.1$

The comes was N of the principal star till 1877, it is now S.

94. There is another 9.0 mag. star somewhat nearer than the double comes about 80°.

110. There is no star in the BD. in Herschel's place. His place is apparently approximate only, a correction of +1<sup>m</sup> brings his place into close agreement with BD.+48°40'9". His observation gives P. 326°4 D. 18".

112. A neat double found while observing Washburn No. 59.

*T. E. Espin.*

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*New Double Stars detected with the 17 $\frac{1}{4}$ -inch reflector during the year 1902. By T. E. Espin.*

The following list contains new double stars found during 1902. The weather has been continuously bad throughout the year, and even when the sky has been clear the definition has generally been very poor. Many of the *comites* are far too faint to measure satisfactorily.

No.	B.D.	R.A. 1880. h m	Decl.	P.	D.	Night.	Mags.	Note.
113	66°6	0 2·6	+66 37	122°6	6''8	1	8·5 11	...
114	66·7	3·1	66 29	161·6	5·0	3	8·7 11·2	...
115	61·50	16·3	61 34	82·4	9·9	1	8·0 10	...
116	54·87	24·6	54 59	255·9	7·7	1	8·9 8·9	...
117	54·106	27·6	55 3	54·4	3·0	1	9·0 11	...
118	63·111	47·7	63 43	241·3	2·6	2	8·6 8·7	...
119	53·271	1 10·3	54 19	115·1	5·1	1	8·2 10·5	...
120	53·576	2 41·1	53 26	70·3	3·9	1	8·7 12·5	...
121	57·729	3 24·1	57 51	325·5	6·9	2	8·0 13·5	...
122	61·666	55·3	61 50	248·7	5·0	2	8·6 10·5	...
123	44·2120	11 37·4	44 51	203·8	7·4	1	9·1 9·3	AB.
				275·5	42·9	1	9·2	AC.
124	42·2287	12 10·2	42 34	135±	5±	1	9·0 12·5	Too faint.
125	42·2370	59·9	42 19	119·1	2·4	2	8·0 10·6	...



No.	B.D.	R.A. 1880. h m	Decl.	P.	D. Night.	Mags.	Note.
126	63°1446	18 38·5	+63 41	21°9	4'9 3	11 12	BC faint.
				53·5	73·1 3		8·0 AB, 14 mag. between.
127	62°1649	46·2	62 46	135·7	4·7 1	9·5 9·5	...
128	46°2659	19 13·4	46 58	281·6	4·7 2	8·4 11·5	...
129	53°2264	30·3	53 38		2·9 2	9·2 10·0	Note.
130	60°2017	45·8	+60 51	237·7	2·9 3	9·5 9·7	...
131	53°2323	52·5	+54 3	228 0	7·3 1	8·1 9·0	...
132	56°2364	20 7·2	+56 36	260·7	5·3 3	8·6 8·7	AB.
				60·7	37·8 3		8·6 AC.
133	56°2368	8·4	+56 56	129·4	7·8 2	8·5 9·0	...
134	63°1655	43·1	+63 6	264·3	10·4 3	8·5 9·2	...
135	56°2509	50·8	56 43	195·9	6·2 5	7·0 11·2	...
136	56°2520	56·7	56 46	340·6	5·1 1	9·2 9·3	...
137	61°2112	21 16·2	61 21	75·3	2·7 2	8·9 11·5	BC. Note.
				74·5	45·3 3		6·5 AB.
138	60°2224	17·3	60 11	265·2	8·4 2	6·5 12 8	Note.
139	52°2921	17·3	52 52		5± 1	9·0 11	...
140	56°2614	34·7	56 26	N.	5 2	8·5 13·1	Too faint.
141	60°2281	38·0	60 40	186·6	1·9 1	9·5 9·6	...
142	61°2361	48·6	61 30	332·9	7·9 2	8·8 11·2	...
143	61°2363	48·8	61 30	44·9	6·5 2	8·2 13·5	Very difficult.
144	S. 800	50·3	62 3	280·8	19·8 4	7·2 12·8	Aa. Note.
				43·3	22·4 4		12·2 Bb.
				146·1	62·3 3	7·2 7·8	AB (S. 800).
145	62°2008	53·5	62 7	203·0	2·8 5	9·1 9·5	...
146	52°3140	22 8·1	+52 17	8·4	2·7 1	9·2 9·4	Poor measure.
147	54°2769	19·9	+54 16	25·1	2·0 3	8·3 10·2	AB.
				204·8	29·1 2		10·2 AC.
148	...	26·7	+61 0	286·2	3·5 2	10 10·5	Note.
149	63°2030	23 34·3	+63 39	120·9	6·0 2	8·5 8·7	...
150	64°1848	38·4	+64 23	210·0	3·1 1	9·3 11·0	...

## Notes.

129. Position, October 30, 204°·2; November 7, 225°·1; probably a mistake of 20° in one or other measure.
137. The measures on both nights of BC were unsatisfactory.
138. The *comes* is too faint to measure satisfactorily.
144. S. 800. South speaks of a third star, but he probably refers to one of the more distant *comites*, the two closer ones would probably be too faint for his aperture.
148. This pair lies 22·7 f. B.D. + 60°·2403 and 12''·4 S. of it.

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*New Double Stars detected with the 17 $\frac{1}{4}$  in. Reflector during the year 1903. By T. E. Espin, M.A.*

The following stars have been found to be double during the year 1903. As they are so few, and the measures are for the most part incomplete, I have not numbered them.

B.D.	R.A. 1880	Decl.	P.	D.	Mags.	
$^{\circ}$	h	m	$^{\circ}$ ' "	$^{\circ}$ "	" "	
53 $^{\circ}$ 234	1	2 $^{\circ}$ 5	+ 53 59	215 $^{\circ}$ 7	5 $^{\circ}$ 1	8.6 11.8
63 $^{\circ}$ 1346	17	21 $^{\circ}$ 4	63 51	19 $^{\circ}$ 1	6 $^{\circ}$ 5	9.0 11.5
64 $^{\circ}$ 1256	18	15 $^{\circ}$ 6	64 1	332 $^{\circ}$ 7	8 $^{\circ}$ 6	8.2 12.0
51 $^{\circ}$ 2372		20 $^{\circ}$ 9	51 35	198 $^{\circ}$ 7	2 $^{\circ}$ 7	8.6 8.7
60 $^{\circ}$ 1844		42 $^{\circ}$ 4	60 32	103 $^{\circ}$ 6	4 $^{\circ}$ 3	9.1 11.1
61 $^{\circ}$ 1816	19	5 $^{\circ}$ 2	61 4	243 $^{\circ}$ 9	6 $^{\circ}$ 1	9.1 9.8
59 $^{\circ}$ 1979		12 $^{\circ}$ 7	59 33	116 $^{\circ}$ 3	7 $^{\circ}$ 4	9.0 11.6
59 $^{\circ}$ 1981		13 $^{\circ}$ 3	59 34	113 $^{\circ}$ 7	8 $^{\circ}$ 1	8.8 11.7
64 $^{\circ}$ 1346		20 $^{\circ}$ 2	64 18	216 $^{\circ}$ 3	4 $^{\circ}$ 4	8.8 9.9
64 $^{\circ}$ 1364		35 $^{\circ}$ 6	64 47	19 $^{\circ}$ 3	8 $^{\circ}$ 9	8.5 10.5
64 $^{\circ}$ 1369		37 $^{\circ}$ 8	64 39	313 $^{\circ}$ 7	2 $^{\circ}$ 7	8.8 9.4
64 $^{\circ}$ 1386		46 $^{\circ}$ 3	64 23	70 $^{\circ}$ 7	6 $^{\circ}$ 5	8.0 10.5
59 $^{\circ}$ 2160		57 $^{\circ}$ 3	59 25	145 $^{\circ}$ 0	4 $^{\circ}$ 1	9.0 11.5
52 $^{\circ}$ 2883	21	8 $^{\circ}$ 7	52 48	—	4 $\pm$	9.0 12
63 $^{\circ}$ 1814	22	5 $^{\circ}$ 8	63 31	—	4 $\pm$	9 11

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*New Double Stars.* By the Rev. T. E. Espin, M.A.

The following list contains all the new pairs detected since the end of 1902. A large number of them were found during the autumn of 1904 and the spring of the present year, and consequently were too late for insertion in Professor Burnham's new catalogue. In many cases these pairs are too difficult to measure properly with the means at my disposal. Four wide

May 1905.

*New Double Stars.*

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pairs have been included, as they are not found in any catalogue so far as I am aware ; but as they are all marked as double in Argelander they have not been numbered.

No.	B.D.	R.A. 1880 Decl.		P.	D.	Mags.	Nights.	Date.
		<sup>h</sup>	<sup>m</sup>					
151	+39°12	0	2·5	+39 58	196°0	6"4	8·6 12·8	2 04·85
152	+39°27		7·1	39 33	102°7	7·8	8·5 12·0	3 05·02
153	+40°42		10·2	40 37	243°1	2·5	9·5 10·5	2 04·73
154	+53°54		16·2	53 40	191°7	10·2	8·4 9·3	3 02·91
155	+36°173		52·8	37 7	70°4	6·2	8·7 9·6	2 05·05
156	+53°234	1	2·5	53 59	216°5	5·2	8·6 11·8	3 03·91
157	+40°250		6·7	40 31	<i>f</i>	10±	7·0 13·5	2 04·86
158	+40°378		42·1	40 22	45°0	6·6	8·5 9·8	1 05·02
159	+37°386		45·1	37 11	...	5±	8·7 14·0	1 04·76
160	+36°355		49·0	36 40	79°8	17·9	5·2 12·5	2 04·73
161	+37°420		49·6	37 14	243°4	3·9	9·5 10·7	3 04·77
162	+36°369		50·6	36 10	204°1	11·1	8·7 12·5	3 04·85
163	+36°375		50·9	36 11	15°9	5·5	9·4 9·9	3 04·85
164	+40°475	2	10·6	40 19	...	5±	8·7 13·0	1 05·02
165	+63°435	3	28·1	63 49	171°9	3·7	9·9 10·4	3 04·05
166	+39°844		33·7	39 19	357±	4±	8·5 13·0	1 05·02
167	+34°730		39·8	34 58	322°6	4·4	9·0 9·1	3 04·86
168	+36°868	4	11·8	36 26	273°2	6·7	8·5 11·5	3 05·16
...	+59°793		12·7	59 20	58°9	32·1	6·0 8·8	1 04·07
169	+39°1191	5	0·6	39 20	176°5	4·5	8·3 12·0	2 05·03
170	+34°978		7·8	34 17	23°4	12·7	8·0 10·1	2 05·16
171	+62°756		18·5	62 35	222°9	2·3	8·7 10·5	1 04·06
172	+39°1397		36·6	39 47	135°4	4·9	9·0 10·0	1 05·02
173	+39°1404		37·7	39 10	N.F.	4±	8·5 12·5	1 05·03
174	Anon.	6	27·9	36 55	108°7	3·0	9·6 9·8	2 05·10
175	+36°1498		38·0	36 35	79°4	6·4	8·9 9·4	1 05·10
176	+34°1451		38·3	34 26	70±	6±	8·8 12·0	1 05·15 AB
					45±	6±	12·5	1 05·15 AC
177	+37°1582		38·8	37 4	...	6±	9·5 10·5	1 05·07 BC
						70±	A = 8·5	1 05·07 AB
178	+40°1776		53·5	40 1	247°7	6·6	9·5 11·5	2 00·51 BC
					151°3	8·5	A = 9·4	2 00·51 AB
179	Anon.	7	49·0	38 2	...	4±	9·5 9·5	1 05·07
180	+36°2033	10	1·5	36 10	349°6	9·6	9·0 11·0	1 05·25
181	+36°2166	11	6·6	36 22	142°9	5·4	9·1 10·7	3 05·29
...	+34°2264		44·9	33 54	273°7	45·2	6·0 8·5	2 05·34

No.	B.D.	R.A. 1880	Decl.	P.	D.	Mags.	Nights.	Date.
		<sup>h</sup> <sup>m</sup>						
182	+63°1346	17	21°4	63 51	19°1	6'5	9°0 11°5	4 03'60
183	+36°3026	18	4°7	36 41	163°0	9'8	8'7 12°0	3 04'74
184	+32°3056		4°7	32 54	157°2	5'5	9°0 11°2	2 04'73
185	+32°3064		6°6	32 57	296°6	5'5	8'8 9°4	4 04'76
186	+64°1256		15°6	64 1	332°7	8'6	8'2 12°0	2 03'61
187	+51°2372		20°9	51 35	198°7	2'7	8'6 8'7	4 03'76
188	+58°1824		31°5	58 36	224°8	11'7	8'2 13°7	2 02'81
189	+60°1844		42°4	60 32	103°6	4'3	9'1 11°1	1 03'88
190	+33°3228		46°1	33 4	236°0	4'2	11'5 12°0	3 04'62 BC
					295°1	12'9	A = 9'5	2 04'61 AB
191	+61°1816	19	5°2	61 4	243°9	6'1	9'1 9'8	1 03'60
192	+59°1979		12°7	59 33	116°3	7'4	9°0 11°6	2 03'63
193	+59°1981		13°3	59 34	113°7	8'1	8'8 11°7	2 03'63
194	+64°1346		20°2	64 18	216°3	4'4	8'8 9°9	3 03'68
195	+33°3496		27°9	34 2	239°5	5'6	8'3 9°0	4 04'75
196	+32°3467		28°5	33 3	48°7	4'5	9°0 12°0	1 04'69
197	+64°1364		35°6	64 47	19°3	8'9	8'5 10°5	3 03'68
198	+64°1369		37°8	64 39	313°7	2'7	8'8 9°4	3 03'68
199	+64°1386		46°3	64 23	70°7	6'5	8°0 10°5	1 03'88
200	+34°3791		50°7	34 15	229°0	4'5	10°0 10°0	2 04'75
201	+59°2160		57°3	59 25	145°0	4'1	9°0 11°5	1 03'64
202	+34°3850		57°9	34 59	180±	6±	8'7 14°0	04'83 Aa
					100°0	17'3	B = 10°5	3 04'83 AB
					110°7	5'5	b 13°0	2 04'86 Bb
					162°8	12'3	C 11°5	2 04'86 AC
					134°8	23'6	D 11°8	2 04'86 AD
203	+35°3983	20	3°8	35 7	131°4	5'8	8'5 10°0	2 04'94
204	+34°3930		9°7	35 1	238°4	11°0	8'1 12°0	2 04'66
205	+34°3936		10°4	34 38	195°5	6'6	8'8 10°7	2 04'95
206	+37°3949		24°3	37 47	127°1	4'1	8'9 9°3	2 04'79
...	+57°2240		42°5	57 9	162°7	68'6	5°0 8'7	3 02'83
207	+37°4213	21	6°4	37 51	244°3	2'5	9'5 9°6	1 04'95
208	+36°4469		8°5	37 4	143°0	3'7	8'8 10°7	2 04'82
209	+52°2883		8°7	52 48	...	4±	9°0 12°0	1 03'69
210	+32°4270		44°5	32 47	111°4	6'5	9'2 10°5	2 04'82
211	+39°4683		45°6	39 11	196°9	2'6	9'5 10°5	1 04'77
212	+64°1608		53°0	65 5	Double	...	9°0 ...	1 03'60
213	+63°1814	22	5°8	63 31	...	4±	9 11	1 03'60
214	+34°4634		10°1	34 11	170°4	3'5	9°0 12°0	1 04'69

No.	B.D.	R.A. 1880	Decl.	P.	D.	Mags.	Nights.	Date.
		<sup>h</sup> ° m	<sup>°</sup> ′ ″	<sup>°</sup> ′ ″	<sup>′</sup> ″			
215	+34°46′35″	10°2	34 18	141°7	8′8	8.8 12.5	1	04.69
216	+35°48′50″	32°3	36 4	...	4 ±	11 13	1	04.78 BC
				38°0	44.3	A = 8.3	1	04.78 AB
217	+36°49′25″	40°0	36 17	...	3 ±	10 11	1	04.78 BC
					70 ±	A = 8.7	1	04.78 AB
...	+35°49′17″	50°1	35 43	243°0	49.6	5.0 8.5	2	04.77
218	...	51°9	64 9	330°5	2.8	11.0 12.0	1	02.73 BC
				296.4	19.1	A = 10	1	02.73 AB (h 1833)
219	+35°50′01″	23 12.8	35 42	309°8	6.1	9.8 10.2	3	04.96
220	+61°24′30″	15°6	61 45	...	4.0	11.5 12.5	1	04.02 BC
					30 ±	A = 8.0	1	04.02 AB
221	+35°51′53″	54°7	36 7	233°9	14.8	8.1 8.8	3	04.87

## Notes.

163. Measures discordant. 165. Discordant angles.  
 168. Discordant angles. 174. 42" N. 10 sec *p* B.D. + 36°1528.  
 175. *h* 5284 is south.  
 182. According to the list of proper motions in the Harvard section of the Catalogue of the Astron. Gesell., this star has a P.M. in Decl. of +0''103. If B was stationary the distance between the stars would have been 0''9 at the time of the Harvard observation.  
 184. Discordant angles. 197. Discordant angles.  
 202. October 8, *Aa* too faint to measure, another still further in the same direction. November 12, glimpsed *Aa* and thought it the first of three in a line. November 14, *Aa* seen—not sure that there is not a nearer and still fainter one.  
 204. Discordant distances. 205. Discordant angles.  
 207. Faint and unsteady poor measures. 212. No particulars, simple entered as double.  
 213. The fainter star of a wide pair. 219. Discordant angles.

*Additional Note.*—Since the above paper was presented Professor Hussey's ninth catalogue of new double stars has been received, and No. 195 was found to be identical with Hussey 946:—

195. 8.0 and 10.0. 240°8—5''25. 1904.47. Hussey. 2.

*New Double Stars.* By Rev. T. E. Espin.

No.	B.D.	R.A. 1900 Dec.		P.	D.	Mags.	Nights.	Date.
		h	m					
222	+ 38° 46	0	20·6	+ 38° 14	152° 5	5" 30	8·6 9·5	2 05·89
223	...		41·5	38 15	262·5	3·82	9·5 9·5	3 05·83
224	37° 130		41·8	38 5	344·8	10·56	8·6 13·7	2 05·86
225	37° 138		42·8	38 6	250·9	6·49	9·0 14	2 05·86
226	38° 144		49·9	38 27	282·4	6·10	9·0 12·5	2 05·79
227	34° 293	1	34·6	34 17	78·1	3·76	9·3 9·8	2 05·90
228	...		51·0	37 30	9·5	3·51	9·7 9·7	3 05·79
229	37° 497	2	5·2	37 37	38·2	1·67	9·0 10·5	4 05·87
230	...		8·2	37 40	301·6	2·86	9·3 9·9	4 05·87
231	37° 606		35·6	37 59	81·1	3·95	8·7 9·5	2 05·83
232	39° 654		46·6	39 29	188·8	2·30	8·7 9·6	2 05·94
233	34° 722	3	37·4	35 0	80±	4±	8·6 12·0	05·87
234	33° 710		39·0	33 34	<i>f</i>	5±	9·3 12·0	05·89
235	34° 732		41·4	34 44	271·3	2·5	12·0 12·0	1 05·89 BC
					227·1	35·01	A = 8·7	2 05·88 AB
236	34° 744		44·0	34 22	352·8	4·96	9·3 9·6	3 05·90
237	33° 757		54·6	33 58	117·8	6·65	9·0 10·0	2 05·88
238	34° 809		59·4	34 22	<i>sf</i>	2±	9·3 9·5	05·94

No.	B.D.	R.A. 1900 Dec.		P.	D.	Mags.	Nights.	Date.
		h	m					
239	35° 85' 6"	4	16' 5"	35° 59'	...	4 ±	9 0 12' 0"	05' 87
240	39° 10' 83"		44' 0"	39 18	...	5 ±	9' 5 11' 0"	05' 79
241	36° 32' 93"	18	48' 0"	36 41	69' 8"	2' 03	9' 1 10' 7"	2 05' 71
242	36° 37' 30"	19	46' 4"	36 28	22' 1"	2' 22	9' 5 10' 0"	2 05' 85
243	34° 38' 44"		58' 2"	35 6	294' 7"	4' 78	9' 0 10' 2"	3 05' 71
244	34° 39' 34"	20	10' 6"	35 7	129' 6"	40' 72	7' 5 11' 5"	2 05' 69 AB
					14' 1"	5' 00	C = 12' 0"	2 05' 69 BC
					306' 0"	4' 74	D = 13' 2"	2 05' 69 CD
245	39° 52' 15"		26' 5"	39 47	160' 3"	4' 76	9' 4 9' 5"	2 05' 79
246	38° 41' 33"		27' 9"	38 11	8' 2"	6' 21	9' 0 11' 5"	3 05' 75 AB
					355' 4"	10' 93	10' 5"	2 05' 72 AC
247	36° 41' 6"		32' 6"	36 30	147' 9"	5' 49	8' 8 10' 2"	2 05' 82
248	36° 41' 73"		36' 1"	36 42	2' 0"	5' 50	9' 0 13' 0"	3 05' 94 (comes 14' 7" nf)
249	33° 40' 31"		44' 0"	34 2	22' 3"	5' 41	9' 0 10' 0"	2 05' 80
250	36° 42' 87"		48' 2"	36 22	87' 6"	4' 26	9' 2 12' 5"	3 05' 86
251	36° 43' 52"		54' 8"	36 21	142' 9"	6' 32	8' 7 9' 3"	2 05' 88
252	36° 44' 42"	21	6' 2"	37 0	170' 2"	3' 49	8' 7 9' 5"	2 05' 75
253	37° 42' 07"		6' 7"	37 12	22' 3"	3' 46	8' 9 9' 6"	2 05' 75
254	37° 42' 10"		7' 0"	38 4	330' 3"	2' 39	8' 8 9' 1"	2 05' 75
255	39° 44' 73"		7' 1"	40 7	33' 0"	4' 89	8' 9 11' 7"	3 05' 84
256	39° 44' 81"		9' 0"	40 7	280' 5"	4' 34	9' 5 9' 7"	3 05' 84
257	38° 43' 97"		9' 1"	38 32	323' 1"	5' 80	8' 0 12' 0"	2 05' 91
258	35° 45' 43"		25' 5"	35 59	355' 3"	4' 02	9' 3 12' 0"	3 05' 87 BC
					203' 3"	25' 41	A = 9' 0"	1 05' 83 AB
259	38° 45' 22"		28' 2"	38 22	321' 9"	2' 80	9' 2 9' 5"	2 05' 93
260	38° 45' 25"		28' 5"	38 35	280' 8"	5' 63	9' 0 13' 0"	2 05' 85
261	39° 46' 95"		48' 2"	39 52	162' 5"	4' 67	9' 2 9' 2"	1 05' 96
262	36° 48' 84"	22	32' 4"	37 9	162' 2"	5' 16	8' 7 10' 5"	2 05' 78
263	40° 48' 60"		32' 4"	40 38	245' 8"	9' 30	8' 9 14' 0"	3 05' 84
264	40° 48' 62"		33' 0"	40 30	356' 4"	8' 54	8' 6 12' 5"	3 05' 84
265	32° 45' 01"		39' 3"	33 6	1' 4"	8' 49	8' 8 9' 3"	3 05' 93
266	39° 49' 58"		48' 8"	39 48	84' 8"	13' 75	8' 0 10' 7"	2 05' 86
267	..	23	25' 8"	38 57	174' 0"	2' 21	9' 6 11' 0"	2 05' 86
268	39° 51' 61"		41' 9"	39 59	266' 3"	4' 23	8' 5 10' 0"	2 05' 79
...	40° 51' 50"		43' 1"	40 33	215' 5"	26' 78	7' 9 8' 4"	2 05' 94
269	40° 51' 53"		44' 0"	40 46	216' 3"	6' 64	8' 8 11' 0"	2 05' 79
					139' 8"	15' 42	C = 13	2 05' 79
...	40° 51' 67"		48' 0"	40 48	145' 4"	50' 98	6' 5 8' 8"	2 05' 94



*Notes.*

- 224. Discordant angles.
  - 225. Measures somewhat discordant, very difficult.
  - 226. The same remarks apply to this star.
  - 244. CD. The measures are little more than estimations.
  - 248. Measures of angle discordant, the 14-mag. *comes* noted only on October 31.
  - 260, 267. Measures discordant.
  - B.D. +40°5150. A fine wide pair, not given in any catalogue of double stars so far as I am aware.
  - B.D. +40°5167. Marked double in Argelander; A orange, B contrasted blue
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*New Double Stars.* By the Rev. T. E. Espin, M.A.

The Spring has been unusually good for observing ; not only have there been a great number of fine nights, but the definition has been, on the whole, excellent. The stars are entirely situated between 30° and 40° N. declination.

No.	B.D.	R.A. 1900.	Decl.	P.	D.	Mags.	Date.	Nights.
		h m	° ' "					
270	35, 436	2 10.4	+ 36° 0'	358.8	2.95	9.2 12.0	06.98	2 BC
				343.7	42.35	...	06.98	2 AB
271	34, 459	26.7	34 48	66.4	1.26	9.5 10.0	06.79	1
272	35, 551	40.2	35 54	77.0	3.55	9.1 10.5	06.83	2
273	34, 633	3 16.7	35 0	356.4	2.81	9.1 9.1	06.09	2
274	...	22.1	35 37	142.4	3.18	9.3 9.4	06.11	3
275	36, 737	36.3	36 49	297.9	3.41	9.3 10.2	06.13	3
276	37, 819	37.3	37 40	282.8	7.81	8.0 13.8	06.14	3
277	34, 741	43.8	34 31	289.7	7.40	10.0 14.0	06.09	2 BC
				142.5	30.24	A = 7.0	06.09	2 AB
278	39, 937	4 2.4	39 54	168.8	1.98	7.7 9.2	06.14	3
279	34, 866	15.9	35 1	242.6	3.24	9.2 11.2	06.82	2
280	39, 1201	5 4.9	39 49	302.8	3.19	9.0 10.5	06.14	1
281	40, 1254	13.5	40 13	215.4	2.29	9.0 9.6	06.14	2
282	...	21.7	33 44	114.6	1.99	9.1 10.3	06.09	3
283	39, 1407	39.9	39 56	S.	2 ±	9.5 9.8	06.13	1
284	37, 1345	46.5	37 24	184.4	4.73	9.0 11.0	06.07	1
285	38, 1375	59.6	38 55	167.4	2.33	9.0 9.3	06.15	2
286	39, 1550	6 6.9	39 45	64.0	2.83	9.0 9.5	06.15	2
287	37, 1476	12.6	37 21	255.5	6.05	9.0 12.5	06.15	1
288	39, 1600	14.9	39 11	148.9	4.40	9.0 9.3	06.16	1 AB
				273.8	13.42	C = 12.0	06.16	1 AC
289	39, 1825	55.9	39 6	98.9	1.97	9.4 9.7	06.18	2
290	36, 1606	7 14.4	36 55	312.4	4.74	9.2 10.0	06.10	3
291	32, 1667	56.4	32 17	343.4	7.12	8.5 10.2	06.19	2
292	38, 3876	8 4.9	38 24	165.7	2.50	8.5 9.1	06.18	2
293	32, 1705	10.5	32 34	214.6	4.76	9.0 9.4	06.22	2
294	36, 1873	42.8	36 31	162.5	1.70	9.0 9.2	06.11	2
295	35, 1874	42.8	35 21	306.8	3.58	9.1 11.5	06.74	3
296	36, 1932	9 6.2	36 47	123.3	1.83	11.5 12.5	06.13	2 BC
				174.2	19.88	A = 8.2	06.13	2 AB
297	39, 2241	18.9	39 11	40.1	3.60	8.6 10.7	06.15	2
298	39, 2242	19.4 + 39	2	308.7	7.89	8.8 11.2	06.17	2 AB

No.	B.D.	R.A. 1900. h m	Decl. ° ′	P.	D.	Mags.	Date.	Nights.	
298	39, 2242	9 19.4	+39 2	169.9	3.71	10.0 11.0	06.17	2	CD
				318.9	92.17	...	06.17	2	AC
299	35, 2017	25.8	34 56	217.1	4.78	11.2 11.5	06.26	2	BC
				360.0	55.87	A = 9.0	06.26	2	AB
300	35, 2021	27.6	35 36	142.4	2.04	9.2 10.3	06.27	2	
301	40, 2245	36.5	40 45	236.4	4.23	8.7 10.7	06.19	2	
302	37, 2077	10 20.6	36 58	348.4	2.63	9.2 10.7	06.17	2	
303	31, 2212	53.3	31 10	201.4	7.56	9.0 11.0	06.29	2	
304	39, 2399	55.0	39 1	89.1	5.65	9.2 10.5	06.19	2	
305	35, 2230	11 12.0	35 1	31.8	3.83	9.1 9.5	06.26	3	
306	39, 2458	33.0	39 18	341.0	6.76	8.0 11.2	06.25	2	
307	39, 2491	12 0.1	39 24	358.7	4.74	8.0 13.3	06.29	4	
308	32, 2343	13 16.5	32 30	292.2	7.06	9.1 9.1	06.28	3	
309	32, 2381	39.9	32 4	133.9	1.88	9.2 9.5	06.29	3	
310	32, 2382	40.2	31 57	nf	5 ±	9.2 11.0	06.27	1	
311	35, 2619	14 50.2	+34 52	288.5	3.76	8.8 9.3	06.28	2	

## Notes.

271. This star was looked at again on February 9, but the condition of the air was then unsteady, and the star was not seen double.

278. A fine object, which so far has escaped detection.

282. This pair was found while measuring S 483. It is 187" distant from B of S 483 at an angle of 30°.9.

289, 290. Angles discordant.

296. A difficult object found while measuring h 2483.

303. Found while measuring  $\Sigma$  1492, rej. 1<sup>m</sup> 10<sup>s</sup> f.

307. Found while looking for the missing pair h 2595. The *comes* is extremely difficult, and can only be seen by oblique vision.

*New Double Stars.* By Rev. T. E. Espin.

No.	B.D.	R.A.		Decl.	P.	D.	Mags.	Date.		Nights.	
		1900.	1900.					1900+	1900+		
		h	m								
312	...	0	12 <sup>o</sup> 0	+34	35	237 <sup>o</sup> 3	2 <sup>o</sup> 15	9 <sup>o</sup> 6	10 <sup>o</sup> 0	6 <sup>o</sup> 95	2
313	+32 <sup>o</sup> 58	0	18 <sup>o</sup> 2	+32	27	16 <sup>o</sup> 3	3 <sup>o</sup> 95	8 <sup>o</sup> 7	12 <sup>o</sup> 7	6 <sup>o</sup> 95	2
314	+28 <sup>o</sup> 95	0	30 <sup>o</sup> 6	+28	41	201 <sup>o</sup> 7	8 <sup>o</sup> 36	8 <sup>o</sup> 5	14 <sup>o</sup> 0	6 <sup>o</sup> 77	3
315	+28 <sup>o</sup> 101	0	32 <sup>o</sup> 5	+28	40	77 <sup>o</sup> 7	2 <sup>o</sup> 04	9 <sup>o</sup> 1	9 <sup>o</sup> 4	6 <sup>o</sup> 78	3
316	+32 <sup>o</sup> 154	0	47 <sup>o</sup> 3	+32	43	292 <sup>o</sup> 3	1 <sup>o</sup> 92	9 <sup>o</sup> 3	9 <sup>o</sup> 7	6 <sup>o</sup> 95	2
317	...	0	54 <sup>o</sup> 9	+31	56	187 <sup>o</sup> 1	6 <sup>o</sup> 59	9 <sup>o</sup> 2	9 <sup>o</sup> 4	6 <sup>o</sup> 71	2
318	+30 <sup>o</sup> 223	1	21 <sup>o</sup> 0	+30	55	71 <sup>o</sup> 0	2 <sup>o</sup> 72	9 <sup>o</sup> 5	11 <sup>o</sup> 0	6 <sup>o</sup> 71	2
319	+32 <sup>o</sup> 256	1	22 <sup>o</sup> 9	+33	2	290 <sup>o</sup> 7	1 <sup>o</sup> 75	9 <sup>o</sup> 3	9 <sup>o</sup> 8	6 <sup>o</sup> 95	1
320	+33 <sup>o</sup> 310	1	46 <sup>o</sup> 5	+33	25	161 <sup>o</sup> 2	1 <sup>o</sup> 87	8 <sup>o</sup> 5	9 <sup>o</sup> 5	6 <sup>o</sup> 95	2 AB
						259 <sup>o</sup> 8	9 <sup>o</sup> 95	C=10 <sup>o</sup> 0		6 <sup>o</sup> 95	2 AC
321	+29 <sup>o</sup> 333	1	51 <sup>o</sup> 6	+30	5	181 <sup>o</sup> 2	3 <sup>o</sup> 63	9 <sup>o</sup> 2	10 <sup>o</sup> 0	6 <sup>o</sup> 82	2
322	+32 <sup>o</sup> 374	1	59 <sup>o</sup> 6	+32	39	92 <sup>o</sup> 2	2 <sup>o</sup> 32	9 <sup>o</sup> 5	9 <sup>o</sup> 6	6 <sup>o</sup> 96	2
323	+33 <sup>o</sup> 425	2	21 <sup>o</sup> 9	+33	39	179 <sup>o</sup> 8	6 <sup>o</sup> 35	9 <sup>o</sup> 1	10 <sup>o</sup> 3	6 <sup>o</sup> 96	2
324	+28 <sup>o</sup> 448	2	33 <sup>o</sup> 2	+28	28	20 <sup>o</sup> 2	1 <sup>o</sup> 80	9 <sup>o</sup> 1	11 <sup>o</sup> 0	6 <sup>o</sup> 97	1 BC
						185 <sup>o</sup> 8	32 <sup>o</sup> 75	A=	9 <sup>o</sup> 0	6 <sup>o</sup> 97	1 AB
325	+30 <sup>o</sup> 465	2	49 <sup>o</sup> 8	+31	10	0 <sup>o</sup> 1	12 <sup>o</sup> 92	7 <sup>o</sup> 9	12 <sup>o</sup> 5	6 <sup>o</sup> 94	3
326	+31 <sup>o</sup> 536	2	59 <sup>o</sup> 6	+31	39	36 <sup>o</sup> 1	4 <sup>o</sup> 79	9 <sup>o</sup> 8	10 <sup>o</sup> 8	6 <sup>o</sup> 91	3 BC
						35 <sup>o</sup> 8	102 <sup>o</sup> 33	A=	8 <sup>o</sup> 0	6 <sup>o</sup> 88	2 AB
327	+32 <sup>o</sup> 652	3	33 <sup>o</sup> 5	+33	9	292 <sup>o</sup> 9	14 <sup>o</sup> 00	8 <sup>o</sup> 3	12 <sup>o</sup> 0	6 <sup>o</sup> 95	1
328	+34 <sup>o</sup> 761	3	47 <sup>o</sup> 1	+34	46	288 <sup>o</sup> 4	6 <sup>o</sup> 82	8 <sup>o</sup> 3	14 <sup>o</sup> 0	6 <sup>o</sup> 99	2
329	+30 <sup>o</sup> 601	3	53 <sup>o</sup> 7	+30	31	255 <sup>o</sup> 9	7 <sup>o</sup> 27	9 <sup>o</sup> 0	12 <sup>o</sup> 5	6 <sup>o</sup> 94	3
330	+31 <sup>o</sup> 834	4	51 <sup>o</sup> 7	+31	7	156 <sup>o</sup> 1	3 <sup>o</sup> 95	9 <sup>o</sup> 2	12 <sup>o</sup> 0	6 <sup>o</sup> 92	2
331	+35 <sup>o</sup> 971	4	59 <sup>o</sup> 1	+35	32	324 <sup>o</sup> 0	7 <sup>o</sup> 60	8 <sup>o</sup> 6	11 <sup>o</sup> 0	6 <sup>o</sup> 95	1
332	+33 <sup>o</sup> 1017	5	14 <sup>o</sup> 8	+33	17	210 <sup>o</sup> 1	14 <sup>o</sup> 65	8 <sup>o</sup> 3	8 <sup>o</sup> 5	6 <sup>o</sup> 95	2
333	+31 <sup>o</sup> 936	5	15 <sup>o</sup> 2	+31	22	36 <sup>o</sup> 7	3 <sup>o</sup> 37	9 <sup>o</sup> 2	9 <sup>o</sup> 3	6 <sup>o</sup> 92	2
334	S 483	5	21 <sup>o</sup> 8	+33	42	347 <sup>o</sup> 9	15 <sup>o</sup> 09	8 <sup>o</sup> 0	14 <sup>o</sup> 0	6 <sup>o</sup> 11	2 BC
						50 <sup>o</sup> 5	95 <sup>o</sup> 48	A=	7 <sup>o</sup> 0	6 <sup>o</sup> 11	2 AB (S. 483)
335	+32 <sup>o</sup> 1012	5	23 <sup>o</sup> 9	+32	34	330 <sup>o</sup> 6	2 <sup>o</sup> 65	9 <sup>o</sup> 1	9 <sup>o</sup> 2	6 <sup>o</sup> 95	1
336	+31 <sup>o</sup> 1027	5	31 <sup>o</sup> 0	+31	43	258 <sup>o</sup> 6	8 <sup>o</sup> 47	8 <sup>o</sup> 7	9 <sup>o</sup> 0	6 <sup>o</sup> 92	2
337	+31 <sup>o</sup> 1191	5	49 <sup>o</sup> 0	+33	13	296 <sup>o</sup> 7	5 <sup>o</sup> 45	9 <sup>o</sup> 1	12 <sup>o</sup> 0	6 <sup>o</sup> 92	2
338	+36 <sup>o</sup> 1361	6	0 <sup>o</sup> 9	+36	37	19 <sup>o</sup> 5	8 <sup>o</sup> 17	8 <sup>o</sup> 5	11 <sup>o</sup> 5	6 <sup>o</sup> 94	2
339	+32 <sup>o</sup> 1460	6	54 <sup>o</sup> 8	+32	33	186 <sup>o</sup> 7	16 <sup>o</sup> 40	6 <sup>o</sup> 5	13 <sup>o</sup> 0	7 <sup>o</sup> 04	2
340	+31 <sup>o</sup> 1491	7	0 <sup>o</sup> 1	+31	51	139 <sup>o</sup> 5	5 <sup>o</sup> 62	9 <sup>o</sup> 0	9 <sup>o</sup> 2	6 <sup>o</sup> 94	2
341	+32 <sup>o</sup> 1522	7	13 <sup>o</sup> 0	+32	37	251 <sup>o</sup> 6	3 <sup>o</sup> 05	9 <sup>o</sup> 0	9 <sup>o</sup> 0	6 <sup>o</sup> 95	1
342	...	17	52 <sup>o</sup> 0	+31	21	235 <sup>o</sup> 4	5 <sup>o</sup> 82	9 <sup>o</sup> 0	10 <sup>o</sup> 7	6 <sup>o</sup> 67	2
343	+31 <sup>o</sup> 3133	17	52 <sup>o</sup> 7	+31	12	282 <sup>o</sup> 8	8 <sup>o</sup> 46	9 <sup>o</sup> 0	11 <sup>o</sup> 7	6 <sup>o</sup> 69	2
344	+33 <sup>o</sup> 2994	17	53 <sup>o</sup> 6	+33	52	30 <sup>o</sup> 7	8 <sup>o</sup> 96	8 <sup>o</sup> 6	9 <sup>o</sup> 1	6 <sup>o</sup> 63	2

No.	B.D.	R.A.		Decl.		P.	D.	Mags.		Date.	Nights.
		1900.		1900.				1900+.			
		h	m	°	'	°	"				
345	+31°3195	18	7.3	+31	22	19.4	2.45	9.1	9.3	6.64	2
346	+32°3102	18	17.1	+32	10	307.0	6.10	9.5	13.0	6.58	2
347	+32°3103	18	17.2	+32	17	66.6	1.75	9.0	9.2	6.62	4
...	+29°3420	18	54.4	+30	1	172.3	17.91	9.0	9.4	6.71	2
348	+28°3210	19	5.0	+28	15	256.3	5.53	8.7	11.2	6.76	2
349	+31°3482	19	6.8	+31	35	220.8	6.65	9.3	13.0	6.58	2
350	+31°3487	19	7.0	+31	57	235.3	5.41	8.5	9.3	6.58	2
351	+33°3398	19	13.3	+33	21	82.4	6.15	8.8	11.0	6.81	1
352	+34°3504	19	17.1	+34	15	133.0	4.67	8.9	10.0	6.81	1
353	+33°3457	19	23.7	+33	7	296.4	3.36	8.6	10.2	6.75	3
354	+31°3785	19	44.5	+31	29	324.4	9.20	8.6	11.5	6.74	4
355	+31°3814	19	48.1	+31	27	294.8	13.05	7.4	13.0	6.70	3
356	+31°3816	19	48.3	+31	24	343.1	5.74	8.9	9.8	6.70	3
357	O $\Sigma$ 389	19	48.7	+30	52	306.5	9.42	6.5	12.0	6.66	3 AB
						183.4	12.57	C= 8.5		6.66	3 AC (O $\Sigma$ 389)
358	+31°3914	19	59.7	+31	33	197.3	7.42	8.6	10.0	6.63	3
359	+31°3915	19	59.8	+31	28	61.1	5.71	11.5	13.0	6.60	2 BC
						131.8	27.91	A= 6.5		6.60	2 AB
...	+30°3900	20	2.9	+30	58	62.3	27.37	8.8	9.5	6.78	3 AB
						251.2	33.40	C= 9.3		6.78	3 AC
360	...	20	3.5	+30	48	78.2	2.74	9.8	9.9	6.66	2
361	+30°3908	20	4.0	+30	23	113.5	4.82	9.0	11.0	6.68	2
362	+30°4008	20	19.0	+30	16	268.2	4.48	11.0	13.2	6.67	2 BC
						229.4	9.18	A= 8.7		6.67	2 AB
363	+30°4018	20	19.4	+30	33	280.4	3.05	9.3	9.3	6.71	3
364	+31°4089	20	23.4	+31	25	277.3	8.47	8.7	12.5	6.66	3
365	+31°4125	20	29.0	+31	25	288.2	2.50	12.0	12.1	6.81	3 CD
						262.1	25.72	7.7	11.5	6.73	2 AB
						318.9	33.68	...		6.81	3 AC
366	+30°4159	20	40.4	+31	2	122.7	3.29	9.1	13.0	6.69	2
367	+29°4161	20	41.0	+29	52	242.5	7.27	9.1	14.0	6.88	1
368	+30°4180	20	43.9	+30	38	357.9	2.88	9.5	9.6	6.64	2
369	+31°4226	20	44.6	+31	37	300.4	6.73	8.9	12.0	6.69	2
370	+31°4227	20	45.0	+31	26	39.2	5.81	9.3	13.5	6.81	3
371	+30°4227	20	49.9	+31	0	132.7	3.67	9.0	9.3	6.66	3
372	+31°4272	20	52.1	+31	35	144.2	2.97	9.1	9.4	6.74	4
373	...	20	54.6	+29	56	147.4	2.49	9.8	11.5	6.69	2
374	+31°4319	20	58.6	+31	22	230.4	4.5 $\pm$	11.0	13.6	6.81	3
						137.1	24.78	A= 8.2		6.75	2

No.	B.D.	R.A.		Decl. 1900.	P.	D.	Mags.	Date. 1900+.	Nights.
		1900.	1900.						
375	+30°4335	21 <sup>h</sup> 4 <sup>m</sup> 6	+30° 38'	221°9	4''40	9.0 9.5	6.64	2	
376	+30°4411	21 17.9	+30 20	214.7	10.61	8.6 12.7	6.78	2	
377	+31°4430	21 18.1	+31 13	210.0	2.49	9.7 10.0	6.84	2 BC	
				290.8	49.38	A= 9.1	6.84	2 AB	
378	+31°4470	21 24.7	+31 58	202.7	7.74	8.6 11.0	6.69	2	
379	+29°4444	21 28.9	+29 48	300.3	8.77	9.0 10.5	6.72	2	
380	+29°4452	21 30.4	+29 50	310.9	2.46	11.2 11.5	6.74	3 CD	
				52.2	13.85	8.5 14.0	6.79	1 AB	
				106.9	57.85	...	6.71	2 AC	
381	+31°4539	21 40.5	+31 17	109.5	4.89	8.7 13.5	6.59	2	
382	+31°4560	21 46.6	+32 11	319.1	10.95	7.7 14.0	6.73	6 AB	
				320.4	60.22	C= 7.8	6.81	1 AC	
383	+34°4586	21 57.0	+34 43	168.1	4.62	9.2 11.6	6.95	2	
384	+31°4612	21 58.4	+31 41	66.5	2.99	9.1 9.2	6.63	2	
385	+32°4340	22 2.4	+34 6	35.6	5.17	9.0 10.5	6.94	2 AB	
				36.2	33.60	C=10.0	6.95	1 AC	
386	+33°4427	22 2.5	+33 5	75.7	6.95	8.6 12.7	6.94	2	
387	...	22 5.0	+32 53	268.5	1.65	10.0 10.2	6.74	4	
388	+31°4653	22 8.8	+31 38	262.6	7.56	8.8 9.3	6.65	2	
389	+29°4620	22 11.6	+30 7	261.7	7.38	9.0 10.0	6.72	2	
390	+32°4406	22 18.2	+32 57	262.1	13.98	9.0 9.3	6.75	3	
391	+29°4687	22 28.3	+29 50	347.1	5.64	9.2 11.2	6.79	3	
392	8 Lacertæ	22 31.4	+39 6	224.7	9.36	8.8 13.2	6.90	4 Dd	
				185.4	21.66	...	6.86	1 AB (Σ 2922)	
				154.3	28.14	...	6.86	1 BC ,,	
				115.9	41.67	...	6.86	1 CD ,,	
393	+30°4785	22 38.9	+30 42	259.4	9.43	8.8 12.0	6.64	2 BC	
				297.5	78.48	A= 8.5	6.63	1 AB	
394	+29°4764	22 42.3	+30 4	338.9	4.57	9.1 11.1	6.80	2	
395	+29°4812	22 51.8	+30 6	351.3	4.05	9.2 12.0	6.71	2	
396	...	22 58.7	+30 50	27.7	3.81	9.3 9.4	6.67	2	
397	+32°4598	23 5.6	+32 36	151.8	5.55	9.2 11.4	6.94	2	
398	...	23 18.8	+31 45	264.2	4.09	9.1 11.0	6.67	2	
399	+29°4937	23 24.3	+29 17	207.1	8.53	9.3 12.0	6.76	2	
400	+29°4938	23 24.6	+29 18	211.3	6.40	9.3 9.9	6.76	2	
401	+29°4970	23 31.8	+30 14	71.8	1.60	9.3 11.5	6.92	2	
402	+31°4949	23 34.8	+32 5	88.1	4.15	9.2 13.0	6.91	1	
403	+30°5001	23 35.7	+30 34	294.7	2.75	9.2 9.5	6.92	2	

*Notes.*

- 322 Discordant angles.
- 325 Observed, in the first instance, in mistake for *h* 329.
- 332 A fine pair, not given in any double star catalogue as far as I am aware.
- 334 South's measures are :—  
 P.  $30^{\circ} 53'$  Nf D.  $87'' \cdot 602$ ,  $1825 \cdot 11$ . The change is due to the proper motion of A, which, according to Argelander (Bonn Observations, vol. viii.) is  $0'' \cdot 20$  at  $202^{\circ} 49'$ , according to Porter  $0'' \cdot 19$  at  $180^{\circ}$ . The measures of South and my own give  $0'' \cdot 195$  at  $174^{\circ} \cdot 1$ . A. has two faint *comites* Nf and Sf.
- 337 Closely p *h* 713.
- 351, 352 The second night's measures were obtained with difficulty, through a fog.
- 357 There seems to be no notice of the closer *comes* in the measures of previous observers. It is a fairly easy object, even in moonlight.
- 365 BC Angles discordant.
- 374 Measures of BC very uncertain.
- 377, 380 Angles of BC discordant.
- 387 A little pair N of  $\pi$  Pegasi.
- 392 The faint *comes*, d, was detected in 1892, but has not hitherto been measured.
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*New Double Stars.* By the Rev. T. E. Espin, M.A.

The following pairs have been found with the 17¼ in. Reflector during the spring. The weather has been persistently unfavourable since the end of March, and few measures have been obtained.

No.	B.D.	R.A. 1900	Decl.	P.	D.	Mags.	Nights.	Date.	
		h m	° ′					1900.	
404	+56,114	0 37.2	+57 5	68.1	2.90	9.3 12.5	1	7.063	
405	+57,171	49.8	57 15	114.8	4.17	9.0 9.0	2	7.043	
406	+56,153	50.9	56 52	149.1	3.67	9.2 9.5	2	7.073	
407				90.1	3.55	9.4 11.0	2	7.073	
408	+57,251	1 13.3	57 45	160.1	2.70	9.3 11.2	2	7.073	
	408 407			345.2	89.98		3	7.094	
409	+55,506	2 0.6	55 39	108.7	1.95	9.5 11.0	2	7.106	
410	+34,769	3 50.2	34 10	102.8	2.88	9.4 9.8	3	7.073	
411	+33,752	52.1	33 40	46.2	4.47	9.2 9.3	2	7.073	
412	+32,876	4 57.4	32 14	267.6	4.77	8.5 12.0	3	7.108	
413	+32,880	58.6	32 13	5.4	5.93	9.0 13.5	3	7.108	
414	+33,975	5 6.3	33 25	183.8	2.38	9.0 9.1	3	7.129	
415	+32,1109	44.8	32 6	16.1	15.00	6.9 12.5	2	7.089	
416	+31,1219	6 4.1	31 33	197.7	7.65	8.9 11.5	2	7.166	
417	+33,1265	4.2	33 1	330.0	13.55	8.0 12.5	2	7.206	AB
				237.0	14.50	14.5	2	7.206	AC
				275.5	37.55	11.0	2	7.206	AD
418	+35,1600	7 16.8	35 12	15.7	13.20	8.1 13.3	3	7.166	
419	+34,1641	28.2	33 56	125.6	3.58	10.0 10.7	3	7.073	BC
				44.0	58.30	Λ = 9.4	2	7.065	AB
420	+29,1597	39.5	28 59	273.4	2.65	12.5 13.0	1	7.246	BC
				118.1	60.79	Λ = 8.7	1	7.246	AB
421	+29,1632	46.1	28 57	217.8	6.20	9.0 12.0	2	7.243	



No.	B.D.	R.A. 1900		Decl.	P.	D.	Mags.		Nights.	Date.	1900.	
		h	m									
422	+29,1645	49	2	+29° 25'	181° 3'	14" 86	8.1	10.5	1	7.246		
423	+34,1741	59	4	34 53	298° 9'	3' 21	8.5	10.4	3	7.073		
424	+35,1756	8	0.6	35 15	73° 7'	5' 77	9.1	10.5	3	7.073		
425	+25,1854		2.3	25 50	257° 2'	4' 52	8.1	12.5	3	7.223		
426	+28,1597		18.8	28 47	284° 0'	4' 85	9.0	9.2	1	7.246		
427	+29,1821		39.9	29 22	72° 4'	2' 50	9.0	10.2	2	7.183		
428	+28,1774	9	30.7	28 47	20° 0'	12' 55	8.6	9.1	3	7.223		
429	+31,2017		32.6	31 18	10° 8'	3' 82	9.5	9.5	2	7.239		
430	+29,1992	10	0.0	29 47	170° 8'	1' 45	9.4	9.7	4	7.230		
431	+27,1852		2.5	27 17	198° 7'	3' 95	10.5	10.6	2	7.282	BC	
					347° 3'	41' 87	A = 8.0		1	7.246	AC	
					351° 6'	44' 20			1	7.317	AB	
432	+33,1988		20.1	33 8	160° 4'	2' 52	9.3	9.6	2	7.232		
433	+30,2087		51.7	30 16	220° 0'	5' 75	9.3	10.5	2	7.282		
434	+35,2233	11	13.4	35 32	247° 8'	7' 76	9.3	14.5	2	7.216		
435	+29,2207		39.6	28 59	347° 2'	6' 80	9.2	9.4	2	7.227		
436	+30,2277	12	23.5	30 26	316° 5'	1' 85	9.2	9.2	2	7.269		
437	+30,2281		24.5	30 4	222° 0'	2' 50	8.8	9.4	2	7.242	BC	
					2° 0'	69' 63	A = 8.5		1	7.246	AB	
438	+26,2382		38.0	26 27	281° 0'	5' 00	8.2	13.0	2	7.232		
439	+28,2155		46.6	27 46	63° 8'	1' 83	8.9	9.4	3	7.237		
440	+29,2387	13	12.7	29 12	361° 5'	2' 55	9.5	9.5	1	7.301		
441	+28,2211		13.0	28 39	77° 5'	4' 80	8.6	13.2	2	7.238		
442	+28,2251		37.9	28 43	243° 2'	7' 45	8.4	13.0	2	7.234		

## Notes.

405.—This pair was found in 1892. The only other measures are mine :

1892.805, P. 116° 6' D. 4" 86 2 nights.

407, 408.—Two pairs a little N of  $\phi$  Cassiopeæ.

409.—Measures discordant.

417.—The *comes* C is very difficult and the measures are discordant.

*New Double Stars.* By the Rev. T. E. Espin, M.A.

No.	B.D.	R.A. 1900.	Decl.	P.	D.	Mags.	Nights.	Date.
		<sup>h</sup> °	<sup>m</sup> °					1907.
443	+48,5	0 0.8	+49 10	32.9	4.27	8.7 9.9	2	'740
444	+44,126	31.4	44 57	192.5	2.93	9.1 9.6	3	'968
445	+44,130	32.6	44 54	349.7	3.32	9.0 11.0	3	'968
446	+49,182	40.2	49 18	256.1	10.12	8.4 9.0	2	'867
447	+49,186	41.1	49 43	277.9	5.60	8.5 11.7	2	'836
448	...	59.1	50 2	81.3	2.50	9.5 9.7	2	'774
449	+49,352	1 13.8	49 58	212.8	11.20	8.5 9.1	3	'876
450	+47,414	21.7	47 37	147.4	9.52	8.0 13.5	2	'759 AB
				268.9	20.10	C = 13.0	2	'759 AC
451	+49,386	21.8	49 57	65.1	1.97	9.1 9.2	3	'886
452	+49,420	31.7	50 8	176.2	2.62	9.4 11.3	2	'881
453	+44,387	48.9	44 50	259.0	4.45	8.5 11.2	2	'994
454	+49,514	53.2	50 7	132.2	8.65	8.5 10.0	3	'786
455	+49,637	2 14.0	49 41	135.6	4.54	9.2 13.0	2	'850
456	+49,665	21.0	50 2	269.8	3.28	9.1 11.4	3	'821
457	+49,671	22.2	49 14	6.7	6.80	7.7 11.5	2	'759
458	+48,701	28.1	48 58	316.8	5.30	9.1 9.9	3	'886 AB
				243.9	24.58	C = 13.5	3	'886 AC
459	+48,708	29.9	48 56	142.7	3.35	8.9 10.2	4	'888
460	+48,711	30.9	48 13	316.8	2.68	9.1 9.3	3	'894 AB
				336.8	18.85	C = 13.5	1	'909 AC
461	+48,756	40.2	48 40	342.7	8.22	8.5 9.6	3	'900
462	...	3 7.9	49 23	172.9	2.55	9.7 10.4	2	'896
463	+49,891	9.5	49 21	257.3	4.95	9.3 11.7	2	'896
464	+47,806	14.2	47 21	65.8	7.15	9.1 9.2	2	'817
465	+49,1015	38.6	50 7	251.1	7.37	8.7 9.2	2	'896
466	+49,1092	56.7	49 32	57.1	3.95	8.5 11.0	2	'896 AB
				123.4	14.22	C = 12.0	2	'896 AC
467	...	5 2.4	47 25	98.2	1.52	11.0 11.3	2	'940
468	+30,3021	17 30.3	30 3	11.5	2.28	9.2 10.0	4	'613
469	+28,2829	42.8	28 1	140.9	4.41	10.0 13.0	3	'650 BC
				267.5	48.12	A = 8.5	2	'658 AB
470	+27,2943	59.3	27 51	206.5	7.17	8.6 9.8	3	'658
471	+27,2948	18 0.7	27 6	271.4	18.23	7.0 14.0	3	'676 AB
				44.1	30.35	C = 10.0	2	'671 AC
472	+27,2980	9.9	27 57	8.5	3.08	9.1 9.6	2	'655
473	+42,3026	10.0	42 49	158.0	9.63	8.5 10.0	3	'703 BC
				100.3	30.78	A = 8.5	3	'703 AB

No.	B.D.	R.A. 1900.	Decl.	P.	D.	Mags.	Nights.	Date.
		<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>°</sup> <sup>'</sup>	<sup>°</sup> <sup>'</sup>			1907.
474	+42,3054	18 16.8	+42 55	34.5	3.68	9.2 12.3	3	.725
475	+27,3032	24.0	27 2	222.9	9.72	8.8 9.8	2	.671
476	+27,3041	26.7	28 0	347.6	2.52	9.5 10.1	3	.666
477	+26,3298	30.9	26 56	233.1	7.76	8.9 11.5	3	.677
478	+42,3144	40.5	42 30	182.3	8.22	8.7 9.2	2	.699
479	+27,3208	57.9	27 9	139.3	8.05	8.6 9.8	2	.603
480	+27,3218	58.9	27 33	304.2	2.45	9.1 10.1	2	.637
481	+27,3261	19 6.2	27 41	136.0	4.32	9.0 12.7	3	.650
482	+25,3756	9.7	25 36	167.4	4.27	8.9 11.2	2	.609
483	+25,3803	17.5	25 23	358.2	12.62	7.2 12.0	4	.634
484	+28,3322	20.8	28 44	332.6	7.30	8.5 14.0	3	.692 AB
				335.6	22.60	C = 9.0	3	.692 AC
485	+27,3419	27.5	27 55	342.4	2.37	9.2 10.5	2	.655
486	+25,3870	28.6	25 13	287.9	8.35	9.0 14.0	3	.656 BC
				18.2	45.24	A = 8.8	2	.633 AB
487	+27,3431	29.8	27 10	336.4	3.87	9.1 11.5	2	.708
488	+27,3434	29.9	27 16	50.5	2.12	9.1 9.2	2	.708
489	+27,3438	31.4	27 41	243.2	15.40	8.2 10.8	3	.714 AB
				205.5	20.32	C = 11.2	3	.714 AC
490	+43,3305	33.4	43 14	166.8	3.50	9.0 10.2	2	.740 BC
				229.7	16.38	a = 12.0	3	.758 Aa
				223.8	61.70	A = 8.9	2	.740 AB
491	+47,2874	33.5	47 54	57.7	9.67	9.1 9.6	2	.720 AB
				251.0	18.20	C = 14.0	1	.725 AC
492	+25,3902	34.2	25 28	158.1	5.42	9.2 9.3	2	.632
493	+43,3311	34.5	43 14	316.0	4.20	9.3 9.5	3	.758
494	+27,3549	49.6	27 49	190.1	3.65	8.9 10.2	2	.725 AB
				309.0	16.35	C = 12.0	1	.739 AC
495	+28,3553	54.3	28 43	310.5	4.11	11.0 11.8	3	.657 BC
				245.5	39.87	A = 8.0	2	.688 AB
496	+28,3594	58.5	28 42	279.2	2.22	8.9 10.0	2	.688
497	+29,3886	20 1.1	30 4	200.3	5.28	9.1 10.8	3	.658
498	+29,3889	1.7	30 6	241.3	9.38	8.3 11.2	3	.658
499	+45,3080	7.8	45 18	339.8	14.35	8.0 12.0	3	.784 AB
				77.3	26.20	C = 13.0	1	.756 AC
500	+49,3218	8.8	49 25	351.6	6.45	8.8 9.2	3	.891
501	+45,3093	9.0	45 17	125.3	1.32	9.1 10.2	2	.715
502	+48,3059	10.9	48 53	223.2	11.25	7.7 10.0	4	.897
503	...	16.5	47 48	353.1	4.57	9.2 9.5	3	.734
504	+28,3760	24.1	28 40	87.2	6.02	9.2 10.2	2	.783

No.	B.D.	R.A. 1900.	Decl.	P.	D.	Mags.	Nights.	Date.
		h m	° ′	° ′	″			1907.
505	...	20 26.5	+30 9	13.0	11.92	9.8 10.0	2	'783
506	+28,3779	27.1	28 35	303.1	6.57	8.7 11.2	2	'654
507	+28,3790	28.9	28 31	295.5	7.30	8.5 11.0	2	'603 AB
				340.2	32.73	C = 8.6	2	'603 AC
				224.3	36.52	D = 9.1	2	'603 AD
508	+28,3847	36.9	29 4	230.1	2.25	8.6 10.0	2	'783 AB
				221.9	18.07	C = 10.0	2	'783 AC
509	+48,3187	37.5	48 39	283.6	7.22	8.8 12.0	3	'723
510	+27,3871	43.9	27 31	235.1	6.11	10.5 10.7	3	'704 BC
				343.3	43.45	A = 8.0	3	'704 AB
511	+26,4026	50.9	26 42	51.5	7.42	9.0 9.7	2	'640
512	+46,3201	21 5.5	46 52	18.3	13.27	7.0 12.3	3	'710
513	+45,3474	12.3	45 59	52.2	7.05	9.0 13.5	2	'847
514	+46,3246	12.3	46 54	195.9	3.85	8.9 9.3	3	'695
515	+25,4504	14.0	25 49	302.5	3.50	9.2 12.7	2	'721
	+48,3376	21.4	48 53	161.5	19.16	6.5 12.0	3	'709
516	...	26.7	46 51	140.5	3.31	9.4 11.0	3	'844
517	+28,4122	28.4	29 4	239.4	2.05	9.2 9.9	4	'781
518	+45,3589	30.6	46 3	11.9	4.55	9.2 12.3	3	'666
519	+47,3476	30.6	47 42	304.3	7.62	9.5 9.7	2	'801
520	+27,4125	34.6	27 59	38.3	7.19	9.4 9.9	4	'714
521	+28,4171	39.9	28 19	269.7	14.25	7.6 14.0	2	'628
522	+44,3972	48.7	44 46	174.7	4.35	9.0 11.0	2	'888
523	+26,4294	49.1	26 33	94.9	6.19	9.1 9.2	3	'764
524	+48,3536	49.6	48 52	5.5	5.87	11.5 13.3	3	'776 BC
				188.7	20.37	A = 9.0	2	'711 AB
525	+48,3544	50.9	48 48	149.1	3.82	8.6 10.5	2	'711
526	+25,4650	52.0	25 44	108.4	7.34	8.4 12.5	3	'771
527	+27,4230	56.8	27 21	207.4	3.05	9.7 9.9	2	'674
528	+46,3546	58.6	46 44	74.5	2.47	9.1 11.7	2	'720
529	+46,3555	59.4	46 17	71.6	5.75	8.5 11.0	2	'705
530	+47,3677	59.5	48 11	190.9	8.17	8.0 9.5	2	'703
531	+47,3680	22 0.2	48 10	225.1	2.55	9.2 11.5	3	'706
532	+46,3580	2.4	46 47	245.6	9.82	9.0 9.1	2	'720
533	+45,3848	10.8	45 23	321.5	4.25	9.0 12.0	2	'730
	+48,3665	13.5	48 39	292.4	21.22	7.0 12.0	2	'755
534	+48,3673	14.4	49 10	104.5	6.02	9.0 9.3	2	'789 BC
				248.7	9.37	a = 12.0	2	'789 Aa
				68.0	48.97	A = 8.5	2	'789 AB
535	+25,4724	20.0	25 39	301.9	8.33	9.3 10.8	3	'828

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.		Nights.	Date.
		h	m							
536	...	22	20.4	+26 54	270.1	2.97	10.2	10.2	2	1907. '673
537	+49,3855	23.2		50 9	19.7	2.27	9.2	9.4	2	'806
538	+46,3716	24.7		46 24	66.8	3.40	9.1	10.5	2	'889
539	+42,4437	28.3		42 36	287.7	6.10	9.1	11.0	3	'836
540	+48,3762	28.7		48 26	281.5	1.30	9.1	9.9	3	'709
541	+25,4787	35.9		26 13	220.3	6.61	8.0	12.4	4	'751
542	+49,3968	48.9		49 29	282.6	5.05	8.7	10.5	3	'710 AB
					83.9	57.88	C =	8.8	2	'708 AC
543	+46,3945	23 3.8		46 58	22.0	3.87	9.2	10.5	2	'783
544	+49,4054	4.2		49 22	245.6	2.30	9.5	9.7	2	'951
	+25,4927	17.5		25 22	264.4	19.95	6.7	13.0	2	'713
545	+48,4024	18.9		48 44	319.7	9.70	8.1	12.0	3	'755
546	+26,4623	20.1		26 24	162.2	2.37	9.1	10.8	3	'683
547	+46,4096	31.9		46 46	237.1	6.95	8.5	12.0	2	'795
548	+46,4139	39.8		46 54	315.9	14.37	8.5	8.8	2	'835
549	+47,4264	40.0		47 57	51.7	8.10	8.5	13.7	2	'704 AB
					238.7	16.07	C =	9.0	2	'704 AC
550	+45,4323	41.8		46 7	167.2	17.35	8.6	8.9	2	'814
551	+47,4313	23 49.5		47 41	311.6	4.72	11.7	12.7	2	'834 BC
					11.4	24.60	a =	10.5	1	'865 Aa
					88.1	30.90	A =	8.6	2	'834 AB

*New Double Stars.* By the Rev. T. E. Espin, M.A.

No.	B.D.	R.A.		1900.	Decl.	P.	D.	Mags.		Nights.	Date.
		h	m								
552	+56,143	0	47.4	+56	41	85.9	12.60	7.0	13.0	2	1908.015
553	+45,405	1	33.5	45	32	144.1	5.15	8.8	9.2	3	'014
554	+42,549	2	27.4	42	32	24.9	5.80	9.1	9.3	1	'099
555	+41,501		32.0	41	46	323.9	9.62	8.5	11.5	2	'083
556	+41,543		42.2	42	0	352.7	6.40	8.4	10.7	2	'073
557	+47,712		44.3	47	41	315.8	5.04	9.1	12.4	4	'075
558	+45,710	3	0.0	45	22	357.8	8.47	7.5	9.4	2	'082
559	...		6.8	43	54	250.6	3.17	9.3	11.2	2	'116
560	+45,784		26.3	45	55	140.8	8.60	8.4	10.1	3	'091
561	+45,787		26.6	45	25	38.8	7.40	8.9	9.1	2	'087
562	+44,769		34.0	44	17	358.4	2.91	9.3	11.7	5	'066
563	+44,809		47.6	44	35	23.3	6.14	9.0	12.6	4	'082
564	+42,876		56.7	42	30	115.3	2.29	8.9	9.3	4	'117
565	+42,890	4	0.0	42	35	62.2	4.75	9.3	10.6	2	'090
566	+46,881		18.5	46	19	281.3	5.10	9.4	12.0	3	'106 CD
						150.2	11.10	8.9	10.8	2	'097 AB
						148.0	27.15			2	'097 AC
567	+44,945		18.7	45	1	128.9	7.97	8.8	9.4	3	'106 BC
						351.8	36.32	A = 8.8		2	'097 AB
568	+42,969		20.7	42	58	304.3	5.07	7.7	12.0	2	'083
569	+44,967		24.5	44	43	19.5	7.72	9.0	12.8	3	'122
570	+41,898		26.8	41	15	178.7	3.90	9.1	13.0	1	'153
571	+48,1146		39.9	49	3	59.9	3.35	9.1	9.2	2	'143
572	+41,966		41.9	41	28	93.1	3.05	8.8	12.0	1	'153
573	+42,1228	5	9.4	42	33	122.9	5.01	8.0	10.5	3	'040
574	+47,1122		10.3	47	12	87.7	1±	9.7	10.3	3	'108 BC
						63.1	33.65	A = 9.4		3	'108 AB
575	+48,1264		16.9	48	16	353.6	14.35	8.1	10.7	3	'113
576	+42,1274		17.2	42	31	342.8	8.45	8.0	13.7	2	'015 AB
						236.3	42.35		8.2	2	'015 AC
577	...		17.3	47	17	133.5	2.30	9.7	11.5	2	'101
578	+49,1403		40.2	49	22	41.7	2.02	9.1	9.2	2	'131
579	+47,1249	6	1.0	47	26	115.3	6.57	8.5	11.0	2	'119 BC
						341.3	57.00	A = 8.3		2	'119 AB
580	+44,1380		4.0	44	45	226.3	6.85	9.0	9.4	3	'078 AB
						119.2	22.30	C = 12.0		1	'082 AC
581	+49,1470		7.3	49	0	61.6	3.25	8.8	11.5	2	'121
582	+44,1492		29.4	44	10	301.9	6.18	9.6	12.3	3	'107
						79.0	33.92	A = 9.3		3	'107
583	+44,1527		38.0	44	35	69.4	4.67	9.4	9.6	4	'082

No.	B.D.	R.A.	1900.	Decl.	P.	D.	Mags.	Nights.	Date.
		h	m	°	'	"			1908.
584	+47,1353	43	9	47	21	325.4	3.00	9 4 10.0	2 '045
585	+45,1430	7	17.7	45	3	237.3	2.72	7.7 11.7	2 '138
586	+41,1670		23.3	41	49	16.8	13.40	8.1 11.5	2 '189
587	+46,1307		39.3	46	9	80.7	4.80	8.9 9.2	2 '083
588	...		40.1	47	33	304.2	2.15	9.5 9.8	3 '078
589	+48,1576		41.2	48	1	178.3	10.00	7.7 13.7	4 '132
590	+43,1746		47.8	43	25	69.8	7.40	9.0 9.4	2 '095
591	+45,1536	8	0.5	45	30	48.2	1.62	9.4 9.6	2 '083
592	+41,1799		6.3	41	52	327.4	2.72	8.6 9.9	3 '308
593	+41,1810		10.0	41	12	208.2	4.70	9.4 9.6	2 '235 BC
						230.2	19.82	A = 8.5	2 '235 AB
594	+43,1820		18.6	43	35	183.0	2.48	9.2 12.0	3 '112
595	+48,1654		24.1	48	6	234.9	7.75	8.5 13.2	2 '082
596	+46,1436		41.1	45	54	201.3	2.65	8.6 9.0	3 '095
597	+45,1640		42.8	45	48	262.6	5.33	8.5 11.8	3 '091
598	+47,1630		55.2	47	45	261.0	7.20	8.6 10.5	2 '119
599	+41,1915		59.7	41	31	137.3	3.02	9.0 11.8	2 '152
600	+50,1673	9	35.5	49	49	71.6	3.65	9.0 13.5	2 '152
601	+46,1549		41.1	46	21	287.5	3.47	9.0 9.2	2 '119
602	...		47.6	48	36	32.9	2.95	10.4 11.1	3 '261
603	+48,1887	10	36.7	48	43	98.5	10.57	9.1 11.0	2 '260
604	+45,1865		40.7	45	43	52.7	1.82	10.6 11.4	2 '249
	+49,1900		49.2	48	40	158.4	47.00	8.0 8.7	2 '292
605	+48,1953	11	27.0	48	11	64.5	4.17	8.9 13.7	2 '260
	+43,2261	12	43.5	42	53	50.1	46.07	7.5 7.7	2 '323
606	+43,2293		56.8	42	58	284.9	8.53	8.5 12.0	3 '304
607	+43,2299	13	0.7	43	15	224.9	6.10	9.0 11.5	1 '334
608	+48,2138		33.0	48	45	271.8	2.57	9.0 9.2	2 '289
609	+48,2224	14	33.2	48	14	12.3	4.65	9.0 10.7	2 '289

## Notes.

559.—38<sup>s</sup> f, 50" S, OΣ 51.

574.—Measures of the close pair are unsatisfactory, and I had some doubts about the star being really double. Professor Burnham has, however, kindly looked at it with the 40 in., and confirms its duplicity.

583.—A 14 mag. south.

602.—Found and measured in looking for *h* 2510.

604.—The star is so faint that it is surprising that it is in the B.D.

605.—Angle mean of 61°.2, 67°.8. This is a very difficult pair to measure, from the faintness of the *comes*.

608.—In field south of *h* 2667.

Jan. 1909.

*New Double Stars.*

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*New Double Stars.* By the Rev. T. E. Espin, M.A.

No.	B.D.	R.A. 1900.		Decl.	P.		D.	Mags.		Nights.	Date.
		h	m		°	'		°	"		
610	+54, 3111	0	1'2	+54 27	203'4	4'20	9'4	11'2	2	'941	
611	+53, 3289		1'6	53 56	292'2	10'50	8'4	10'1	2	'872	
612	+54, 32		13'3	54 19	266'0	2'90	9'3	9'5	2	'988	
613	+52, 79		24'0	52 50	270'6	8'25	8'3	11'8	3	'744	
614	+52, 182		46'6	53 11	86'8	2'23	9'5	9'8	3	'748	
615	+53, 190		53'1	53 22	267'4	3'27	9'1	11'7	2	'802	
616	+53, 223	1	0'6	53 53	278'1	3'35	9'4	10'3	3	'846	
	+53, 326		26'3	54 14	195'4	16'15	8'6	8'8	2	'907	
	+53, 327		26'8	53 46	28'1	15'33	8'7	9'0	2	'907	
617	+54, 324		29'7	54 27	304'9	3'27	9'1	9'2	2	'852	
618	+53, 491	2	10'5	53 41	173'1	3'65	9'3	11'6	3	'895	
619	+45, 600		15'1	45 57	243'6	5'55	8'0	10'7	2	'828	
620	+53, 546		28'5	53 15	212'7	6'12	8'5	12'0	2	'916	
621	+53, 601		52'5	53 56	354'1	8'25	8'4	11'5	3	'917	
622	+53, 680	3	28'1	53 34	34'1	4'62	9'1	9'9	3	'915	
623	+53, 705		43'7	53 15	331'2	8'02	8'5	13'9	2	'941	
624	<i>h</i> 2770	15	9'8	47 14	49'6	2'30	10'0	10'1	3	'386 AB	
					129'3	16'57	C=	10'5	2	'383 AC	
	+49, 2363		9'5	48 57	343'0	25'75	7'0	10'2	2	'401	
625	+44, 2454		17'7	44 40	252'9	1'57	9'3	10'3	2	'413	
626			38'0	50 28	275'0	7'52	9'2	9'2	2	'469	
627	+51, 2073	16	16'0	51 34	286'5	11'07	8'6	9'8	2	'472	
628	+52, 1959		17'3	52 0	265'7	3'37	8'8	12'0	2	'472	
629	+52, 1961		18'0	52 4	93'2	10'20	8'1	13'0	2	'472	
630	+54, 1813		25'4	54 28	44'7	5'47	9'0	13'5	2	'517	
631	+43, 2621		32'1	43 38	162'1	9'77	8'2	11'0	2	'401	
632			38'2	50 25	102'9	1'75	9'3	10'0	2	'469	
633	+42, 2783		58'4	42 52	258'9	6'30	7'0	11'5	2	'412	
634	+42, 2789	17	0'8	42 20	98'0	1'80	9'4	10'0	2	'444	
635	+52, 2075		33'0	52 14	241'7	5'77	8'9	12'0	2	'568	
636			33'4	41 46	124'4	2'38	9'2	9'7	3	'517	
637	+54, 1898		34'2	54 29	296'4	3'70	9'2	9'3	2	'489	
638	+54, 1902		38'2	54 14	188'2	2'57	9'2	11'0	4	'530	
639	+56, 2019		44'3	56 16	76'1	8'00	8'8	9'9	2	'598	
640	+54, 1931		58'8	54 53	75'6	7'90	8'6	9'2	2	'552	
641	+54, 1937	18	2'8	54 34	66'7	1'95	9'2	9'4	3	'602	
642	+51, 2327		8'5	51 38	273'8	6'75	9'0	13'0	2	'650	
643	+55, 2039		10'9	55 54	50'3	3'40	9'0	11'2	2	'565	
644	+52, 2167		11'2	52 27	32'0	9'97	8'5	14'0	2	'640	
645	+53, 2054		11'7	53 39	89'1	2'75	8'2	12'0	3	'560	
646	+52, 2175		12'9	52 5	197'2	9'88	8'0	13'8	3	'654	
647	+50, 2561		15'8	50 47	293'4	2'80	9'0	11'3	3	'776	
648	+52, 2197		19'8	52 18	5'2	4'68	9'0	13'7	4	'666	
649	+53, 2074		19'9	53 31	316'5	8'32	9'2	11'5	2	'624	



No.	B.D.	R.A. 1900.		Decl.		P.	D.	Mags.		Nights.	Date.					
		h	m	°	'			°	"							
650	+52, 2305	18	53.5	52	33	329.5	3.22	8.8	12.0	3	'752 AB					
						193.6	26.79	C=	10.2	2	'721 AC					
651	+51, 2476		57.8	51	58	140.1	5.87	9.2	9.5	2	'668					
652	+50, 2758	19	14.0	50	41	80.0	7.05	9.2	11.2	2	'610					
653	+53, 2241		23.8	53	57	284.6	11.20	9.0	9.0	2	'551					
654	+54, 2152		26.0	54	34	191.5	7.60	7.2	12.5	3	'641					
655	+54, 2182		32.6	54	57	57.7	2.95	10.2	11.7	5	'681 BC					
						128.9	67.07	A=	9.1	3	'636 AB					
656	h 1427		34.4	46	4	286.5	8.27	10.0	10.4	2	'841 AB					
						246.2	2.75	11.2	11.5	2	'841 CD					
						293.1	39.13			2	'841 AC					
657	+52, 2489		39.7	53	5	113.9	2.70	9.4	11.0	2	'562					
658	+52, 2521		44.0	52	53	316.3	5.18	8.6	14.0	3	'571 AB					
						296.7	8.10	12.0	13.0	2	'564 CD					
						90.4	31.41			3	'571 AC					
659	+54, 2230		47.3	54	39	160.7	5.83	9.2	9.3	3	'744					
660	+51, 2821	20	14.5	51	42	288.2	9.05	9.0	9.0	5	'602 BC					
						304.1	30.41	A=	8.9	4	'568 AB					
	+51, 2833		16.1	51	53	270.1	24.67	8.3	8.4	1	'572					
661	+44, 3474		24.8	44	38	163.5	8.60	8.9	11.2	2	'651					
662	+44, 3485		26.1	44	56	145.6	6.60	9.0	11.2	2	'774					
663	+46, 2952		27.1	46	14	111.8	5.35	9.5	11.2	2	'916					
664	+46, 2965		29.2	46	14	65.9	5.20	8.9	12.8	3	'894					
665	+46, 2973		30.4	46	57	124.6	5.45	8.9	9.2	2	'918					
666			31.6	48	9	316.0	3.25	10.1	10.7	3	'776					
667	+44, 3525		35.2	44	17	184.3	9.92	8.7	9.2	3	'640					
	+44, 3552		39.8	44	34	297.4	40.83	8.5	8.7	3	'736					
668	+44, 3555		40.0	44	39	72.7	6.17	8.4	14.0	3	'640 AB					
						269.9	23.30	C=	12.7	3	'640 AC					
	+44, 3569		41.5	44	26	79.4	53.74	8.5	8.7	2	'728					
669	+46, 3054		44.8	46	31	70.2	4.58	9.2	10.4	3	'798					
670	+45, 3294		46.0	45	51	81.9	6.50	9.1	9.2	2	'778					
671	+46, 3069		46.7	46	13	92.6	1.82	9.2	10.0	4	'771					
672	+47, 3195		46.9	47	11	162.5	4.05	9.2	9.3	2	'918					
673			50.5	46	8	81.6	4.37	9.5	9.7	2	'848					
674	+44, 3636		52.3	44	25	91.5	5.05	9.4	12.0	2	'668					
675	+44, 3637		52.8	44	24	107.2	3.70	9.6	11.0	2	'753 BC					
						272.3	99.63	A=	9.5	3	'849 AB					
676	+44, 3648		54.3	45	7	284.8	6.40	9.0	11.7	4	'920					
677	+44, 3650		54.4	45	9	162.8	5.97	9.1	12.2	2	'916					
678	+47, 3379	21	17.7	47	38	116.4	4.10	9.5	11.5	2	'916					
679	+47, 3400		22.0	47	15	275.6	4.52	9.4	10.6	3	'749					
680	+47, 3415		24.2	47	23	332.5	8.80	8.6	12.0	2	'798					
681	+53, 2715		46.2	53	14	46.2	2.10	9.5	9.6	3	'923					
682	+47, 3624		53.7	47	47	134.7	7.40	9.1	11.7	3	'748					
683	+43, 4098		54.6	44	13	248.7	8.85	8.4	8.9	2	'705					
684	+53, 2753		55.5	54	3	273.0	4.30	9.2	12.5	2	'943					

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.		Nights.	Date.
		h	m				°	'		
										1908.
	+47, 3694	22	2.8	47 22	278.7	38.43	8.3	8.7	2	.754
685	+48, 3621		4.4	48 43	56.7	6.04	8.5	10.3	3	.912
686	+47, 3717		6.4	47 29	159.7	7.17	10.0	10.1	3	.771 BC
					90.7	9.42	A=	8.9	3	.771 AB
					119.3	14.24			2	.777 AC
	+47, 3720		6.6	47 25	307.6	22.10	7.0	9.3	3	.767
687	+47, 3792		21.5	47 37	269.6	4.92	9.0	9.1	2	.746
688	+46, 3726		26.8	46 30	20.1	2.02	9.3	9.5	3	.846
689	+54, 2800		29.3	54 15	286.6	10.33	8.6	14.0	3	.814
690	+47, 3856		32.5	47 22	258.1	11.36	8.0	11.4	3	.763
691	<i>h</i> 1830		50.1	55 7	278.3	5.85	9.5	12.5	2	.705 AB
					80.3	14.27	C=	9.6	2	.705 AC
					276.2	20.80	D=	13.5	1	.671 AD
692	+54, 2894		56.2	54 16	159.4	4.00	10.0	10.5	3	.914 BC
					252.8	94.00	A=	8.7	3	.914 AB
	+54, 2899		57.8	54 22	252.6	30.83	8.8	9.0	2	.916
693	+47, 4023		58.2	47 34	37.5	5.45	9.3	11.5	2	.746
694	+47, 4090	23	11.5	47 28	92.3	3.52	9.5	12.0	2	.750
695	+53, 3127		14.0	53 37	312.7	5.12	8.6	9.0	3	.864 AB
					303.9	25.88	C=	12.2	3	.864 AC
696	+53, 3133		14.6	53 36	230.9	2.92	8.9	11.5	3	.864
697	+54, 2954		15.9	54 57	74.9	3.87	9.0	12.5	2	.932 BC
					344.1	68.26	A=	8.5	2	.941 AB
698	+47, 4130		16.8	47 23	57.5	3.20	8.8	12.0	2	.754
699	+47, 4238		35.8	47 17	220.4	6.88	8.7	10.2	3	.843
700	+53, 3238		45.7	53 38	34.9	14.64	6.5	10.5	2	.906
701	+54, 3075		51.3	55 3	309.3	3.83	9.4	10.7	3	.930
702	+53, 3263		53.1	53 44	106.9	4.27	8.9	13.3	3	.869
	+53, 3266		54.2	53 19	105.6	16.99	8.2	9.0	2	.855
703	+53, 3268		54.5	53 26	269.1	7.05	8.1	11.7	3	.768 AB
					267.2	53.03	C=	9.5	1	.671 AC
704			55.0	53 27	119.4	5.45	9.5	11.5	2	.709

## Notes.

624.—*h*'s angle for AC is  $148^{\circ}4$ ; if this is correct the close pair may have considerable proper motion.

630.—Angles discordant, difficult in twilight.

648.—Discordant measures.

657.—The p. star of two.

671.—In low-powered field S of  $\beta$  250.

+47°, 3720 A 12 mag. sp. from B.

691.—The nearer *comes*, and the distant one not given by *h*.

697.—On two nights A was suspected to be a close double.

*New Double Stars.* By the Rev. T. E. Espin, M.A.

During the spring, especially in the early part of the year, there have not been many fine nights; and when the sky has been clear, the definition has been usually very poor. The measures obtained in the case of faint comites are in several cases little more than approximations.

No.	B.D.	R.A. 1900.	Decl. 1900.	Position Angle.	Dis- tance.	Mags.	No. of Nights.	Date. 1909.
		h m	° ′	°	″			
705	+44,582	2 43·1	+44 59	225·9	8·26	8·5 11·7	3	'104
706	+51,723	3 15·2	+51 18	126·9	2·60	12·5 13·2	3	'105 BC
				304·8	26·37	A = 8·6	3	'105 AB
707	+53,744	4 5·2	+53 29	152·9	8·87	8·3 13·2	2	'126 AB
				287·7	19·01	C = 12·6	2	'126 AC
708	+53,857	5 2·0	+53 31	68·1	3·52	9·2 12·0	2	'216
709	+52,933	4·2	+52 13	228·2	1·94	9·0 9·2	5	'163
710	+53,946	39·9	+53 43	173·6	2·65	9·2 12·0	1	'205
711	+52,1026	53·0	+52 19	271·2	2·42	9·1 9·6	2	'136
712	+53,1033	6 24·6	+53 19	249·1	7·60	9·1 9·6	1	'205
713	+52,1171	7 0·4	+52 52	48·4	5·55	8·6 13·7	2	'135
714	+53,1229	8 12·0	+53 35	194·2	5·97	9·1 12·5	3	'234
715	+54,1279	9 2·5	+54 4	226·3	7·27	9·2 10·5	3	'301
716	+52,1374	6·4	+51 58	293·2	7·52	8·5 10·5	2	'247
717	+51,1501	16 3	+51 12	309·0	4·42	9·0 13·2	4	'279
718	+52,1385	16·5	+52 2	26·5	7·90	9·2 11·5	2	'248
719	+50,1662	30·3	+50 28	258·2	4·55	9·3 11·5	2	'277
720	+50,1701	51·1	+50 42	90·8	3·07	9·3 12·7	2	'290
721	+54,1373	10 18·7	+53 59	131·3	3·69	9·0 12·5	4	'277 AB
				285·5	33·88	C = 11·6	2	'278 AC
722	+53,1454	54·5	+53 9	107·0	8·42	9·1 10·7	2	'293
723	+51,1704	11 44·7	+51 14	300·8	6·03	9·2 9·3	5	'295
724	+51,1710	49·1	+51 6	227·0	3·12	9·0 11·3	3	'311
725	+47,1933	12 5·0	+47 9	58·4	6·83	8·9 9·3	2	'341
726	+54,1531	26·0	+54 25	173·4	9·64	9·1 11·0	3	'328 AB
				171·3	21·67	C = 12·2	3	'328 AC
727	+46,1810	35·5	+46 10	13·6	6·02	8·3 11·5	1	'350
728	+51,1779	37·3	+51 41	329·5	6·42	9·3 13·7	2	'296
729	+54,1546	39·3	+54 21	226·3	8·97	8·5 12·0	3	'341
730	+51,1785	44·6	+51 30	65·3	3·37	9·1 10·5	2	'287
731	+46,1824	46·0	+46 37	348·6	12·14	8·0 12·5	1	'350
732	+49,2204	13 10·9	+49 10	79·0	3·30	9·0 9·1	2	'349
733	+54,1599	17·2	+53 53	210·9	6·21	8·8 9·4	3	'322

No.	B.D.	R.A. 1900.	Decl. 1900.	Posi- tion Angle.	Dis- tance.	Mags.		No. of Nights.	Date. 1909.
		h	m						
734	+52,1697	18°0	+51° 54'	163°5	7"59	9.1	9.4	2	'282
735	+50,2017	34°2	+50° 41'	284°2	3.55	9.5	11.0	2	'349
736	+52,1747	48°1	+52° 6'	268°2	9.53	8.6	11.9	2	'312
737	+53,1696	14 9°3	+52° 58'	301°7	3.78	10.2	10.6	3	'339
738	+53,1707	18°8	+52° 51'	311°0	6.52	8.6	11.8	3	'333
739	+52,1843	58°7	+51° 59'	155°3	2.50	9.2	9.6	2	'349
740	+54,1739	15 15°9	+53° 54'	39°2	3.42	8.9	9.4	2	'334
741	+53,1773	17°0	+53° 7'	230°2	8.64	8.5	10.5	2	'341
742	+54,1767	44°7	+53° 56'	85°3	3.10	9.0	9.2	2	'346
743	+54,1792	16 2°7	+54° 42'	6°4	7.02	9.0	12.1	3	'337

*Notes.*

707.—The measures of the distances of both *comites* are unsatisfactory.

720.—A difficult object from the faintness of the *comes*. Examined on four nights.

728.—*Comes* faint and difficult to measure.

729.—Distance doubtful.

730.—There is no star in the position of B.D. +51°, 1785 as given by Argelander. This star agrees with his R.A., but lies 2' N. of his place.

*New Double Stars.*

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.		Nights.	Date.
		h	m				1909.	1909.		
744	+49° 5	0	3'5	+49 33	33'1	4'52	8'5	11'8	2	'811
745	+49° 10		4'3	49 43	177'2	3'00	9'1	9'3	2	'839
746	+50° 15		5'2	51 2	108'6	6'88	9'2	11'5	3	'889
747	+49° 21		5'6	50 1	174'4	2'90	9'4	10'2	2	'839
748	+51° 23		8'0	51 17	358'6	10'46	7'9	12'0	2	'984
749	+50° 48		12'5	50 45	165'5	9'27	9'1	9'1	2	'842
750			18'2	51 28	265'8	2'70	9'1	11'2	2	'855
751	+51° 136		37'4	51 15	340'3	6'65	9'1	14'0	2	'811
752	+53° 139	0	40'2	53 41	279'1	5'67	9'2	11'6	2	'932

## New Double Stars—continued.

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.		Nights.	Date.
		h	m							
753	+53°	145	0 42'3	53 32	115'7	8'05	9'1	9'1	2	'932
754	+53°	180	0 50'3	53 30	194'0	6'35	8'8	9'5	2	'932
755	+51°	244	1 5'2	51 45	334'8	4'03	9'1	12'0	4	'860 AB
					124'5	3'13	12'2	12'3	3	'856 CD
					182'1	10'20			3	'856 AC
					295'3	47'74	E=	9'3	2	'862 AE
756	+53°	252	6'2	54 7	209'3	3'50	8'5	10'6	4	'875
757			13'0	51 18	58'6	1'76	9'4	11'2	3	'824
758	+51°	280	13'4	51 17	247'3	5'05	9'2	10'7	3	'824 AB
					351'4	34'00	C=	9'6	3	'824 AC
759	+51°	334	28'6	51 39	88'8	9'27	8'6	9'0	2	'800
760	+53°	394	42'9	53 23	298'2	11'26	8'6	9'1	2	'896
761	+53°	395	43'2	53 25	249'6	4'92	8'5	11'7	2	'896
762	+51°	418	45'2	51 18	264'1	2'83	10'3	10'8	3	'942 BC
					278'9	60'13	A=	8'5	2	'932 AB
763	+51°	454	1 52'1	51 26	329'9	5'18	9'0	13'7	2	'932
764	+51°	566	2 18'1	51 26	94'0	2'32	9'2	12'0	2	'807 BC
					62'1	35'67	A=	8'5	2	'807 AB
					219'1	19'67	a=	11'5	2	'807 Aa
765	+52°	617	36'3	52 20	93'8	6'73	8'7	12'3	3	'957
766	+52°	635	2 44'8	52 49	295'8	4'18	8'6	10'8	3	'881
767	+51°	685	3 2'8	51 47	129'9	6'37	9'1	9'5	2	'932
768	+52°	672	8'3	52 23	47'3	2'58	10'2	11'5	4	'894 BC
					314'6	73'47	A=	8'1	2	'861 AB
769	+50°	730	9'1	50 28	138'8	5'85	9'1	11'0	2	'852
770	+51°	780	3 41'8	51 56	65'4	2'42	9'0	12'0	2	'947 BC
					49'5	70'20	A=	9'0	2	'947 AB
771	+52°	841	4 24'9	52 26	56'0	9'27	8'6	11'7	2	'972
772	+53°	1141	7 16'5	53 24		1±	9'3	9'3	1	'137
773	+50°	2115	14 42'2	50 48	83'8	5'67	9'0	12'0	2	'413
774	+51°	1979	15 3'8	51 23	232'5	3'10	9'0	9'2	2	'413
775	+51°	1989	15 11'2	51 14	222'1	6'75	9'3	9'4	2	'413
776	+53°	1934	17 16'0	53 21	314'9	1'90	10'5	10'7	2	'679 BC
					151'4	29'35	A=	8'6	2	'679 AB
777	+52°	2066	30'0	52 40	351'4	5'97	8'1	12'0	4	'597
778	+50°	2438	34'5	50 44	27'6	13'47	9'0	12'0	2	'614 BC
					104'1	57'62	A=	8'0	2	'614 AB
779	+51°	2262	47'6	51 5	341'8	9'12	8'8	12'0	2	'603
780	+54°	1929	17 57'8	54 16	155'3	2'98	9'2	11'8	3	'700

## New Double Stars—continued.

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.	Nights.	Date.	
		h	m							°
781	+53° 2019	18	0·5	53 57	277·3	3·50	9·1	11·4	2	'647
782	+50° 2536		9·2	50 25	107·1	6·32	9·2	13·6	3	'612
783	+51° 2337		12·1	51 5	239·0	8·27	9·1	14·0	3	'601
784	+51° 2399		29·5	51 6	65·6	6·47	8·7	9·2	2	'595
785	+50° 2615		31·1	50 52	95·8	8·55	8·6	9·0	2	'606 AB
					330·7	18·52	C=	12·0	4	'614 AC
786	+50° 2616		31·1	50 39	324·1	5·41	9·2	9·5	4	'616
787	+50° 2639		37·1	51 1	37·6	7·75	8·5	9·5	2	'679
788	+51° 2441		49·2	51 8	317·4	3·05	8·7	9·7	4	'623
789	+51° 2480	18	58·7	51 12	327·5	3·80	9·2	11·7	2	'605
790	+51° 2518	19	7·0	51 12	106·8	4·14	8·5	11·3	4	'647
791	+51° 2557		17·4	51 19	312·7	10·35	8·5	11·3	3	'640
792	+51° 2588		23·6	51 11	252·3	7·48	8·8	10·7	3	'596
793	+50° 2820		32·5	50 33	233·1	6·54	9·3	11·7	2	'758 BC
					85·9	15·27	a=	13·5	2	'758 Aa
					247·3	43·40	A≠	9·0	2	'758 AB
794	+51° 2664		39·5	51 47	119·7	8·32	9·0	13·2	3	'634 BC
					261·2	42·53	A=	8·3	3	'634 AB
795			44·1	50 36	319·4	3·98	9·4	10·1	2	'613 AB
					51·8	14·45	C=	14·0	1	'608 AC
796	+50° 2899		47·9	51 5	357·9	7·07	9·1	11·3	3	'670
797	+50° 2919	19	51·9	50 21	154·0	3·96	9·3	12·0	4	'600
798	+50° 2977	20	2·7	50 13	326·7	2·97	9·7	9·9	2	'606 BC
					104·9	80·40	A=	8·5	1	'594 AB
799	+47° 3051		11·1	47 25	9·8	2·45	9·2	9·3	3	'715 AB
					74·0	3·72	9·6	14·0	3	'715 CD
					224·4	32·22			2	'633 AC
800	+50° 3058		17·2	50 57	150·3	2·25	10·0	12·0	2	'662 CD
					103·6	40·27	A=	8·3	2	'662 AC
					314·6	28·25	B=	8·8	2	'662 AB
					96·8	112·65	E=	8·2	2	'662 AE
801	+44° 3454		20·5	45 6	170·8	9·70	9·0	9·6	3	'880
802	+48° 3129		24·0	48 49	236·9	4·55	9·4	11·0	3	'812
803	+47° 3114		25·0	47 55	354·4	5·78	8·0	11·2	3	'774
804			30·9	44 59	122·5	2·41	9·6	10·7	3	'893 BC
					116·3	31·80	A=	9·5	2	'885 AB
805	+45° 3219		31·4	45 10	135·3	8·95	9·3	10·3	2	'885
806	+47° 3160	20	36·5	47 44	253·9	6·57	8·5	13·9	4	'730 AB
					31·4	10·97	C=	13·2	4	'730 AC

## New Double Stars—continued.

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.	Nights.	Date.	
		h	m							°
807	+48° 3185	20	37.3	48 34	155.4	3.27	8.7	11.1	4	.744
808	+47° 3166		37.7	48 7	155.4	3.45	9.2	10.6	3	.640
809			38.2	47 39	91.0	2.60	9.4	10.2	2	.631
810	+47° 3188		44.5	47 29	42.1	18.33	5.5	14.5	3	.631
811	+48° 3230		48.9	49 0	138.1	1.97	9.1	9.3	2	.855
812	+47° 3210		49.6	47 51	140.2	6.27	9.2	10.8	2	.821
813	+47° 3226		52.4	47 32	235.0	5.16	9.1	11.6	5	.649
814	+47° 3233		53.3	47 31	356.5	4.52	8.7	12.1	4	.652
815	+47° 3247	20	56.4	47 20	230.6	5.85	9.1	9.6	2	.679
816	+47° 3283	21	2.1	47 34	34.0	2.60	9.3	9.4	3	.830
817	+47° 3297		3.8	47 20	352.3	11.43	7.5	12.0	2	.915
818	+48° 3289		4.3	48 27	80.8	2.35	11.2	12.2	2	.621 BC
					42.7	47.67	A=	8.2	2	.621 AB
819	+48° 3318		10.8	49 6	201.7	4.70	9.5	10.1	4	.807
820	+48° 3350		17.2	48 57	290.7	3.17	9.7	11.6	2	.674 BC
					59.0	33.42	A=	8.8	2	.674 AB
821	+48° 3382		22.6	48 39	272.2	7.60	9.1	10.3	3	.639
822	+48° 3385		22.9	48 45	37.2	1.57	9.0	9.2	3	.639
823	+48° 3386		23.0	48 51	278.4	9.33	8.1	11.7	3	.639
824	+47° 3434		27.0	47 17	1.7	6.00	9.1	9.8	2	.868
825	+48° 3457		36.3	48 41	253.1	9.60	7.5	11.8	3	.618 AB
					285.6	55.10	C=	8.4	2	.612 AC
826	+48° 3523		46.8	48 40	127.0	3.56	9.0	11.9	4	.645
827	+49° 3642		47.4	50 12	243.8	3.38	9.3	9.6	3	.609
828	+50° 3474		50.1	51 5	89.1	7.15	9.1	9.6	2	.631
829	+48° 3553		53.0	48 24	284.2	6.25	9.1	12.7	3	.714
830	+49° 3708		55.8	49 56	302.5	3.85	9.3	11.8	3	.768
831	+48° 3576	21	57.7	48 52	78.5	6.57	8.7	12.3	3	.814 AB
					310.8	20.69	C=	9.1	2	.821 AC
832	+47° 3693	22	2.7	47 45	132.3	7.60	9.1	13.0	3	.679
833	+47° 3696		3.9	47 49	259.9	2.60	9.1	9.2	3	.667
834			15.4	51 12	335.0	2.55	9.3	10.7	2	.631
835	+50° 3668		15.8	51 10	199.5	4.02	9.0	10.7	2	.702
836	+47° 3819		26.4	47 57	165.7	3.32	9.1	12.3	2	.773
837	+49° 3882		27.6	49 34	231.8	5.45	8.4	12.1	3	.756 AB
					231.2	12.43		11.7	3	.756 AC
838	+49° 3887	22	29.0	49 14	250.4	6.18	9.3	12.0	3	.799 AB
					182.7	18.32		11.0	2	.806 AC



## New Double Stars—continued.

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.	Nights.	Date.	
		h	m							°
839	+48° 3765	22	29.3	48 18	65.5	4.78	9.9	10.7	3	.854 BC
					101.7	31.09	A=	9.1	2	.852 AB
840		31.1		48 13	29.2	4.38	9.6	13.2	3	.854
841		31.3		48 13	95.1	2.83	9.8	9.9	3	.854
842	+47° 3867	34.6		47 24	111.6	3.42	9.1	9.9	2	.878
843	+47° 3877	35.7		48 13	210.4	8.35	9.1	9.2	2	.859
844	+48° 3804	36.5		48 21	39.6	4.45	9.2	11.2	2	.859
845	+47° 3889	37.6		47 43	36.7	4.37	8.8	12.2	2	.878
846	+46° 3800	38.4		46 59	161.2	5.25	9.0	14.0	2	.904
847	+46° 3814	40.6		46 26	254.4	9.87	9.1	12.0	3	.842
848		40.7		50 3	93.8	2.25	9.3	9.5	2	.722
849	+47° 3938	46.0		47 49	9.7	10.49	8.2	12.5	3	.939
850	+47° 3946	47.0		47 51	307.3	7.27	8.6	11.3	3	.939
851	+47° 3949	47.4		47 33	252.9	7.22	8.8	9.5	2	.915
852	+46° 3856	47.7		47 2	328.2	6.70	8.4	10.0	3	.818
853	+47° 3957	48.2		48 1	226.1	3.55	9.3	13.7	3	.950
854	+48° 3869	48.2		48 25	89.0	2.70	9.0	11.5	2	.963
855	+47° 3969	50.6		48 11	228.4	4.97	9.1	9.7	2	.655
856	+48° 3918	22	58.8	48 32	5.9	7.37	9.1	11.8	4	.722
857	+47° 4153	23	21.1	47 28	161.0	3.32	9.2	10.5	2	.790
858	+47° 4165		23.2	48 2	122.0	3.37	10.1	10.4	4	.814 BC
					237.1	29.38	A=	9.5	4	.814 AB
859	+47° 4216	32.6		47 59	265.1	2.65	9.8	9.9	3	.816 BC
					216.6	87.84	A=	8.0	2	.809 AB
860		36.3		49 29	46.9	2.42	9.5	9.8	3	.931
861	+48° 4146	40.3		48 32	278.0	5.62	9.2	9.7	3	.701
862	+48° 4148	40.8		48 23	39.7	6.01	8.6	12.0	2	.725 AB
					227.9	10.32		12.7	2	.725 AC
863	+49° 4242	45.4		49 30	330.9	3.65	9.3	9.7	2	.984
864	+48° 4239	23	59.7	49 5	173.9	9.02	8.7	10.2	2	.861

## Notes.

768.—There is a 9.8 mag. star nearer than B, and north of a line joining A and B.

772.—Professor Burnham kindly looked up the star, and has sent me the following measures:—

$$\left. \begin{array}{l} \text{AB P } 91.9 \text{ D } 1.04 \text{ } 9.6 \text{ } 9.7 \\ \text{AC } 354.3 \text{ } 6.50 \text{ } 14.0 \end{array} \right\} 1909.70.$$

The *comes* C was not noted by me.

773.—The *f.* and brighter of two stars.

795.—Another *comes* mag. 13.5 more distant in the same direction as C.

- 806.—The nearer *comes* suspected on several nights to be a Ghost.
- 810.—The *comes* is about the *minimum visible* of the  $17\frac{1}{4}$ -in. with mirrors newly silvered.
- 817.—A *comes* at P  $350^{\circ} \cdot 9$  D  $24'' \cdot 0$  mag. 12·0, and a 13·5 mag.  $85^{\circ} \pm 24''$ .
- 825.—A *comes* 14 mag.  $20'' \pm$  N of A.
- 826.—A pair S.p. 10·0 12·0  $5'' \pm$  and two others, about the same distance apart *f*.
- 831.—A 12·0 mag. P  $131^{\circ}$  D  $16''$ , an 11 mag. P  $34^{\circ}$  D  $20''$ , an 11·5 P  $66^{\circ} \cdot 4$  D  $22''$ .
- 837.—An 8·7 mag. P  $177^{\circ} \cdot 1$  D  $46'' \cdot 9$ .
- 843.—Two other pairs in field *p*.
-

May 1910.

*New Double Stars.*

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*New Double Stars.* By Rev. T. E. Espin, M.A.

No.	B.D.	R.A. 1900. h m	Decl. ° '	P. °	D. "	Mags.	Nights.	Date. 1910.
865	+51° 330	0 10'6	+52 2	306'0	6'65	9'3 9'5	3	'019 AB
				70'5	12'39	C= 10'5	3	'031 AC
866	+51° 58	0 17'7	+51 37	86'9	9'02	8'5 12'2	2	'001
867	+51° 228	1 0'5	+51 45	350'5	7'00	9'2 12'2	4	'831 1909
868	+51° 386	38'2	+51 19	98'2	5'45	9'5 13'0	3	'032
869	+51° 406	41'6	+51 23	231'6	9'32	8'6 11'6	2	'013
870		1 41'7	+51 21	111'2	8'77	9'2 13'0	3	'032
871		2 7'7	+55 7	299'8	3'74	9'4 10'1	3	'028
872	+54° 551	21'6	+54 54	156'6	4'56	9'4 10'3	3	'057 AB
				18'0	7'00	C= 14'0	1	'093 AC
873	+51° 632	42'4	+51 34	98'8	4'53	9'0 11'3	4	'138
874	+50° 697	2 58'4	+51 10	82'5	9'45	8'7 11'7	4	'025
875	+54° 681	3 20'0	+54 59	293'0	7'30	9'4 10'5	2	'102
876	+50° 810	37'5	+51 0	70'0	5'08	9'5 11'0	2	'083
877	+50° 863	49'7	+50 46	73'4	6'45	8'8 10'7	3	'040
878	+51° 817	51'3	+51 13	223'8	12'31	7'8 10'0	3	'133
879	+50° 881	54'4	+50 47	180'1	2'58	9'3 10'7	3	'037
880	+51° 836	3 55'3	+51 16	280'7	2'80	9'0 11'5	4	'140
881	+54° 747	4 6'1	+55 3	250'9	7'58	9'5 9'5	3	'109
882	+54° 774	23'4	+54 50	183'3	6'31	8'8 12'0	4	'133
883	+54° 784	29'1	+54 16	172'8	4'20	9'4 9'6	2	'155
884	+54° 787	30'3	+54 43	250'5	3'00	8'8 11'8	3	'127
885	+54° 788	30'7	+54 35	157'7	6'25	8'9 12'7	3	'127 AB
				187'6	26'40	C= 10'5	3	'127 AC
886	+54° 817	39'7	+54 57	77'2	9'25	8'8 13'5	2	'166

No.	B.D.	R.A. 1900. h m	Decl. ° '	P. °	D. "	Mags.	Nights.	Date. 1910.
887	+54° 836	4 46·4	+54 57	234·6	6·05	9·5 12·5	1	'172
888	+54° 859	4 58·2	+54 16	177·6	7·67	7·0 10·7	2	'053 AB
				246·0	26·92	C= 11·7	2	'053 AC
889	+54° 871	5 5·9	+54 17	316·3	8·20	9·3 10·7	3	'170
890	+50° 1135	7·1	+50 47	52·3	6·05	9·6 11·7	3	'219 BC
				269·7	62·52	A= 8·5	2	'018 AB
891	+54° 892	19·2	+54 17	71·7	8?	9·0 12·2	2	'186
892	+52° 963	22·5	+52 23	165·0	6·60	9·5 11·7	4	'182
893	+51° 1098	32·0	+51 42	255·8	7·22	9·5 9·7	2	'020
894	+52° 987	34·9	+52 33	187·0	3·22	8·9 9·2	5	'025
895	+53° 974	50·2	+53 49	90·1	4·40	9·3 12·5	1	'172
896		5 51·9	+53 9	331·6	2·53	10·8 11·0	4	'075 BC
				76·7	29·38	A= 9·0	4	'101 AB
				308·9	31·40	D= 9·5	3	'064 AD
897	+52° 1066	6 15·1	+52 0	85·4	6·91	8·8 11·4	3	'024
898	+54° 1067	36·0	+54 50	302·3	8·20	8·9 12·0	3	'200
899	+53° 1072	42·5	+53 34	300·8	3·08	9·3 10·5	3	'254
900	+50° 1389	56·5	+50 6	51·3	10·35	8·8 9·0	3	'196
901		57·7	+53 37	1·8	5·52	9·5 11·0	2	'219
902	+53° 1099	6 58·1	+53 37	331·8	7·17	9·5 13·2	2	'219
903	+50° 1428	7 16·5	+50 33	244·0	8·22	9·1 11·7	3	'166
904	+51° 1347	36·8	+51 27	129·3	3·00	9·5 10·5	2	'192
905	+50° 1490	49·1	+50 32	240·7	3·14	9·3 12·0	4	'179
906		49·3	+50 34	282·0	4·77	9·8 11·0	3	'183
907	+51° 1382	7 53·7	+51 34	109·2	6·04	9·3 10·5	3	'127
908	+53° 1235	8 11·7	+53 47	328·1	2·95	9·4 10·7	2	'257
909	+52° 1329	33·0	+52 6	276·3	6·40	11·5 12·7	2	'118 BC
				316·6	49·09	A= 8·0	2	'118 AB
910	+49° 1760	37·5	+49 35	12·3	9·55	9·0 13·5	2	'245
911		8 49·2	+50 52	123·6	2·52	9·8 10·6	4	'176
912	+48° 1763	9 17·5	+48 22	144·6	9·77	9·0 10·5	3	'239
913	+47° 1718	47·3	+47 26	337·0	7·83	9·3 10·4	3	'240
914	+47° 1731	9 53·6	+47 0	326·5	6·10	9·4 11·7	3	'244
915	+48° 1857	10 14·0	+48 14	167·1	5·78	9·5 10·4	3	'210
916		14·9	+48 54	326·8	2·97	10·2 10·2	2	'193
917	+49° 1954	17·1	+49 13	146·5	2·26	9·0 9·3	4	'204
918		28·7	+47 9	183·3	3·53	10·6 10·8	5	'243
919	+46° 1645	32·3	+45 58	321·4	7·27	9·5 10·7	2	'260
920	+47° 1827	47·8	+47 46	245·8	7·52	9·7 11·2	2	'215 BC
				125·4	61·32	A= 8·6	2	'215 AB

No.	B.D.	R.A. 1900.	Decl.	P.	D.	Mags.	Nights.	Date.
		h m	° '	°	"			1910.
921	+47°	1836 10	54'7	+47 15	175'5	2'70	9'5 10'0	2 '248
922	+49°	2022 11	3'1	+48 47	60'3	4'88	9'0 11'2	3 '217
923	+49°	2094 11	50'5	+48 47	219'8	2'52	9'5 10'7	3 '254
924	+48°	2037 12	30'0	+48 41	218'4	4'28	9'4 9'7	3 '254
925	+49°	4084 23	13'4	+49 19	66'5	5'97	8'8 9'7	3 '012
926		45'5		+49 50	149'5	3'30	9'2 9'7	2 '023 AB
					198'4	7'49	C= 12'0	2 '023 AC
					130'0	14'91	D= 14'0	1 '031 AD
927	+49°	4292 23	53'2	+49 29	181'8	6'97	9'3 11'8	2 '034

*Notes.*

881.—Argelander's place requires a correction of + 1 min. in R. A.

891.—The distance is doubtful.

Jan. 1911.

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No.	B.D.	R.A. 1900.		Decl.		P.	D.	Mags.	Nights.	Date.		
		h.	m.	°	'						°	'
928	+52°	10	0	4'1	+52	51	18'5	7'75	9'4	9'6	2	'852
929	+53°	11		4'7	53	36	116'7	3'42	9'4	10'1	3	'827
930	+54°	6		5'3	55	7	340'8	3'77	9'5	9'5	3	'734
931				18'9	52	9	321'4	2'50	9'6	9'7	3	'867
932	+54°	53		19'5	55	10	91'0	3'37	12'0	12'3	2	'740 BC
							320'0	42'85	A=	9'1	2	'740 AB
933	+54°	89		25'6	54	21	266'3	7'95	8'8	12'3	3	'866
934	+50°	90		26'4	50	58	183'4	5'91	9'0	12'0	3	'898
935	+52°	110		29'6	52	43	288'1	5'80	9'5	12'4	3	'845
936	+55°	136		34'3	55	15	266'0	7'92	9'3	9'3	2	'877
937	+53°	152		44'3	54	1	174'7	5'92	9'3	10'0	2	'788
938	+53°	171		48'0	54	2	214'1	3'81	9'4	10'0	2	'712
939	+54°	179		49'2	54	57	341'3	7'25	9'2	11'1	2	'718
940	+51°	193		51'5	51	42	32'9	7'00	9'0	13'2	3	'880 BC
							356'3	62'60	A=	7'0	3	'880 AB
941	+52°	233	0	53'3	53	9	62'6	3'70	9'5	11'7	2	'839
942	+54°	221	1	0'7	54	40	96'7	4'75	10'5	12'2	3	'772 BC
							174'3	18'97	A=	8'9	2	'741 AB

## New Double Stars—continued.

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.	Nights.	Date.	
		h	m							
				°	'	"			1910	
943	+54° 248	1	8·5	54 17	40·3	3·22	11·0	11·3	2	·836 CD
					263·4	58·47	A=	9·1	2	·836 AC
					261·2	33·35	B=	11·2	2	·836 AB
					86·4	24·42			2	·836 CB
944	+54° 256		11·4	54 34	320·4	6·48	8·7	12·0	3	·812
945	+51° 381		37·0	51 52	110·5	4·77	9·0	11·0	2	·857
946	+54° 372		39·5	54 50	189·7	5·60	8·5	13·2	3	·880
947	+54° 376		42·0	54 58	205·1	4·35	9·0	10·3	3	·880 AB
					25·9	26·72	C=	10·7	2	·884 AC
948	+54° 414		48·7	54 20	85·2	3·05	9·5	11·5	3	·840
949	+55° 453	1	51·9	55 19	262·5	5·60	9·3	9·4	2	·890 AB
					18·7	24·05	C=	10·3	2	·890 AC
950	+54° 518	2	12·7	54 21	96·0	5·10	9·2	9·9	2	·788 AB
					287·0	15·90	C=	12·0	1	·832 AC
951	+50° 709	3	3·2	50 32	121·5	2·39	9·5	10·4	4	·934
952	+51° 706		9·4	51 48	115·5	7·21	9·2	11·4	4	·939
953	+50° 794		31·5	50 35	235·0	4·03	9·1	12·2	3	·925
954	+50° 871	3	52·4	50 37	354·4	4·22	9·2	10·4	3	·986
955	+53° 758	4	13·1	53 38	41·3	2·62	9·5	10·7	2	·880
956	+53° 762		15·6	53 44	288·5	2·32	9·3	9·5	2	·880 AB
					182·7	26·35	C=	10·5	1	·887 AC
957	+53° 822		44·7	54 2	350·8	1·60	9·3	9·4	3	·925
958	+53° 823	4	46·3	53 10	4·6	2·87	9·4	9·5	2	·943
959	+51° 1058	5	13·5	51 7	163·8	5·13	9·2	11·7	3	·960
960	+48° 2158	13	48·9	48 14	267·5	4·43	9·5	10·7	3	·394
961	+48° 2215	14	27·5	48 34	319·6	6·95	9·4	9·7	2	·405
962	+48° 2231		40·3	48 9	169·7	8·47	8·9	11·5	2	·430
963	+50° 2129	14	56·2	50 8	242·7	7·63	9·5	12·0	3	·398
964	+53° 1797	15	35·7	52 54	216·9	5·65	9·5	9·7	2	·404
965	+52° 1828		52·8	53 20	331·7	5·00	9·5	9·7	2	·450
966	+53° 1833	15	57·2	53 3	65·1	8·10	9·0	12·0	2	·456
967	+55° 1818	16	8·0	54 55	210·3	8·25	8·5	11·6	3	·496
968	+52° 1986		36·8	52 48	236·5	5·30	9·3	10·5	3	·451
969	+50° 2329		43·4	50 23	235·7	2·60	9·3	9·5	3	·501
970	+52° 1996		44·9	52 29	297·0	3·65	9·1	11·3	3	·510
971	+51° 2143		49·3	51 13	228·9	2·06	10·5	11·7	4	·421 BC
					44·1	41·81	A=	9·4	4	·421 AB
972	+51° 2152	16	53·1	51 50	103·2	2·06	9·8	10·0	3	·510

## New Double Stars—continued.

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.	Nights.	Date.		
		h	m							°	'
973	+50° 2436	17	34'2	50	17	267'8	5'87	9'5	13'2	2	'553
974	+50° 2469	17	46'8	50	13	348'6	3'52	9'1	9'3	3	'505
975	+56° 2110	18	30'0	56	34	77'8	9'00	8'8	14'0	4	'646
976	+54° 2054	18	52'0	54	9	277'8	5'38	9'3	9'5	3	'621
977	+50° 2714	19	0'2	50	45	216'1	5'75	9'0	12'3	3	'565
978			2'8	51	52	202'4	5'68	9'9	10'0	4	'672
979	+50° 2731		5'2	50	47	196'0	6'86	8'8	11'1	3	'589 AB
						44'2	19'67	C=	9'7	3	'589 AC
980	+50° 2745		11'2	50	30	190'7	5'90	9'4	13'0	2	'669
981	+55° 2169		11'9	55	13	90'3	3'17	9'0	11'2	2	'612
982	+52° 2399		18'9	52	39	85'8	2'98	9'3	10'0	3	'569
983	+52° 2407		19'9	52	34	211'0	3'35	9'6	10'2	3	'544 AB
						46'8	22'60	C=	10'0	3	'544 AC
984	+53° 2232		20'4	+53	24	314'8	5'83	12'2	12'7	5	'692 BC
						92'2	31'23	A=	8'7	5	'692 AB
985	+53° 2325	19	53'6	54	3	285'2	2'80	9'5	12'0	3	'684
986	+51° 2784	20	7'3	52	3	287'3	3'30	9'4	9'5	2	'773
987	+53° 2372		12'0	53	31	291'2	8'17	9'2	9'8	3	'652
988	+51° 2550		18'9	51	55	13'7	3'95	8'1	11'8	3	'839
989	+52° 2689		19'6	52	17	269'8	4'33	9'5	11'0	3	'794
990	+50° 3135		31'9	50	48	299'4	2'42	9'5	9'5	2	'866
991	+54° 2382		33'1	54	14	296'8	16'27	8'6	9'6	2	'619 AB
						126'7	2'46	9'5	11'9	4	'622 CD
						104'0	63'62			2	'606 AC
992	+51° 2920		36'8	52	6	169'8	7'37	9'1	10'5	2	'857
993	+54° 2392		36'8	54	27	109'9	2'02	9'5	9'5	3	'712
994	+54° 2404		39'4	54	14	12'3	5'82	9'5	11'6	3	'671
995	+51° 2929		39'9	51	45	101'2	9'15	8'1	10'0	3	'862
996	+52° 2796		43'1	52	57	262'9	8'42	8'0	14'0	3	'854
997	+53° 2490		44'6	53	45	271'2	2'82	9'5	11'8	3	'735
998	+50° 3205		45'2	50	32	167'4	3'55	9'4	9'7	3	'900
999	+50° 3235		54'3	50	41	261'9	3'38	9'3	10'2	3	'945
1000	+50° 3254	20	59'6	50	18	53'3	4'40	9'5	12'0	2	'944
1001	+54° 2465	21	0'2	54	55	34'8	4'95	9'0	9'5	3	'688
1002	+52° 2863		1'0	53	7	65'4	6'80	9'1	12'7	2	'613
1003	+51° 3000		5'5	51	24	150'0	6'62	9'0	11'2	2	'881
1004	+50° 3309		15'6	50	14	219'0	7'10	9'0	11'5	1	'909
1005	+50° 3311	21	15'8	50	24	107'4	2'15	10'0	11'5	2	'944 BC
						141'4	11'30	A=	9'5	1	'909 AB



## New Double Stars—continued.

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.	Nights.	Date.	
		h	m							°
1006	+51° 3057	21	20·9	53 24	49°0	9·45	8·0	12·0	2	'881
1007	+53° 2625		24·0	54 7	45·6	2·03	9·5	9·5	4	'646
1008	+53° 2677		36·2	54 10	310·1	8·30	8·6	11·6	4	'706
1009	+52° 3018		39·1	52 42	298·1	4·37	9·5	9·5	4	'940
1010	+54° 2608		40·1	54 59	106·5	2·50	9·5	10·3	3	'784
1011	+52° 3026		41·7	52 26	218·6	7·45	9·0	11·3	2	'866
1012	+54° 2622		43·4	54 56	4·2	4·28	9·1	9·2	3	'735
1013	+53° 2706		44·3	53 52	3·4	3·57	9·3	11·7	2	'855
1014	+52° 3046		46·6	53 12	226·0	3·82	9·2	12·7	3	'900
1015	+52° 3072	21	54·8	52 15	243·5	5·65	9·3	9·3	4	'682
1016	+52° 3122	22	5·1	52 28	295·3	4·04	9·0	11·6	3	'877
1017	+54° 2721		11·5	54 59	280·0	4·90	10·5	13·0	3	'719 BC
					14·8	15·65	A=	9·0	3	'719 AB
1018	+52° 3172		14·2	52 39	44·3	4·91	9·2	14·0	2	'724
1019	+52° 3174		14·6	53 11	399·9	7·25	8·8	9·9	3	'867
1020	+52° 3180		15·6	52 39	245·7	1·90	9·1	9·3	3	'766
1021	+53° 2867		19·8	54 1	101·3	5·28	8·8	9·3	3	'899
1022	+53° 2901		26·1	53 34	127·0	6·85	9·3	10·2	2	'888
1023	+53° 2903		26·7	53 58	268·9	4·12	9·1	9·1	2	'898
1024	+54° 2795		28·0	54 56	259·3	4·32	8·9	11·0	3	'749
1025	+54° 2824		34·2	55 3	320·0	5·67	10·2	12·5	2	'751 BC
					330·0	43·60	A=	9·0	3	'771 AB
1026	+52° 3262		36·0	53 2	26·5	2·05	9·0	11·3	5	'969
1027	+54° 2839		38·0	54 15	216·0	5·45	9·0	12·0	2	'773
1028	+53° 2961		38·3	53 43	242·8	5·67	7·5	10·0	2	'852
1029	+54° 2844		39·6	54 20	91·1	5·97	9·3	14·0	3	'808
1030	+52° 3297		43·7	52 17	1·7	6·55	9·0	11·0	2	'992
1031	+54° 2870		46·6	55 3	251·7	2·12	9·4	9·5	2	'740
1032	+52° 3312		47·6	52 39	190·6	2·27	12·0	12·2	3	'877 BC
					134·3	24·55	A=	8·3	3	'877 AB
1033	+53° 3035		52·5	54 13	236·7	2·26	9·5	10·2	4	'737 AB
					279·6	21·37	C=	12·2	2	'732 AC
1034	+54° 2893		55·8	55 6	329·2	6·17	9·4	11·4	3	'690
1035	+52° 3355		57·4	52 45	149·9	5·62	9·4	12·2	2	'907
1036	+52° 3359	22	58·8	52 56	86·5	2·65	9·5	10·6	2	'907
1037	+54° 2923	23	6·1	54 21	341·0	3·30	9·5	9·9	2	'672
1038	+52° 3382		6·6	52 25	24·0	7·68	9·1	12·5	3	'901 AB
					191·8	9·22	C=	13·5	3	'901 AC

## New Double Stars—continued.

No.	B.D.	R.A. 1900.		Decl.		P.	D.	Mags.		Nights.	Date. 1910
		h	m	°	'						
1039	+52° 3403	23	10·5	52	48	208·9	1·19	9·0	9·4	4	·880
1040	+54° 2943		12·6	54	56	235·8	2·55	9·4	9·6	4	·723
1041	+53° 3118		12·7	53	53	133·6	2·40	9·5	9·7	3	·726
1042	+51° 3581		14·1	52	12	306·2	4·10	9·1	9·3	2	·992
1043	+54° 2974		22·0	+54	25	118·9	2·00	10·6	11·0	6	·709 BC
						29·1	29·45	A=	8·5	3	·684 AB
						20·0	43·24	D=	10·0	4	·692 AD
1044	+52 3449		22·5	52	30	259·8	3·92	9·5	11·5	2	·992
1045	+54° 2980		22·9	55	2	259·2	2·77	9·5	11·3	2	·743
1046	+53° 3195		30·5	53	20	344·9	7·53	9·4	13·9	3	·853
1047	+54° 3028		37·7	54	17	269·9	3·85	9·4	10·0	3	·780
1048	+54° 3029		38·3	54	22	325·6	5·10	9·6	9·7	3	·780 DE
						247·4	14·30	B=	11·5	2	·788 AB
						282·3	16·35	C=	11·0	2	·788 AC
						15·4	69·95			2	·754 AD
1049	+52° 3550		47·8	52	26	217·3	4·87	9·3	10·6	2	·898
1050	+54° 3061		48·7	54	20	228·8	4·68	9·1	12·0	3	·729 AB
						310·5	39·17	C=	9·3	3	·729 AC
1051	+52° 3566	23	52·4	53	9	46·4	5·92	9·4	10·7	2	·833 AB
						180·7	8·85	C=	11·7	2	·833 AC

## Notes.

1015.—A 14 Mag. 15" ± N.

1017.—An 11 Mag. P = 138°·1 D = 11"·7, and a 13 Mag. P = 177°·2  
D = 15"·9.

1027.—A comes 15" ± s.f.

Jan. 1912.

*New Double Stars.* 193

*New Double Stars.*

No.	B.D.	R.A. 1900	Decl.	P.	D.	Mags.	Nights.	Date.
1052	+51° 74	0 <sup>h</sup> 21 <sup>m</sup> 1	+51° 53'	131° 1'	5" 81	8.7	11.5	3 '868 (1910)
1053	+49° 252	0 52.3	49 22	80.5	5.45	9.1	9.8	2 '860
1054	+49° 338	1 10.8	50 11	62.3	5.13	9.4	11.7	3 '889
1055	+52° 419	37.2	53 4	261.4	7.35	9.2	12.0	3 '059
1056	+50° 347	39.5	50 40	20.3	4.80	9.5	9.7	2 '074
1057	+50° 345	39.3	50 51	5.3	7.88	9.5	13.9	3 '328
1058	+50° 405	50.9	50 26	50.8	5.22	9.0	12.0	2 '061
1059	+50° 417	53.2	50 48	219.8	8.45	8.7	11.0	2 '070 AB
				214.9	19.62	C=	12.5	2 '070 AC
1060		1 57.5	50 22	252.5	2.90	9.6	11.5	2 '065
1061	+49° 589	2 7.1	49 57	113.0	3.25	9.5	9.6	2 '996
1062	+49° 590	7.5	50 9	28.3	7.03	9.5	9.7	3 '998
1063	+50° 568	2 24.3	50 37	25.1	2.05	9.5	11.0	2 '050
1064	+49° 1042	3 44.3	49 29	28.4	6.12	9.0	12.2	3 '366 BC
				287.8	59.35	A=	8.6	2 '131 AB
1065	+49° 1043	44.5	49 21	17.3	6.48	9.5	11.1	3 '003 (1912)
1066	+52° 743	3 54.9	52 47	112.3	5.70	9.3	9.5	2 '020
1067	+52° 773	4 1.8	52 41	41.8	4.72	9.4	12.0	2 '034
1068	+50° 962	9.2	51 3	72.4	3.60	13.0	13.5	2 '050 BC
				102.8	47.67	A=	8.7	2 '050 AB
1069	+49° 1171	13.7	49 26	109.1	4.13	9.2	13.2	3 '010 (1912)
1070	+49° 1263	4 43.9	49 57	112.2	2.23	9.4	10.6	3 '700
1071	+50° 1175	5 20.0	50 4	354.7	5.57	8.6	11.6	2 '016
1072	+49° 1366	5 25.2	49 8	359.5	4.05	9.3	10.4	2 '080
1073	+49° 1457	6 1.3	49 7	105.4	7.65	8.6	12.5	3 '703
1074	+49° 1476	9.8	49 42	179.6	6.27	9.5	11.3	2 '152 AB
				307.4	13.02	C=	10.5	2 '152 AC
1075	+52° 1104	30.1	52 32	3.6	6.52	9.4	12.0	2 '059
1076	+50° 1343	35.4	50 9	260.2	5.24	8.5	11.8	3 '145
1077		35.7	50 46	95.9	3.75	9.6	11.0	3 '124
1078	+52° 1154	53.4	52 12	285.5	4.51	9.3	11.7	4 '071
1079	+50° 1383	6 54.8	50 48	324.4	6.20	8.5	12.0	3 '115
1080	+49° 1599	7 4.5	49 40	29.5	4.62	9.5	10.6	2 '164
1081	+51° 1301	7.0	51 52	200.4	4.50	9.5	12.7	3 '128 AB
				99.6	37.45	C=	10.5	2 '115 AC
1082	+49° 1664	7 36.7	49 47	318.3	6.05	9.3	9.6	2 '176
1083	+49° 1795	8 54.4	49 6	355.5	5.85	9.3	9.4	2 '164
1084	+48° 1963	11 38.6	+47 50	257.7	4.17	9.5	10.7	2 '323

No.	B.D.	R.A. 1900	Decl.	P.	D.	Mags.	Nights.	Date.
1085	+47° 2129	<sup>h</sup> 14 <sup>m</sup> 12.7	+47° 1'	171.8	6.07	8.6 11.6	3	1911 '369
1086	+46° 2019	14 59.2	46 17	265.8	2.20	9.7 10.3	2	'428
1087	+48° 2328	15 41.0	47 55	168.9	6.67	9.5 11.5	2	'414
1088	+47° 2319	16 11.0	47 51	217.9	7.77	11.4 12.5	3	'492 BC
				316.4	33.37	A= 8.0	3	'492 AB
1089	+48° 2436	43.7	48 9	141.0	1.98	9.1 9.7	3	'525 AB
				30.1	32.57	C= 12.2	3	'525 AC
1090	+48° 2468	16 57.8	48 26	276.6	5.17	9.4 9.4	2	'523
1091	+48° 2521	17 25.9	48 27	307.2	5.82	9.5 12.1	2	'527
1092	+49° 2694	17 45.9	49 43	21.7	4.15	9.5 9.9	2	'513
1093	+49° 2912	18 58.0	49 19	309.4	2.87	9.5 9.6	3	'652
1094	+49° 2934	19 4.3	49 57	117.2	4.57	9.4 12.0	2	'658
1095	+49° 2978	16.3	49 41	134.1	6.50	9.1 11.7	3	'612
1096	+49° 3016	24.9	49 53	147.1	6.40	9.5 12.0	3	'621
1097	+49° 3025	27.5	49 19	226.4	1.12	9.4 9.6	4	'664
1098		19 42.2	48 34	165.9	3.82	9.3 9.8	3	'663
1099	+48° 3053	20 7.6	49 5	179.6	4.62	9.0 10.0	2	'677
1100	+49° 3299	27.4	49 54	281.6	2.30	9.5 9.6	2	'622
1101		20 28.1	50 2	241.4	1.67	9.5 9.7	3	'635
1102	+47° 3399	21 21.8	47 52	107.5	3.56	12.0 12.8	3	'864 CD
				49.6	5.02	C= 11.3	3	'864 BC
				194.9	46.71	A= 9.5	3	'864 AB
1103	+50° 3399	36.3	50 13	240.9	6.12	9.3 12.5	2	'703
1104	+49° 3591	36.8	50 3	353.9	3.30	9.5 13.0	3	'932 AB
				225.3	13.90	C= 12.5	3	'932 AC
1105	+49° 3629	45.1	50 7	295.4	7.32	9.0 12.7	4	'917 AB
				107.7	11.00	C= 13.2	3	'907 AC
1106	+51° 3189	52.3	51 44	9.4	4.77	9.4 10.2	2	'746 AB
				158.2	10.77	C= 12.0	3	'771 AC
1107	+51° 3190	52.5	51 55	352.2	6.27	9.3 12.0	3	'772
1108	+50° 3510	55.3	50 44	251.6	5.67	9.5 11.0	3	'643
1109	+50° 3535	21 59.3	51 2	105.5	5.42	9.5 11.5	3	'661
1110	+50° 3551	22 1.7	50 39	9.5	2.38	9.0 9.2	3	'906
1111	+51° 3261	4.8	51 54	272.0	7.27	9.5 11.6	2	'828
1112	+50° 3578	4.8	51 3	230.8	1.23	9.1 9.2	3	'672
1113	+50° 3626	11.0	50 40	219.9	6.52	8.6 9.0	3	'976
1114	+51° 3322	14.5	51 31	256.9	5.37	9.1 9.3	2	'971
1115	+51° 3392	25.3	51 18	231.3	1.89	9.5 9.7	4	'819
1116	+51° 3410	28.3	51 25	132.3	7.22	9.0 9.3	2	'803
1117	+50° 3781	22 35.5	+50 42	268.6	5.67	9.5 12.5	2	'860

No.	B.D.	R.A. 1900	Decl.	P.	D.	Mags.	Nights.	Date.
1118	+51° 3468	<sup>h</sup> 22 <sup>m</sup> 43·3	+51° 39'	131°·6	6·67	9·5	11·3	2 1911 '672
1119	+51° 3509	52·7	51 36	115·8	4·51	9·4	9·8	2 '703
1120	+50° 3893	53·8	51 1	23·2	7·97	9·3	9·4	3 '774
1121	+51° 3524	<sup>h</sup> 22 <sup>m</sup> 56·9	52 7	331·9	1·18	9·3	9·5	3 '655
1122	+50° 3940	23 1·7	50 38	83·5	2·50	9·2	9·3	2 '891
1123	+51° 3565	10·4	52 2	309·6	2·53	9·4	10·0	3 '691 AB
				125·9	17·37	C=12·3	3	'691 AC
1124	+50° 4164	45·3	50 41	246·7	2·32	9·2	9·4	3 '931
1125	+50° 4184	23 47·4	+51 6	333·8	5·05	9·5	9·6	3 '838

*Notes.*

1077. The star B.D. + 50°1344 was found to be 13 mag. on Jan. 31, and is not identical with the pair here measured.

1121. Professor Fox kindly measured this object and obtained:—

1911·709      P 329°·4      D 1"·34      3 nts.

*New Double Stars.* By Rev. T. E. Espin, M.A.

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.	Nights.	Date.	
		h	m							1912.
1126	+47°	12	0 4'3	+47 25	320'4	6'12	9'0	9'7	3	'918
1127	+47°	18	5'8	47 47	298'6	1'98	10'0	10'7	3	'945 BC
					0'9	89'32	A=	9'2	3	'945 AB
1128	+49°	98	23'3	50 7	172'7	4'17	9'5	11'7	2	'832
1129	+48°	152	25'4	48 44	84'7	1'45	9'3	9'4	3	'987
1130	+49°	342	1 11'4	49 27	361'7	3'20	9'3	11'6	3	'796
1131	+48°	458	26'4	49 0	317'8	3'57	9'5	10'2	3	'918
1132	+48°	495	33'1	48 30	182'4	5'95	9'3	11'7	2	'898
1133	+49°	725	2 31'6	49 49	293'3	3'26	9'3	10'3	4	'221
1134	+49°	751	36'2	49 38	362'3	4'83	9'0	11'7	3	'292
1135	+49°	768	43'8	48 39	40'2	4'22	9'5	9'7	2	'809
1136	+48°	923	3 21'4	48 36	9'6	6'68	9'3	11'6	3	'066
1137	+49°	1038	43'8	49 22	75'9	1'18	9'5	9'8	4	'111
1138	+49°	1279	4 50'4	49 19	339'9	5'60	9'5	9'6	3	'077
1139	+49°	1284	52'7	49 21	109'4	2'00	9'2	9'4	4	'130 AB
					343'1	7'75	O=	13'5	3	'117 AC
1140	+48°	1259	5 15'1	48 16	286'7	2'87	9'4	10'3	2	'167
1141	+48°	1290	29'6	48 10	267'9	3'39	9'1	9'6	3	'182
1142	+49°	1567	6 47'1	49 52	278'7	3'01	9'5	12'0	2	'174
1143	+48°	1553	7 29'9	48 16	277'9	4'55	9'0	12'0	2	'194
1144	+46°	1356	8 0'9	46 29	337'8	7'63	9'0	9'2	3	'244
1145	+46°	1358	1'9	46 15	77'7	6'38	9'5	10'2	3	'277 AB
					245'3	14'15	C=	13'5	2	'272 AC
1146	+46°	1447	44'6	46 32	165'6	6'22	9'4	11'9	3	'252
1147	+45°	1682	9 1'4	45 35	179'5	7'20	8'9	9'0	2	'254 AB
					272'3	31'70	C=	10'2	2	'254 AC
1148	+45°	1702	12'3	45 4	31'0	6'03	8'8	9'6	4	'261
1149	+47°	1740	58'7	47 3	249'8	7'92	8'6	12'0	3	'261
1150	+46°	1634	10 24'2	46 3	306'5	2'74	9'3	10'8	4	'277
1151	+44°	1992	24'8	44 45	301'2	2'80	9'5	9'6	3	'287
1152	+45°	1845	31'0	45 35	348'5	3'57	9'3	9'4	2	'267
1153	+44°	2112	11 33'2	44 39	263'1	5'42	8'9	11'5	3	'315
1154	+44°	2142	48'2	43 50	337'2	3'23	9'6	9'9	3	'314
1155	+45°	2029	12 18'9	45 14	194'8	3'93	9'8	10'7	3	'296
1156	+45°	2152	14 0'7	45 37	264'9	2'48	9'6	9'6	3	'337
1157	+46°	2428	18 4'2	46 46	16'2	4'47	9'8	10'5	3	'796 BC
					180'8	25'93	A=	7'8	3	'796 AB
1158	+47°	2612	16'6	47 21	198'1	4'92	8'0	11'5	3	'796
1159	+46°	2521	35'8	46 55	254'0	3'57	9'1	10'8	3	'809 AB
					336'1	18'87	C=	10'3	2	'800 AC
1160	+46°	2522	36'1	46 53	1'9	1'86	9'5	11'5	5	'819
1161	+47°	2688	42'7	47 40	269'5	3'72	9'2	9'4	2	'717
1162			19 9'5	47 2	91'0	2'37	9'6	10'5	3	'777

No.	B.D.	R.A. 1900.		Decl.		P.	D.	Mags.	Nights.	Date.	
		h	m	°	'						°
1163		19	20.6	47	26	119.6	2.46	9.6	11.2	2	1912. 790 AB
						190±	8±	C=	14.0	2	790 AC
						233.1	26.30	D=	10.0	2	790 AD
1164	+46° 2718		29.9	46	48	281.2	4.67	9.3	12.5	3	.860
1165	+47° 2884		35.9	47	55	297.2	4.52	9.6	9.7	2	.772
1166		20	56.3	46	35	115.8	1.75	9.3	9.7	3	.703
1167	+46° 3150		58.8	46	17	228.2	5.00	8.6	12.1	3	.720 AB
						78.9	16.30	C=	13.2	3	.720 AC
1168	+45° 3391	21	1.7	45	16	114.7	1.62	9.4	10.2	4	.879
1169	+46° 3185		3.3	46	44	84.9	5.67	9.4	12.5	3	.743
1170	+45° 3537		22.6	45	57	344.7	5.41	9.0	12.7	4	.852 AB
						346.1	10.79	C=	13.2	4	.852 AC
1171	+46° 3324		24.6	46	47	193.8	3.63	9.4	9.5	3	.769 AB
						228.5	20.72	C=	12.5	3	.769 AC
1172	+46° 3368		30.7	46	59	106.1	6.62	9.0	9.5	3	.849 AB
1173	+46° 3373		31.3	46	56	94.3	3.48	9.3	10.5	3	.849
						208.6	16.23	C=	9.8	3	.849 AC
1174	+47° 3488		32.4	47	47	253.5	2.13	9.3	9.8	3	.649
1175	+49° 3650		48.9	49	45	195.4	4.00	9.4	10.8	2	.757
1176	+47° 3638		55.0	47	19	270.1	5.75	10.5	12.3	3	.973 BC
						142.3	32.43	A=	8.8	3	.973 AB
1177	+47° 3691	22	1.8	47	17	302.2	6.00	9.5	11.9	2	.961
1178	+48° 2638		7.8	49	11	117.5	1.74	9.5	9.7	4	.852
1179	+50° 3658		14.8	50	52	101.4	6.05	9.0	12.8	3	.701
1180	h1766		22.6	49	48	272.4	4.15	9.1	13.2	2	.764 BC
						266.0	13.57	C=	9.6	2	.764 AB
1181	+48° 3753		27.0	48	42	115.2	1.75	9.3	9.6	2	.931
1182			27.4	48	45	250.1	1.97	9.5	10.3	2	.931
1183	+49° 3992		52.1	49	31	272.3	5.35	9.5	10.8	3	.771
1184			53.7	50	34	245.2	1.51	9.6	9.7	4	.526
1185	+49° 4010		58.1	49	15	318.0	4.15	9.5	10.8	3	.781
1186	+47° 4090	23	11.5	47	28	89.6	4.03	9.3	12.3	3	.940
1187	+50° 4033		19.3	50	52	135.6	3.38	9.5	12.5	4	.745 AB
						333.2	6.65	C=	13.8	3	.741 AC
1188	+49° 4109		19.6	49	44	144.5	3.17	9.5	10.7	2	.896
1189	+49° 4126		22.7	50	5	138.7	1.75	9.4	9.7	2	.791
1190	+50° 4136		39.3	50	58	106.7	5.72	9.5	10.7	3	.771
1191	+48° 4232		58.3	48	20	14.1	3.82	9.4	12.8	3	.823

## Notes.

1130. There is a *comes* mag. 13.5 P 97°.6 D 11".6.

1137. Professor Fox has kindly measured this star,

1912.099 P 78°.7 D 1".24 Mags. 10.2, 10.3; 4 nts.

1163. The *comes* C is too faint to measure.

1180. The *comes* to B was missed in my earlier observations of this star.

*New Double Stars.*

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.		Nts.	Date.
		h	m				1913.	1913.		
1192	+44° 4551	0	0'3	+44 48	298'9	1'70	9'2 9'4	3	'992	
1193	+46° 4261		2'0	46 50	70'7	2'60	9'5 9'6	2	'796	
1194	+45° 28		8'0	46 3	290'1	5'77	9'5 10'2	2	'976	
1195	+45° 36		9'0	45 39	11'0	7'25	9'3 9'6	3	'999	
1196	+45° 59		14'4	46 6	184'5	5'65	9'5 13'2	2	'990	
1197	+48° 83		15'2	48 38	107'2	6'30	8'5 11'5	3	'904	
1198	+48° 88		15'9	48 15	188'1	6'78	8'6 11'5	3	'931	
1199	+45° 74		17'4	45 41	16'1	2'97	9'2 9'6	3	'999	
1200	+45° 76		18'0	46 0	55'2	1'75	13'0 13'3	3	'991 BC	
					325'1	47'75	A= 8'2	2	'987 AB	
1201	+45° 80		18'4	46 1	75'6	7'05	8'5 12'8	3	'999	
1202	+45° 108		22'9	46 12	33'4	2'52	9'6 10'0	2	'987	
1203	+46° 138		36'2	46 54	66'6	6'87	8'3 11'5	2	'935	
1204	+48° 304		53'3	48 41	348'2	4'09	9'6 9'8	3	'840	
1205	+48° 316		55'5	48 20	113'6	2'87	9'3 9'8	2	'825	
1206	+47° 304		59'7	47 56	179'6	5'45	8'8 12'7	3	'974	
1207	+48° 386	I	10'6	48 33	95'8	4'00	9'1 12'0	2	'957	
1208	+48° 389		11'6	48 27	51'1	5'47	9'5 10'5	2	'957	
1209	+48° 420		18'5	48 42	308'2	5'92	9'6 9'8	2	'879	
1210	+46° 367		23'9	46 59	180'7	2'35	9'2 11'2	2	'981	



No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.	Nts.	Date.
		h	m						
1211	+46°	426	1 35.8	46 15	235.5	6.66	8.5 13.0	3	1913. '991
1212	+48°	529	41.7	48 19	13.1	4.06	9.5 9.6	3	'056
1213	+46°	470	46.9	46 51	131.2	2.41	9.4 12.0	3	'955
1214	+46°	481	50.8	46 24	215.1	3.35	9.4 9.6	2	'965
1215	+47°	576	2 4.7	47 31	172.8	3.45	9.3 12.4	3	'846
1216	+46°	583	25.9	46 32	92.8	1.62	9.3 9.4	3	'958
1217			48.9	47 22	282.5	2.33	9.4 9.5	3	'966
1218	+45°	759	3 18.5	45 24	263.0	1.72	9.6 9.9	3	'991
1219	+59°	663	22.8	59 33	271.1	5.52	9.4 12.7	2	'160
1220	+59°	664	22.8	59 34	346.1	3.77	9.3 13.2	2	'160
1221	+49°	1009	39.6	49 23	1.9	2.57	9.4 9.7	3	'055
1222	+48°	1014	46.1	48 23	87.8	5.82	9.4 10.1	2	'976
1223	+47°	941	4 1.8	47 45	111.5	4.05	9.4 11.3	3	'979
1224	+47°	951	4.7	48 1	188.7	1.45	9.5 9.6	2	'976
1225	+47°	987	16.4	47 27	130.8	5.15	9.5 10.7	2	'991
1226	+48°	1126	33.5	48 28	276.8	7.32	9.0 10.7	3	'185
1227	+47°	1063	46.3	47 26	237.4	4.10	9.3 10.7	3	'987
1228	+48°	1186	50.4	48 53	302.1	6.52	9.2 9.8	2	'108
1229	+48°	1211	57.4	48 23	256.2	5.66	9.3 10.7	4	'169
1230	+47°	1098	5 0.3	47 40	6.2	7.30	9.0 12.2	2	'183
1231	+46°	1002	15.1	46 15	35.9	1.12	9.3 10.0	2	'994 AB
					9.4	14.12	C= 10.5	2	'994 AC
1232	+47°	1224	52.2	47 51	262.7	3.75	9.5 10.7	2	'183 AB
					175.2	22.72	C= 9.8	2	'183 AC
1233			56.3	47 54	211.1	3.03	9.2 11.0	3	'185
1234	+48°	1339	58.3	48 15	267.0	9.82	7.1 11.5	2	'169
1235	+47°	1289	6 14.0	47 24	156.2	2.72	9.4 9.5	4	'211
1236	+47°	1291	16.0	47 21	266.1	6.02	8.9 10.8	2	'208
1237	+48°	1433	39.8	48 32	358.0	5.25	9.0 11.2	3	'177
1238	+47°	1376	52.8	47 17	202.1	3.25	9.6 9.9	2	'235
1239	+46°	1212	53.1	46 35	0.0	5.10	9.4 9.7	1	'257
1240	+47°	1402	7 0.6	47 0	102.6	7.92	9.3 12.8	3	'352 AB
					285.0	11.25	C= 13.9	3	'352 AC
1241	+48°	1514	12.8	48 0	0.5	3.57	9.4 9.4	2	'177
1242	+46°	1265	19.1	46 23	268.7	7.85	9.2 9.5	1	'257
1243	+46°	1295	33.4	46 5	320.2	3.25	9.4 10.1	2	'250
1244	+43°	1965	9 44.1	43 13	227.2	2.05	9.1 10.1	2	'274
1245	+43°	1986	55.7	43 17	169.9	5.55	8.8 9.7	3	'343
1246	+43°	2039	10 36.7	43 35	56.5	3.67	9.3 9.7	2	'297
1247	+43°	2046	42.3	43 27	281.8	2.72	9.1 9.6	2	'250

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.	Nts.	Date.
		h	m						
1248	+42° 2277	12	6'2	41 54	76'9	2'07	9'5 9'7	2	'373
1249	+43° 2313	13	9'3	43 38	201'6	2'87	9'5 12'0	3	'411
1250	+42° 2519	14	35'8	42 18	164'7	6'45	8'8 12'2	2	'431
1251	+40° 2832		54'0	40 35	54'5	7'03	8'7 13'1	3	'431
1252	+46° 2051	15	14'4	46 33	20'2	1'95	9'5 9'6	3	'397
1253	+45° 2392	16	15'4	45 24	231'6	6'40	9'2 10'2	2	'424
1254	+45° 2476		55'0	45 32	133'4	5'30	9'5 12'5	3	'481
1255	+46° 2253		58'1	46 25	44'8	8'41	8'0 11'7	4	'496
1256	+47° 2486	17	24'7	47 21	332'3	5'03	9'4 12'4	3	'576
1257	+45° 2574		35'4	45 3	261'1	2'70	9'1 9'5	3	'561 AB
					121'5	52'83	C= 9'6	2	'586 A
1258	+45° 2575		36'0	45 26	323'4	5'92	9'2 13'1	4	'598
1259	+46° 2581		49'4	46 58	226'7	6'25	8'6 9'3	4	'578
1260	+45° 2640		57'5	45 48	201'1	3'65	9'5 10'6	2	'606
1261	+45° 2735	18	29'5	45 6	207'8	8'07	8'9 11'5	2	'641
1262	+45° 2737		29'6	45 8	257'6	1'55	9'4 9'5	2	'641
1263	+46° 2538		41'0	46 13	242'3	6'20	9'5 12'0	3	'598
1264	+45° 2781		47'9	45 35	116'3	3'70	9'5 10'6	2	'619
1265	+45° 2793		51'5	46 2	299'2	5'55	9'5 12'6	3	'585
1266	+46° 2743	19	35'1	46 21	344'7	3'20	9'6 10'0	3	'580
1267	+46° 2795		49'3	46 31	161'7	5'78	8'8 12'3	3	'642
1268	+44° 3379	20	9'0	44 47	154'2	7'85	8'8 10'0	2	'796
1269	+44° 3380		9'1	44 51	46'5	5'72	9'0 13'2	2	'796
1270	+44° 3549		39'3	44 59	291'2	6'10	9'3 9'9	4	'626
1271	+44° 3672		57'5	45 4	30'7	2'95	9'4 10'1	2	'686
1272	+45° 3443	21	8'4	45 25	53'7	3'10	9'3 9'6	3	'765
1273	+45° 3446		8'9	45 27	73'2	4'77	13'1 13'6	2	'730 BC
					9'0	38'20	A= 8'6	4	'766 AB
1274	+45° 3556		25'5	46 2	240'2	2'55	9'4 13'3	3	'717
1275	+45° 3640		38'5	45 49	336'5	4'30	13'0 13'4	3	'813 BC
					279'2	5'22	D= 13'2	2	'805 BD
					3'6	66'47	A= 8'6	2	'805 AB
1276	+45° 3641		39'2	45 22	287'2	2'40	9'4 10'2	2	'820
1277	+47° 3748	22	11'8	48 9	5'9	6'05	9'2 12'8	3	'326 AB 1912
					199'5	11'72	C= 13'8	3	'326 AC 1912
1278	+45° 3891		16'5	45 21	73'8	8'12	8'5 10'7	2	'950
1279	+46° 3671		17'5	46 34	299'4	4'87	8'4 12'1	3	'904
1280	+45° 3907		18'5	45 16	255'4	6'42	8'6 9'2	2	'923
1281	+46° 3688		20'5	46 50	167'2	6'67	8'5 9'7	3	'856
1282	+45° 3918		20'6	45 19	55'8	4'51	9'0 12'3	3	'941

No.	B.D.	R.A. 1900.		Decl.		P.	D.	Mags.	Nts.	Date.
		h	m	°	'	°	"			
1283	+46° 3689	22	20·7	47	7	13·7	7·57	9·1 13·2	2	1913. ·805
1284	+46° 3697		21·7	46	53	65·7	2·09	9·3 12·0	4	·864
1285	+46° 3704		22·8	46	38	135·7	4·40	9·4 10·7	2	·818
1286	+45° 3982		29·2	45	21	352·6	3·07	9·2 10·1	2	·918
1287	+45° 4023		37·9	46	0	24·0	6·29	9·6 10·3	3	·905
1288	+45° 4024		38·0	46	4	338·2	4·90	9·4 10·4	3	·905
1289	+45° 4089		51·1	46	7	98·8	6·72	8·6 13·3	3	·852
1290	+45° 4166	23	8·0	46	13	65·7	3·15	9·4 10·5	2	·823 AB
						292·8	17·40	C= 11·6	2	·823 AC
1291	+46° 4194		46·9	46	29	146·8	5·17	9·1 10·7	2	·386
1292			56·6	45	44	86·7	3·10	9·7 9·8	2	·823
1293	+46° 4249		59·4	46	50	4·6	6·05	9·4 9·6	3	·800

*Notes.*

1200 BC.—A difficult object, and the measures are little better than approximate.

1208.—This pair lies SP  $\Sigma$  102, while *h* 2033 lies NF; the angle of position is similar, but the distance is only about half that of *h* 2033.

1251.—Star in field immediately f  $\Sigma$  1895, a very difficult object to measure in the twilight of the nights in June.

1273.—There is a 14 mag. P  $290^\circ \pm$  D  $24''$  from A.

1279.—8·4 is orange-red.

*New Double Stars.* By Rev. T. E. Espin, M.A.

The measures of the following new double stars were made in the earlier part of the year with the 17¼-in. reflector, and in the latter part with the 24-in. reflector.

No.	B.D.	R.A. 1900.	Decl.	P.	D.	Mags.	Nights.	Date.
		h m	° ′	° ′	″			1914.
	+44° 4550	0 0'0	+44° 40'	119°8	13'32	6.5 13.5	1	'990 AB
				235.1	20'37	C= 9.2	2	'987 AC
1294	+44° 53	12.2	44 41	229.2	0.99	9.5 9.6	2	'984
1295		23.4	43 50	320.6	4.03	9.6 9.8	3	'995
1296		31.3	44 56	343.4	2.40	10.0 13.9	3	'388
1297	+46° 192	48.1	46 58	240.9	4.97	9.7 9.8	3	'029
1298	+45° 231	49.8	45 38	25.1	1.99	9.5 9.7	3	'906
1299	+46° 212	52.7	46 40	247.8	5.38	8.7 12.8	3	'600 AB
				244.9	13'32	C= 13.5	3	'600 AC
1300	+45° 284	1 3.8	46 3	38.2	1.73	9.6 10.2	3	'853
1301	+45° 433	38.8	45 49	283.8	2.12	9.5 9.8	2	'897
1302	+44° 366	40.5	45 12	32.7	5.08	8.6 13.5	3	'987
1303	+45° 445	40.8	45 44	240.8	7.46	9.3 13.7	2	'991
1304		40.9	45 46	278.1	2.40	9.8 12.1	2	'991
1305	+45° 448	42.2	45 30	274.5	5.97	9.5 9.6	2	'980
1306	+44° 476	2 18.0	44 13	272.9	9.22	9.0 9.2	2	'994
1307	+45° 635	30.5	45 20	3.4	2.11	9.5 9.7	4	'085
1308	+44° 555	33.9	45 10	273.3	6.60	8.7 9.5	2	'042
1309	+44° 592	45.1	44 21	214.6	3.23	9.3 13.9	3	'953
	κ Persei	3 2.7	44 59	333.9	21.76	4.0 13.5	2	'994
1310	+44° 639?	6.4	44 16	117.9	2.19	10.0 13.0	1	'997 BC
				158.4	20.21	A= 9.5	1	'997 AB
1311	+44° 671	14.1	44 51	28.5	5.18	9.3 13.8	3	'953 AB
				301.5	11.71	C= 9.7	3	'953 AC
1312	+44° 762	32.1	44 25	99.7	2.08	9.6 9.7	2	'994
1313	+44° 803	45.2	44 40	21.9	2.97	9.5 14.0	2	'990
1314	+45° 839	47.4	45 50	282.3	6.45	9.2 12.0	2	'105

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.		Nights.	Date.
		h	m							
1315	+46°	838	3 58.5	+46° 57'	317.4	9"14	8.5	14.0	4	1914. '091
1316	+44°	912	4 12.7	44 37	78.5	4.80	9.5	10.7	2	'994
1317	+44°	989	27.9	44 47	115.9	4.85	9.5	14.0	1	'890
1318	+47°	1042	40.2	47 33	147.1	3.05	9.2	10.3	2	'064
1319	+44°	1021	40.5	45 0	20.4	7.48	9.0	10.5	2	'994
1320	+44°	1027	41.7	44 57	206.0	2.63	9.1	10.0	1	'991
1321	+46°	1060	5 44.9	46 47	351.3	5.65	7.5	9.3	3	'167
1322	+46°	1084	55.0	46 38	260.5	5.65	8.5	12.0	3	'177
1323	+46°	1104	6 2.3	46 39	96.0	5.55	9.4	11.2	2	'183
1324	+45°	1375	53.4	45 35	129.4	5.07	9.4	10.7	2	'181
1325			7 53.8	45 8	355.6	2.75	9.4	10.1	3	'181
1326	+44°	3035	18 57.4	44 51	229.2	2.46	9.3	10.4	2	'748
1327	+44°	3174	19 30.3	44 27	51.6	2.36	9.3	9.4	3	'840
1328	+43°	3337	40.2	44 5	88.1	2.51	9.6	13.5	2	'832
1329	+44°	3340	20 2.9	44 43	215.6	6.53	8.0	10.5	2	'743
1330			20.4	44 23	310.1	3.75	9.4	11.2	2	'832
1331	+44°	3456	20.6	44 37	76.8	1.30	9.3	9.5	2	'756
1332	+43°	3704	41.4	44 3	326.1	6.68	9.3	10.8	2	'871
1333	+43°	3851	21 9.9	44 8	109.8	1.39	9.5	9.6	6	'746
1334	+44°	3784	17.5	44 23	303.7	5.10	8.8	13.7	2	'694
1335	+44°	3820	24.1	44 49	303.4	6.45	8.4	12.0	2	'725
1336	+43°	3948	26.9	44 10	340.3	3.66	9.5	14.0	3	'877
1337	+43°	3955	28.0	43 55	263.4	6.18	9.0	10.0	2	'894
1338	+43°	3959	28.4	44 11	41.5	7.25	9.5	10.0	2	'873
1339	+43°	3963	29.0	44 10	132.8	4.81	9.5	14.5	3	'877 AB
					247.1	23.63	C=	10.2	2	'876 AC
1340	+43°	3966	29.9	44 11	223.3	5.63	9.5	14.0	3	'891
					130.9	5.65	C=	11.7	4	'894
1341	+43°	4018	38.7	44 7	294.6	3.88	9.5	14.0	3	'889
1342	+44°	4076	22 10.0	45 0	185.3	3.73	9.1	13.0	2	'719
1343	+44°	4090	13.5	44 33	258.4	1.33	9.4	9.6	4	'865
1344	+44°	4099	16.2	44 45	182.0	4.59	9.5	9.5	3	'556
1345	+44°	4125	20.3	44 48	293.8	2.61	9.3	9.7	2	'743
1346	+43°	4203	22.5	44 2	311.1	2.99	9.5	11.7	3	'877 AB
					360.7	7.29	C=	13.4	2	'919 AC
1347	+44°	4144	24.9	44 34	150.4	3.57	9.4	13.0	2	'724
1348	+43°	4279	38.6	44 13	102.4	2.73	8.6	13.5	2	'987
1349	+44°	4309	57.6	44 19	166.3	4.99	8.8	13.6	4	'800
1350	+43°	4419	23 9.4	44 5	79.7	7.74	8.9	11.5	3	'873
										1915.
1351	+42°	4655	18.2	43 12	141.7	3.92	9.5	10.8	2	'008
1352	De	26	33.9	43 58	70.7	2.22	9.3	10.5	3	'977 AB
					292.2	4.91	C=	14.8	3	'977 AC
1353	+44°	4488	41.6	44 23	78.8	1.98	9.5	11.2	3	'880
1354	+44°	4494	43.2	44 39	339.5	6.94	9.5	9.8	2	'897
1355	+43°	4573	49.9	43 28	11.9	3.61	9.4	14.0	3	'975
1356	+43°	4596	54.3	44 2	106.9	2.51	9.3	12.0	2	'966

*Notes.*

1296.  $\alpha^m 7^s.4 p, \alpha' 41'' s$ , Espin 444.  
 1310. This star has the same R.A. as B.D. + 44°, 639, but is 1' further N.  
 1321. Colours: orange, blue. There are two distant *comites*, 14 mag. P 179°4, D 23''84, 2 nts.; 11.5, P 317°3, D 33''17, 2 nts.  
 1324. *Comes*, 13.5, P 144°5, D 23''.  
 1334. *N* star of group of four.  
 1335. In B.D., 9.4 mag. Much underrated. *Cat. Ast. Ges.* (Bonn), 8.5 mag.  
 1337. *Comes*, 12 mag. P 147°8, D 22''5.  
 1341. A star, 9.4, P 327°5, D 33''.  
 1352. The faint *comes* has hitherto escaped detection. No mention is made of it by  $\beta$ , although he measured De 26 on one night with the 18½-in. at the Dearborn Observatory in 1878, and on three nights with the 40-in. at the Yerkes in 1903. It was measured with the 24-in. in moonlight on all three nights.
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*New Double Stars.* By the Rev. T. E. Espin, M.A.

No.	B.D.	R.A. 1900.	Decl.	P.	D.	Mags.	Nts.	Date.
		h m	° ′	° ′	″			1915.
1357	+44°	1	0 2'6	+44 34	138°1	5'14	8'7 13'5	1 '022
1358	+44°	129	32'1	+44 26	9'9	5'99	9'0 11'7	2 '048
1359	+44°	154	39'1	+44 45	330'6	2'49	11'0 11'2	2 '031 BC
					269'7	38'42	A=9'5	2 '031 AB
1360	+44°	242	1 2'4	+44 48	261'1	2'77	9'5 9'8	2 '048
1361	+44°	362	39'8	+45 4	268'5	2'90	12'2 12'4	3 '039 BC
					7'2	18'43	A=9'3	3 '039 AB
1362	+44°	401	54'2	+44 56	291'9	8'92	9'5 10'8	2 '031
1363	+44°	605	2 52'6	+44 38	205'1	5'55	9'5 10'4	3 '036
1364	+44°	653	3 11'3	+44 10	78'5	2'33	9'2 12'7	2 '086
1365	+44°	785	37'7	+44 16	230'4	4'69	9'3 10'7	3 '098
1366	+43°	878	56'2	+43 59	341'7	2'48	9'2 12'5	3 '119
1367	+43°	890	59'1	+43 56	12'0	6'68	8'2 13'2	2 '132
1368	+43°	915	4 3'2	+43 59	361'3	2'75	9'8 13'5	2 '140
1369	+43°	920	5'2	+43 57	207'2	6'98	9'1 12'5	2 '139
1370	+43°	974	20'3	+43 50	244'8	3'16	9'1 11'7	2 '171 AB
					153'5	7'01	C 14'0	1 '142 AC
1371	+43°	1039	34'3	+43 36	340'5	5'69	9'5 9'5	2 '171
1372	+44°	1063	50'8	+44 57	93'5	4'57	9'5 11'2	2 '031
1373	+44°	1130	5 5'9	+44 22	78'3	5'46	9'0 10'1	2 '094
1374	+44°	1142	7'7	+44 26	262'3	1'91	9'5 14'0	4 '088
1375	+44°	1174	13'3	+44 46	234'0	3'17	9'5 10'5	2 '031
1376	+44°	1196	18'7	+44 35	250'1	3'98	9'3 9'6	3 '182
1377	+44°	1204	20'6	+44 36	187'6	4'37	9'3 9'7	2 '168
1378	+44°	1284	40'6	+44 19	281'0	4'70	9'5 9'5	2 '164

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.	Nts.	Date.
		h	m						
1379	+44° 1305	5	46 <sup>2</sup>	+44 33	297 <sup>6</sup>	5 <sup>45</sup>	9.7 10.8	3	1915. 237
1380	+44° 1341		55 <sup>1</sup>	+44 6	356 <sup>1</sup>	5 <sup>26</sup>	9.5 11.9	3	'213
1381	+44° 1395	6	6 <sup>0</sup>	+44 55	87 <sup>3</sup>	1 <sup>40</sup>	9.5 9.6	3	'043
1382	+44° 1416		12 <sup>3</sup>	+44 39	358 <sup>5</sup>	1 <sup>82</sup>	9.5 11.7	3	081
1383			37 <sup>0</sup>	+44 20	308 <sup>4</sup>	1 <sup>88</sup>	9.5 9.5	3	'169
1384	+43° 1591		37 <sup>2</sup>	+43 41	310 <sup>1</sup>	3 <sup>29</sup>	9.5 10.6	3	'213
1385			42 <sup>4</sup>	+44 11	255 <sup>5</sup>	1 <sup>47</sup>	9.2 10.5	5	'213
1386	+42° 1746	7	33 <sup>3</sup>	+42 20	64 <sup>9</sup>	9 <sup>03</sup>	8.3 9.0	1	'257
1387	+43° 1760		53 <sup>5</sup>	+42 59	140 <sup>8</sup>	5 <sup>11</sup>	9.5 10.2	3	'223
1388	+43° 1803	8	13 <sup>6</sup>	+43 4	176 <sup>8</sup>	3 <sup>72</sup>	9.5 14.0	3	'235
1389	+43° 1829		28 <sup>2</sup>	+43 21	170 <sup>3</sup>	4 <sup>03</sup>	9.7 11.7	2	'195
1390	+43° 1865		49 <sup>9</sup>	+43 26	190 <sup>7</sup>	1 <sup>51</sup>	9.4 9.7	2	'246
1391	+43° 1884	9	2 <sup>3</sup>	+42 54	283 <sup>7</sup>	5 <sup>59</sup>	9.5 9.6	2	'253
1392	+43° 1906		14 <sup>7</sup>	+43 26	271 <sup>7</sup>	7 <sup>49</sup>	9.3 11.7	2	'246
1393	+42° 2059		47 <sup>5</sup>	+42 41	215 <sup>4</sup>	3 <sup>41</sup>	9.5 14.0	3	'268
1394	+41° 2080	10	18 <sup>0</sup>	+41 4	141 <sup>7</sup>	6 <sup>20</sup>	8.5 9.6	3	'339
1395	+43° 2022		23 <sup>4</sup>	+43 4	76 <sup>0</sup>	4 <sup>35</sup>	9.0 10.0	2	'246
1396	+42° 2129		28 <sup>0</sup>	+42 29	186 <sup>9</sup>	5 <sup>14</sup>	9.4 12.5	2	'316
1397			39 <sup>3</sup>	+40 54	140 <sup>1</sup>	4 <sup>43</sup>	9.8 12.5	2	'332
1398			57 <sup>4</sup>	+41 5	335 <sup>5</sup>	2 <sup>72</sup>	9.4 13.3	3	'340
1399	+42° 2213	11	24 <sup>9</sup>	+41 49	302 <sup>3</sup>	3 <sup>14</sup>	9.7 9.8	2	'278
1400	+41° 2202		27 <sup>5</sup>	+41 40	180 <sup>5</sup>	2 <sup>82</sup>	9.4 13.0	2	'322
1401	+41° 2205		29 <sup>2</sup>	+41 25	325 <sup>7</sup>	6 <sup>61</sup>	9.7 10.0	3	'336
1402	+41° 2315	12	34 <sup>8</sup>	+41 1	23 <sup>6</sup>	3 <sup>50</sup>	9.3 10.3	3	'339
1403	+41° 2325		38 <sup>9</sup>	+40 48	215 <sup>1</sup>	2 <sup>75</sup>	9.3 10.2	3	'339
1404	+40° 2584		47 <sup>3</sup>	+40 44	30 <sup>6</sup>	2 <sup>77</sup>	9.5 13.5	2	'345
1405			48 <sup>0</sup>	+40 22	254 <sup>7</sup>	3 <sup>92</sup>	10.0 10.2	1	'359

*Notes.*

1366.—*Comes*, 13 mag., P 281°, D 25".

1385.—Professor Jonckheere kindly looked up this object with the 28 in. at Greenwich and measured it:—

1915 March 26 P 229°1, D 1"41, Mags., 9.4, 11.3.

1405.—This pair forms a distant companion to B.D. +40° 2585 at P 284°4, D 66".



*New Double Stars.* By the Rev. T. E. Espin, M.A.

No.	B.D.	R.A. 1900.	Decl	P.	D.	Mags.	Nts.	Date.
		h m	° ′	°	″			1915.
1406	+43°	12 0 6.0	+43 46	349.4	4.87	9.2 14.0	3	.983
				332.8	9.63	A 8.5	3	.983
1407	+44°	52 11.6	44 21	221.4	2.31	9.5 11.5	2	.885
1408	+43°	137 37.5	43 22	260.4	7.64	9.2 9.3	3	.940
1409	+43°	266 1 13.2	43 59	216.0	4.69	9.6 12.0	2	.888
1410	+43°	298 21.4	43 43	124.3	4.11	11.3 13.9	3	.940 BC
				89.1	20.34	A= 9.5	2	.917 AB
1411		45.1	44 34	236.6	1.65	9.5 9.7	3	.903
1412	+44°	2666 17 7.9	44 4	132.4	3.64	9.6 9.7	3	.677
1413	+43°	2728 21.5	43 32	248.6	6.51	9.5 11.0	2	.691
1414	+43°	2741 26.8	43 39	232.8	7.14	9.3 9.7	2	.691
	+43°	2837 50.5	43 14	333.7	9.89	9.3 9.6	3	.700
1415	+43°	2844 52.9	43 52	120.5	2.27	9.5 12.9	4	.675
1416	+44°	2813 18 0.1	44 42	72.1	1.61	9.5 9.7	4	.615
1417	+43°	2898 6.1	43 12	276.1	3.24	9.8 13.8	4	.747 BC
				234.6	7.32	A= 8.9	3	.731 AB
1418	+43°	2902 6.4	43 18	308.3	3.62	9.2 13.1	2	.738
1419	+43°	2911 9.0	43 53	274.3	4.87	9.4 10.5	3	.643

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## New Double Stars.

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No.	B.D.	R.A. 1900.		Decl.		P.	D.	Mags.	Nts.	Date.		
		h	m	°	'							°
1420	+44° 2861	18	12'6	+44	15	68°1	8'58	8.9	10.1	3	1915. '617	AB
						6.7	19.60	C=	13.2	3	'617	AC
1421	+44° 2863		13.3	44	21	348.1	9.45	8.5	11.7	3	'617	
1422	+43° 3020		32.2	43	9	81.2	4.35	9.5	10.2	3	'740	
1423	+43° 3045		38.1	43	50	333.6	6.95	9.1	9.5	3	'662	
1424	+44° 2986		42.0	44	15	90.6	8.85	7.9	13.0	2	'643	
1425	+42° 3158		43.6	42	56	231.3	4.53	9.0	9.1	2	'781	
1426	+43° 3099		48.1	43	17	252.4	6.60	8.7	14.0	2	'721	
1427			49.0	43	16	109.7	4.04	9.5	12.7	3	'739	
1428	+43° 3119		52.5	44	3	132.7	2.97	13.5	13.7	3	'654	BC
						96.0	24.54	A=	8.7	3	'654	AB
1429	+43° 3140		57.4	43	5	7.6	5.25	8.8	9.8	3	'730	
1430			59.2	42	21	102.7	1.41	9.5	11.0	2	'820	
1431	+44° 3072	19	6.9	44	12	58.7	7.07	9.4	13.4	3	'604	
1432	+43° 3236		22.0	43	28	267.7	4.12	13.1	13.5	2	'721	BC
						175.5	31.00	A=	8.7	2	'721	AB
1433	+43° 3239		22.4	44	1	194.3	1.82	9.2	10.5	4	'674	
1434	+43° 3296		32.6	43	7	212.9	3.16	9.5	10.6	3	'694	
1435	+43° 3330		39.1	43	59	120.8	5.39	9.5	13.3	4	'657	
1436	+43° 3435		55.3	43	25	180.4	2.99	9.5	10.9	2	'685	
1437	+42° 3575	20	0.6	43	4	267.3	4.15	9.5	12.0	3	'859	
1438	+43° 3509		6.0	43	35	41.9	5.79	8.4	13.5	3	'676	
1439			13.0	43	20	24.8	1.54	9.6	9.8	2	'779	
1440	+42° 3676		14.5	43	0	260.0	2.60	9.2	10.2	2	'842	
1441	+44° 3492		26.9	44	19	127.9	2.22	9.2	9.4	2	'669	
1442	+44° 3493		27.1	44	15	265.6	2.30	9.5	13.2	2	'669	
1443	+43° 3634		28.0	43	43	290.6	2.73	9.1	10.7	2	'750	
1444	+43° 3661		31.3	43	13	80.7	5.26	9.5	12.7	2	'784	
1445	+43° 3687		38.1	43	29	177.3	6.09	9.0	10.6	2	'686	
1446	+42° 3839		39.4	42	49	130.9	4.46	8.8	11.6	2	'853	
1447	+42° 3846		40.2	42	55	309.6	2.27	9.2	10.5	2	'842	
1448	+43° 3703		41.3	43	10	137.5	2.24	9.1	9.5	4	'732	
1449	+43° 3706		41.7	43	16	57.4	6.84	8.7	9.2	2	'721	
1450	+42° 3919		53.7	42	55	160.3	4.67	8.5	12.5	2	'944	
1451	+42° 3925		54.8	43	4	111.1	8.61	9.3	10.5	2	'738	
1452	+42° 3978	21	3.5	42	58	17.4	1.96	9.1	10.5	2	'747	
1453	+42° 3988		6.3	43	2	67.6	5.65	8.5	8.8	2	'712	
1454			7.1	43	21	284.8	2.88	10.0	10.0	2	'686	
1455	+42° 4131		29.4	42	39	291.2	5.82	9.5	14.0	2	'740	
1456	+42° 4147		31.8	42	35	135.3	4.27	9.5	12.0	3	'755	

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.	Nts.	Date.
		h	m						
1457	+41° 4204	21	32'1	+41 11	77'9	3'64	9'4 12'7	2	1915. '932
1458	+42° 4163		34'2	42 31	190'7	5'11	8'7 12'8	3	'835
1459			41'4	42 31	279'9	1'96	9'8 9'8	3	'889
1460	+41° 4263		42'3	42 11	2'0	1'80	9'3 11'0	3	'941
1461	+42° 4242		49'9	42 29	355'2	5'87	9'5 13'5	3	'754
1462	+42° 4291	22	0'8	42 48	181'7	1'52	9'1 9'3	3	'740 BC
					15'0	43'11	A= 9'1	2	'733 AB
1463	+41° 4412		7'2	41 55	245'2	6'46	9'5 13'3	4	'907 BC
					194'1	34'42	A= 9'3	2	'898 AB
1464	+42° 4323		8'2	42 52	149'7	1'39	9'4 9'8	3	'777
1465	+42° 4356		15'8	42 35	116'4	4'82	9'5 13'9	2	'783
1466	+42° 4360		17'0	42 38	260'2	6'11	9'3 13'2	3	'804
1467	+43° 4208		23'8	43 36	228'2	7'94	6'5 13'7	3	'675
1468	+42° 4445		29'9	43 10	329'4	5'88	8'7 9'0	2	'735
1469	+42° 4449		31'3	42 36	39'9	6'52	8'5 11'6	3	'777
1470	+42° 4459		33'0	42 52	335'1	5'45	9'4 9'7	2	'783
1471	+43° 4275		38'0	43 16	91'6	3'60	8'7 13'8	2	'684
1472	+43° 4328		48'3	43 40	36'1	2'39	9'3 11'1	2	'782
1473	+42° 4704	23	28'9	42 52	136'7	1'45	9'4 9'5	3	'831
1474	+42° 4723		33'6	42 55	92'9	7'53	9'3 9'4	2	'857
1475	+42° 4760		42'2	43 0	303'2	5'28	8'5 9'1	3	'790
1476	+42° 4779		46'8	42 31	59'1	1'42	9'6 9'7	3	'891 AB
					245'4	15'22	C= 12'5	2	'885 AC
1477	+41° 4885		47'5	42 14	346'3	4'49	9'5 13'2	2	'917
1478	+43° 4587		52'8	43 31	2'2	1'33	9'5 10'4	2	'762
1479	+42° 4797		52'9	43 12	104'5	3'50	9'5 9'6	2	'872

## Notes.

1419. This star is 1' too far N. in Argelander.  
 1426. This pair is P, and 1427 is F  $\beta_{421}$ .  
 1429. Star, 14'5, at  $75^{\circ}8 \pm 9''$  from B.  
 1432. Star, 13'5, at  $293^{\circ}7, 26''9$ .  
 1444. Star, 13'0, at  $97^{\circ}8, 14''6$ .  
 1450. Star, 10'0, at  $317^{\circ}3, 26''$ .  
 1454. Forms a distant *comes* to B.D. +43°, 3830, at P 114°.  
 1460. Star, 14'0, at  $235^{\circ}8, 20''$ .  
 1462. Star, 13'8, at  $317^{\circ}1$  makes a triangle.

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*New Double Stars.*

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*New Double Stars.*

No.	B.D.	R.A. 1920.	Decl.	P.	D.	Mags.	Nts. 1916.
		h m	° ′	°	"		
1480	+41° 4935	0 0'4	+42 3	90°9	6"33	9.1 12.5	4 .912
1481	+43° 40	11'6	43 53	80.8	7.70	8.6 9.1	2 .017
1482	+43° 41	12'2	43 45	187.9	3.76	9.5 14.0	2 .017
1483	+42° 50	13'7	42 28	346.5	2.56	9.5 9.6	3 .923 AB
				14.7	2.27	12.0 12.1	2 .944 CD
				165.2	28.90		1 .925 AC
1484	+42° 52	13'9	42 56	341.8	2.35	9.5 12.7	2 .814 BC
				42.6	32.38	A= 8.5	2 .814 AB
1485	+42° 61	15'7	43 10	94.4	9.60	8.2 12.3	3 .844
1486	+40° 77	19'9	40 48	350.7	6.06	8.8 12.0	3 .994
1487	+42° 81	22'9	42 42	50.8	3.14	9.5 13.0	2 .861
1488	+41° 133	41'9	41 41	280.4	6.78	8.6 8.9	2 .955
1489	+40° 181	46'8	40 59	24.6	6.00	9.5 10.8	2 .999
1490	+43° 180	51'0	44 3	144.1	2.75	9.0 12.0	3 .056
1491	+43° 188	53'0	43 20	127.9	2.16	9.5 9.6	3 .035
1492	+43° 198	56'0	43 23	75.3	3.04	9.1 11.5	2 .023
1493	+43° 323	1 28'2	43 35	55.7	7.97	7.7 13.7	3 .014
1494	+40° 323	29'4	40 52	5.0	5.99	9.4 9.7	2 .986
1495	+42° 327	30'5	43 5	66.3	1.24	9.2 9.4	2 .814
1496	+42° 333	31'7	43 10	191.0	7.09	8.5 12.0	2 .072
1497	+43° 340	33'0	43 19	158.9	5.61	9.3 11.9	3 .079
1498	+43° 369	41'9	43 23	359.1	3.50	9.5 9.6	2 .100
1499	+42° 403	50'9	42 55	298.7	5.99	9.4 10.9	2 .825
	+43° 440	2 5'4	43 39	181.6	10.20	8.8 10.0	2 .011
1500	+42° 488	11'7	42 31	25.4	6.69	9.5 11.4	2 .891
1501	+41° 450	16'8	41 46	95.7	6.56	8.6 13.2	2 .941

No.	B.D.	R.A. 1920.	Decl.	P.	D.	Mags.	Nts. 1916.
		<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>''</sup>				
1502	+40° 503	2 17·8	+41° 10	162°7	6"70	9·4 10·8	2 '999 AB
				24·1	15·35	C= 9·5	2 '999 AC
1503	+41° 463	21·3	41 40	61·1	5·83	9·6 11·2	4 '974
1504	+41° 491	29·9	41 29	100·0	5·95	9·2 13·5	2 '974
1505	+42° 558	31·2	42 32	9·4	3·29	9·4 12·7	4 '682
1506	+42° 601	35·9	42 20	353·4	5·71	8·4 14·0	2 '105
1507	+41° 536	40·1	42 1	319·3	2·66	9·5 10·7	2 '941
1508	+41° 566	49·2	41 51	57·7	3·43	9·5 9·7	2 '910
1509	+41° 582	52·2	41 23	175·2	6·81	9·5 11·2	2 '958
1510	+40° 637	53·0	40 46	324·2	4·97	9·3 9·3	2 '987
1511	+42° 675	53·5	42 59	280·8	6·44	9·5 10·7	2 '072
1512		56·0	41 13	116·9	3·75	9·5 9·7	3 '977
1513	+41° 630	3 5·2	41 23	91·4	7·22	9·1 10·2	2 '999
1514	+42° 739	12·7	42 44	48·7	1·19	9·5 9·6	2 '509
1515	+41° 705	26·8	41 27	312·6	4·91	9·5 9·6	2 '974
1516	+41° 713	29·2	41 54	87·1	4·20	9·3 11·0	2 '941
1517	+42° 818	39·6	42 59	181·6	4·72	9·3 11·5	3 '397
1518	+42° 825	41·7	42 19	240·0	5·95	9·4 11·2	2 '911
1519	+42° 849	48·4	43 3	117·6	1·56	9·5 9·7	5 '060
1520	+42° 888	59·7	43 0	4·4	6·10	9·5 9·6	2 '102
1521	+42° 960	4 19·1	42 25	292·9	6·31	8·0 13·0	2 '958
1522	+43° 967	19·6	43 15	311·0	8·89	7·5 13·7	2 '138
1523	+43° 984	23·1	43 55	39·0	2·61	9·5 10·6	5 '072
1524	+42° 1068	43·8	42 49	83·1	6·18	8·5 13·7	2 '903
1525	+42° 1073	45·1	42 34	269·8	5·63	9·2 12·2	2 '987
1526		45·4	42 51	103·3	1·93	9·8 10·0	3 '920
1527	+43° 1137	50·1	43 12	138·3	2·87	9·5 10·7	3 '114 AB
				320·4	10·51	C= 13·0	3 '114 AC
1528	+44° 1211	5 21·5	44 12	45·3	5·61	9·4 9·5	2 '104
1529	+44° 1229	25·7	44 27	236·3	2·59	9·3 13·7	3 '114
1530	+43° 1346	39·5	43 20	14·5	5·19	9·1 9·1	2 '987
1531	+43° 1382	49·0	43 52	301·5	4·03	9·3 9·4	2 '104
1532	+43° 1482	6 5·5	43 40	231·8	7·61	9·5 12·0	3 '114
1533	+43° 1499	9·1	43 42	254·3	6·47	8·5 12·5	2 '104
1534	+43° 1531	18·4	43 26	92·1	1·78	9·4 9·7	2 '120
1535	+42° 1595	37·6	42 37	74·2	6·95	8·6 13·2	2 '247
1536	+41° 1615	7 6·0	41 46	11·8	1·42	9·1 9·4	2 '114
1537	+41° 1718	38·4	40 55	354·9	6·73	9·3 13·2	2 '258
1538	+42° 1794	53·7	42 16	216·6	2·53	9·2 10·0	2 '175
1539	+41° 1766	54·0	41 14	100·8	1·32	9·2 9·4	3 '262

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## New Double Stars.

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No.	B.D.	R.A. 1920.	Decl.	P.	D.	Mags.	Nts. 1916.
		h m					
1540	+40° 2014	8 9.3	+40° 52'	1° 3'	7.04	8.8 11.5	3 .269
1541	+40° 2196	9 15.8	40 24	21.2	7.84	9.0 9.8	3 .303
1542		10 18.6	40 35	196.7	3.52	9.5 9.6	2 .258
1543	+40° 2370	42.2	40 30	12.1	3.20	9.5 12.5	2 .265
1544	+40° 2642	13 14.0	40 25	267.6	6.97	8.1 10.0	2 .328
1545	+40° 2643	14.5	40 25	88.9	6.34	9.5 13.5	2 .328
1546	+40° 2648	16.8	40 16	221.9	2.87	9.2 13.5	2 .345
1547		18.8	43 49	86.6	1.93	11.8 12.7	4 .420 BC
				327.2	27.53	A= 10.2	3 .408 AB
1548	+44° 2272	20.7	44 44	361.1	1.06	9.5 9.6	2 .387
1549	+44° 2284	29.7	43 48	N.P.	5±	9.5 11	1 .427
1550	+40° 2839	14 58.2	40 26	161.2	2.19	9.4 10.9	2 .387
1551	+41° 2584	15 13.1	41 22	139.7	1.67	9.3 12.0	2 .417
1552	+44° 2450	24.0	44 34	275.1	4.96	9.5 13.5	2 .372
1553	+42° 2620	31.6	42 10	150.6	2.89	9.4 9.6	2 .454
1554	+44° 2510	46.5	44 7	357.8	4.92	9.4 9.6	2 .372
1555	+43° 2548	56.5	43 23	73.6	2.29	9.1 10.3	2 .407
1556	+44° 2532	57.7	43 55	217.2	9.69	9.0 10.7	3 .374
	+40° 3194	17 36.8	40 49	50.6	10.79	9.2 9.4	2 .588
	+40° 3205	41.1	40 29	240.0	13.10	7.4 12.2	2 .618
1557	+41° 2928	52.3	41 9	4.4	9.35	8.7 12.0	2 .602
1558	+41° 2954	57.6	41 45	283.1	5.26	9.2 12.7	3 .587
1559		18 26.4	41 54	181.2	1.85	9.8 10.5	3 .573
1560	+41° 3144	44.6	41 53	340.9	7.95	9.5 11.6	2 .720
1561	+41° 3147	44.8	41 15	122.2	6.97	9.2 10.5	2 .750
1562	+42° 3309	19 16.1	42 6	323.7	5.75	8.5 8.9	2 .577
1563	+42° 3446	42.4	42 15	206.9	7.57	9.2 10.8	2 .715
1564	+42° 3476	45.4	42 26	200.9	7.91	9.2 10.6	2 .779
1565	+42° 3481	45.8	42 22	230.2	3.41	11.5 12.3	4 .793 BC
				36.2	38.23	A= 9.2	3 .790 AB
	+42° 3514	50.9	42 18	340.3	9.51	8.7 9.3	2 .834
1566	+42° 3630	20 8.0	42 14	350.2	5.60	9.5 9.6	2 .715
1567	+42° 3656	12.4	42 15	177.4	2.02	9.3 9.5	2 .636
1568	+41° 3685	13.3	41 39	186.7	2.62	12.2 12.3	4 .894 BC
				299.0	11.45	A= 9.5	2 .899 A
1569		29.8	42 15	268.6	2.68	9.3 10.6	3 .697
1570	+41° 3852	38.1	41 41	119.1	4.68	9.5 9.6	2 .795
1571	+41° 3862	39.2	41 10	36.0	6.41	9.5 9.6	3 .810
1572	+41° 3870	40.6	41 43	166.5	5.99	9.2 13.5	2 .779
1573	+41° 3890	44.2	41 42	74.1	4.52	9.0 12.7	3 .839

No.	B.D.	R.A. 1920.		Decl.	P.	D.	Mags.	Nts.	1916.
		h	m						
1574	+41° 3922	20	49'7	+41° 17'	155°6	1''64	9'6 9'7	3	'936
1575	+42° 3924		54'8	42 38	357'6	5'39	9'5 13'7	2	'632
1576	+42° 3930		55'6	42 32	6'7	4'49	9'5 14'0	3	'647
1577	+41° 3967		58'5	42 10	38'9	6'12	9'3 9'8	2	'670
1578	+42° 3948		58'7	42 12	228'9	2'29	9'3 9'8	2	'670
1579	+42° 3961	21	1'8	42 32	269'8	3'52	9'4 12'0	2	'728
1580	+42° 3974		3'2	42 32	88'1	3'31	9'5 9'6	2	'728
1581	+41° 4047		10'6	41 54	49'2	4'66	9'5 9'7	2	'961
1582	+41° 4063		12'3	41 59	133'4	3'89	9'2 10'5	2	'899
	+42° 4055		15'6	42 28	306'7	13'31	9'3 10'0	3	'697
1583	+41° 4093		15'9	42 3	76'1	5'89	9'6 10'2	2	'851 BC
					239'6	14'28	A= 9'4	2	'851 AB
1584	+41° 4096		16'4	41 42	113'3	3'43	9'5 10'8	2	'913
1585	+42° 4065		17'6	42 35	265'8	4'97	9'3 12'5	3	'762
1586	+40° 4721	22	1'3	41 2	39'2	4'37	9'5 9'6	3	'866
1587			14'7	40 37	299'7	3'91	9'5 9'6	2	'961
1588	+40° 4781		15'1	40 40	96'0	5'89	9'4 9'5	2	'961
1589	+41° 4464		17'0	41 57	178'3	9'30	8'6 9'7	3	'796
1590	+41° 4472		18'1	41 23	167'0	7'95	9'5 10'7	3	'895
1591	+42° 4382		19'9	42 38	160'1	2'31	9'4 10'0	2	'672
1592	+41° 4536		28'5	41 32	312'0	7'25	9'1 11'2	2	'787
1593	+40° 4868		34'0	41 13	145'4	6'73	9'3 12'7	2	'899
1594	+41° 4650		53'5	41 24	94'8	8'97	8'7 9'7	2	'891
1595	+40° 4972		58'0	41 11	337'9	2'24	9'4 9'5	2	'961
1596	+41° 4680	23	2'0	42 7	76'4	5'70	11'7 12'7	3	'789 BC
					21'9	35'77	A= 7'6	2	'787 AB
1597	+41° 4802		26'5	41 31	90'0	7'70	8'4 12'5	2	'814
1598			30'8	40 25	273'5	2'76	9'4 9'5	2	'981
1599	+40° 5125		34'5	40 20	347'0	3'81	9'3 9'4	2	'987
1600	+41° 4835		34'8	42 14	301'8	6'03	9'5 9'7	3	'021

## Notes.

1522. Also a 10 mag., P 102°'9, D 31''·5.  
 1526. Forms a distant *comes* to B.D. +42°·1079 at P 237°.  
 1531. There is a 9·3 mag. at P 292°'6, D 41'', and four other stars in the group.  
 1542. P of two stars, S of B.D. +40°·2322.  
 1557. An 11 mag. at P 37°'8, D 28'', a more distant 13 mag. at P 309°.  
 1559. Forms a distant *comes* to B.D. +41°, 3063 at 87°'2.  
 1562. A 12 mag. at P 56°'3, D 30''.  
 1566. On the second night, the N star seemed to be slightly the brighter.  
 1568. Middle of three stars on N border of a nebula. R.A. about 20 sec. less than in Argelander.  
 69. This agrees in R.A. with B.D. +42°, 3780, but is 4' S in declination. There is no star in Argelander's place.  
 1575. SF of two.  
 1576. N star of a pair in Argelander.  
 1589. Also a 12 mag. at P 240°, D 22''.

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*Errata in the Rev. T. E. Espin's Recent List of New Double Stars.*  
By Eric Doolittle.

This list, comprising the numbers Espin 1480 to Espin 1600, has just been published in the *Monthly Notices*, vol. lxxvii. pp. 239 to 242. In reducing the positions to the standard epoch 1880·0, and comparing the measures with the manuscript extension of Burnham's General Catalogue, the following notes and corrections are suggested :—

- All of the columns are headed with the epoch 1920·0; this should be 1900·0.
- Espin 1496. The R.A. is 15 sec. too small.  
1499*a*. The R.A. is 20 sec. too large.  
1505. The Decl. is 6 min. too small.  
1509. The R.A. is 12 sec. too small.  
1514. The Decl. is 2 min. too great.  
1515. Jonckheere 890 must be near, but the descriptions of the two pairs differ.  
1519. The R.A. is 25 sec. too small.  
1537. The Decl. is 1 min. too small.  
1548. The Decl. is 1·3 min. too large.  
1552. Identified by Espin with B.D. +44°, 2450, but if this is correct the R.A. given is 8 min. too great and the Decl. is 9 min. too great. The place given practically agrees with that of B.D. +44° 2470, and it is assumed that this is the pair observed.  
1565*a*. This pair is Roe 40. Measured by Roe in 1910 (*A.N.*, 4467).



- Espin 1574. Called B.D. + 41°, 3922 by Espin, but this is a 6.5 magnitude star, 6s following and 45' north of the place given. This place, however, practically agrees with that of B.D. + 41°, 3921, and it is here assumed that this was the star observed.
1575. The Decl. is 1.5 min. too small.
1576. The Decl. is 1.5 min. too small.
- 1582a. Measured by Fox in 1912 (*Annals, Dearborn Obs.*, vol. i.).
1586. The Decl. is 3 min. too small.
1592. The Decl. is 9 min. too small.
- Page 236. B.D. + 44°, 4550. This measure was published in *M.N.*, lxxv. p. 203, where a nearer companion was also given.
- Page 238. B.D. + 44°, 3552. Measures made on three nights in 1908 will be found in *M.N.*, lxix. p. 224.

*The Flower Observatory:*  
1917 May 5.

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*New Double Stars.*

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.	Nts.	Date.
	°	h	m	° ′	°	″			1917.
1601	+39	9	0 3·4	+39 28	109·9	5·85	9·0 14·0	4	·871
1602	40	60	15·5	40 16	85·6	7·12	9·6 9·9	2	·744
1603	40	80	20·9	40 40	322·4	2·72	12·5 13·5	3	·754 BC
					55·5	28·07	A= 9·5	3	·754 AB
1604	40	134	33·9	40 17	158·4	2·58	9·5 13·0	5	·856
1605	40	174	45·3	41 3	277·2	5·31	9·2 10·7	3	·794
1606	41	155	48·0	41 21	58·3	1·71	9·4 11·2	4	·390
1607	39	320	1 18·6	40 12	214·9	3·37	9·4 12·2	3	·821
1608	37	315	28·9	38 10	42·4	1·20	9·5 9·7	3	·917
1609	39	392	38·4	40 8	189·1	1·85	9·4 9·5	2	·877
1610	...	2	3·5	40 25	287·4	2·77	11·0 11·1	3	·791
1611	39	563	27·0	39 52	108·5	1·19	9·3 9·5	3	·898
1612	40	583	38·0	40 40	204·1	3·14	9·3 9·6	3	·357
1613	40	612	44·1	40 53	16·1	6·90	8·7 9·1	3	·102
1614	40	658	56·9	40 32	128·8	2·51	9·4 11·1	2	·098

Jan. 1918.

New Double Stars. 193

No.	B.D.		R.A. 1900.		Decl.	P.	D.	Mags.		Nts.	Date. 1917.
	°	'	h	m				°	'		
1615	40	670	3	0'9	40 25	208'9	1'73	9'2	9'4	2	'105
1616	40	911	4	7'4	40 47	233'0	6'29	8'5	9'8	2	'154
1617	40	984		26'2	40 29	212'0	2'89	9'3	10'8	2	'925
1618	41	948		37'8	41 58	337'0	3'29	9'5	11'3	3	'102
1619	41	949		38'6	41 46	353'0	4'89	9'6	10'0	2	'112
1620	42	1144		56'1	42 15	308'7	3'20	12'7	13'2	2	'195 BC
						106'9	6'54	D=	13'6	2	'195 BD
						8'2	13'95	A=	8'5	2	'195 AB
1621	42	1153		57'5	42 24	188'5	4'18	9'3	12'0	3	'194
1622	42	1200	5	5'4	42 51	247'7	5'50	9'3	9'5	1	'935
1623	42	1208		6'8	42 23	2'0	5'33	9'5	11'0	1	'935
1624	42	1211		7'3	42 49	47'9	2'79	9'5	9'8	1	'935
1625	41	1209		24'3	41 47	262'1	3'25	9'5	10'5	1	'197
1626	42	1393		39'7	42 48	2'1	7'52	9'5	11'9	2	'134
1627	42	1414		43'3	42 20	303'9	1'89	9'3	11'0	2	'193
1628	42	1491	6	1'7	42 43	286'3	3'15	9'2	10'1	2	'195
1629	43	1477		4'4	43 7	105'0	1'33	9'1	9'7	2	'171
1630	42	1562		23'9	42 57	91'4	4'95	9'7	9'8	4	'217
1631	41	1583		57'2	41 46	231'6	7'43	9'5	9'7	2	'134
1632	41	1584		58'3	41 36	227'6	3'87	9'4	12'0	2	'171 AB
						77'4	10'99	C=	11'6	3	'180 AC
1633	41	1585		58'8	41 43	27'5	2'81	9'5	9'7	2	'171
1634	...		7	11'3	40 17	86'9	4'01	9'5	9'6	2	'235
1635	40	1967		50'7	40 34	274'6	7'39	9'1	10'4	2	'134
1636	40	2016	8	10'3	40 6	265'7	5'27	9'5	12'2	2	'195
1637	39	2186		55'8	39 5	110'6	3'98	9'1	12'7	2	'257
1638	39	2285	9	47'4	39 7	71'3	2'96	9'5	9'8	4	'291
1639	38	2128	10	14'8	37 49	131'3	2'10	9'6	9'8	2	'331
1640	38	2188		47'5	38 44	228'7	2'83	9'5	9'6	3	'264
1641	39	2407		57'8	38 55	345'3	5'31	9'4	13'7	3	'277
1642	38	2212	11	4'1	38 38	44'5	1'28	9'5	9'7	2	'339
1643	39	2446		24'9	39 7	83'2	3'66	9'5	13'7	2	'249
1644	...			46'0	39 2	326'3	2'24	10'0	10'1	2	'249
1645	40	2960	15	57'6	39 52	213'3	3'14	9'5	9'6	3	'529
1646	40	3028	16	28'7	40 27	119'2	4'79	9'4	12'0	2	'543
1647	40	3048		37'1	40 32	19'4	3'32	9'5	10'7	3	'529
1648	41	2963	17	59'7	41 9	4'4	3'58	9'5	10'8	2	'535
1649	40	3292	18	4'6	40 1	331'4	6'79	9'5	13'0	2	'680 AB
						244'8	19'80	C=	12'5	2	'680 AC
1650	40	3309		8'8	40 13	142'8	1'62	9'4	10'3	4	'750

No.	B.D.		R.A. 1900.		Decl.		P.	D.	Mags.	Nts.	Date.	
	°	'	h	m	°	'					1917.	
1651	41	3021	18	12'6	41	5	358'7	2'87	9'6	10'7	3	'661
1652	40	3359		20'8	40	7	148'2	6'49	9'5	13'0	2	'709
1653	40	3375		23'7	40	27	177'8	7'50	9'5	9'7	2	'700
1654	40	3415		31'0	40	35	253'1	3'05	9'5	12'2	4	'680
1655	40	3437		34'5	40	9	27'8	2'06	9'4	10'2	3	'688
1656	41	3136		43'0	41	12	249'3	4'87	9'6	14'2	4	'750
1657	40	3524		52'1	40	44	355'8	3'78	9'4	10'0	3	'688
1658	39	3653	19	5'5	39	54	107'2	1'20	9'5	11'0	3	'799
1659	40	3605		5'8	40	48	252'2	6'03	9'5	12'3	3	'731
1660	41	3277		11'4	41	15	72'9	5'10	9'3	12'5	3	'670
1661	41	3328		19'5	41	8	146'4	3'81	9'5	12'0	2	'680
1662	40	3701		20'5	40	9	71'6	2'93	9'4	11'2	2	'770
1663	41	3350		23'7	41	17	228'8	5'85	8'4	12'7	3	'661 AB
							300'6	24'17	C=	11'8	3	'661 AC
1664	...			24'4	40	41	98'7	1'83	9'8	10'2	2	'739
1665	41	3406		31'7	41	11	72'1	5'96	9'3	12'2	2	'700
1666	40	3809		34'2	40	8	317'0	4'87	9'5	12'2	4	'812
1667	40	3812		34'4	40	17	99'4	4'03	8'5	12'0	2	'792
1668	39	3856		35'2	40	6	142'2	2'61	9'5	10'5	2	'810
1669	40	3845		37'9	40	44	153'0	1'45	9'3	9'4	3	'777
1670	41	3464		39'7	41	10	97'6	3'56	9'5	12'0	2	'711
1671	41	3500		46'1	41	9	64'4	4'20	9'4	9'5	2	'711
1672	...			50'4	41	7	111'4	2'10	9'5	11'1	2	'690
1673	40	3947		52'1	40	33	187'5	3'61	8'6	11'7	3	'788
1674	40	4102	20	14'5	41	3	22'6	4'58	9'1	9'2	2	'770
1675	...			16'0	41	14	144'3	2'54	9'6	10'2	3	'746
1676	...			18'5	40	23	286'3	2'20	9'8	10'2	3	'813
1677	40	4146		19'6	40	26	268'3	6'79	9'4	11'6	2	'690
1678	41	3737		21'3	42	3	181'1	7'28	9'0	14'0	2	'707
1679	40	4212		28'0	40	52	216'7	4'51	9'4	12'0	3	'801
1680	...			29'1	39	35	21'1	2'31	9'7	10'4	2	'870
1681	40	4317		44'3	41	3	144'0	2'16	9'2	9'4	2	'690
1682	40	4320		44'9	40	19	149'8	2'79	9'5	9'7	3	'829
1683	40	4341		47'9	40	42	202'5	4'99	9'5	9'6	3	'746
1684	40	4351		50'5	40	48	274'2	7'51	9'2	12'7	2	'703
1685	40	4355		50'9	40	19	74'5	1'73	12'7	13'5	3	'681 BC
							75'0	21'57	A=	9'5	2	'674 AB
1686	40	4358		51'8	40	49	192'9	5'99	8'5	12'0	3	'708
1687	40	4399	21	0'7	40	33	43'2	6'81	9'1	9'4	2	'670
1688	40	4466		12'5	41	4	145'5	5'20	9'5	9'6	2	'739

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.		Nts.	Date.
		h	m							1917.
1689	40° 4467	21	12·6	40° 44'	137° 7'	3" 22	9·5	9·7	3	'758
1690	...		12·6	40 21	105·9	3·75	9·5	10·5	2	'802
1691	40 4499		17·8	40 28	161·2	6·84	8·5	13·0	3	'799
1692	40 4514		21·1	40 55	322·4	3·49	9·4	11·2	3	'762
1693	39 4663		41·7	40 1	41·8	6·93	8·5	12·5	3	'874
1694	40 4681		53·3	40 14	70·6	1·65	9·4	10·1	3	'732
1695	39 4746	22	0·7	39 40	40·3	1·12	9·5	10·0	3	'781
1696	...		25·8	40 29	141·1	2·32	10·8	11·2	4	'751
1697	...		29·6	40 20	338·7	2·76	10·0	10·7	2	'792
1698	39 4888		31·1	39 22	31·2	2·22	9·5	11·2	2	'865
1699	40 4886		38·1	40 39	106·3	1·53	9·5	9·6	2	'739
1700	...		41·0	39 33	236·4	4·14	9·5	11·5	3	'818
1701	39 4961		49·4	39 28	66·8	7·14	9·5	9·6	3	'812
1702	40 4948		51·8	40 22	261·4	2·59	9·2	10·3	3	'687
1703	40 5007	23	6·0	41 5	115·2	3·93	9·5	11·0	2	'765
1704	40 5040		13·1	40 18	336·1	2·05	9·3	10·9	4	'747
1705	Espin 268		41·9	39 59	274·2	0·82	9·1	9·3	4	'866 AB
					263·1	4·09	C=10·7		5	'798 $\frac{AB}{2}$ C

## Notes.

- No. 1610.—In field with B.D. +40° 446 at P. 121° 9.  
 1612.—*f* star of two in Argelander.  
 1614.—Also a 10 mag. at P. 57° 6. D. 37".  
 1615.—13' from Algol at P. 229° 1.  
 1619.—A 10·5 mag. in same direction.  
 1622.—Milburn, P. 252° 8. D. 5"·55. 1 nt. 18·00.  
 1631.—S. of two. Declination of the two stars in Argelander has apparently been reversed.  
 1672.—Forms a distant *comes* to B.D. +40° 3931 at P. 49° 3.  
 1680.—Forms a distant *comes* to B.D. +39° 4228 at P. 6° 2.  
 1696.—Forms a distant *comes* to B.D. +40° 4835 at P. 344° 5.  
 1702.—N. star of wide pair.  
 1705.—Mr. Jonckheere has kindly measured this with the 28-inch at Greenwich, with the following results:—

AB	P. 277° 5	D. 1"·01	Mags. 9·1, 10·3	3 nt.	1917 '850
AC	P. 267° 8	D. 4"·30	C=11·2	3 nt.	1917 '850

*New Double Stars.*

No.	B.D.	R.A. 1900.	Decl.	P.	D.	Mags.	Nts.	Date.
		h m	° '	°	"			1918.
1706	+59° 2831	0 2'3	+59 35	79°1	2'00	9'5 10'3	2	'874
1707	+60° 44	18'3	+60 17	103'5	7'99	9'3 12'5	2	'847
1708		48'3	+60 8	303'1	3'70	9'6 12'0	2	'861
1709	+58° 137	50'5	+58 55	282'2	5'25	9'5 11'0	2	'940
1710	+58° 146	53'1	+59 11	332'7	6'04	8'5 9'0	2	'948
1711	+58° 145	53'2	+58 57	54'2	2'89	9'3 10'8	3	'943
1712	+58° 231	1 18'0	+58 26	297'0	5'66	8'9 13'5	2	'845
1713	+57° 282	19'7	+58 1	147'1	1'37	9'4 9'5	3	'854
1714	+59° 528	2 33'1	+60 0	81'8	3'37	9'5 13'2	2	'993
1715	+59° 753	3 59'1	+59 52	162'2	5'49	8'5 10'2	2	'986

## New Double Stars—continued.

No.	B.D.	R.A. 1900.		Decl.	P.	D.	Mags.	Nts.	Date.
		h	m						
1716	+40° 1097	4	49.9	+40	39	137.3	5.64	9.2 11.2	3 '122
1717	+40° 1132		54.0	+40	20	233.6	1.85	9.3 10.0	2 '180
1718	+40° 1144		55.5	+40	5	272.5	2.09	9.5 9.7	2 '204
1719	+40° 1159		57.4	+40	23	22.7	4.64	9.5 12.0	2 '189
1720	+41° 1071	5	1.4	+41	57	117.1	3.47	9.3 9.7	2 '130
1721	+40° 1189		3.3	+40	32	162.1	5.66	8.4 11.2	2 '204
1722	+41° 1105		5.0	+41	46	302.1	5.10	8.5 12.0	3 '168
1723	+41° 1130		9.0	+41	47	210.7	2.37	9.2 9.3	3 '168
1724	+41° 1194		21.0	+41	5	228.6	2.59	9.5 11.7	3 '168
1725			26.8	+40	40	214.4	2.56	10.5 10.8	1 '222
1726	+40° 1412		40.4	+40	15	75.9	2.89	9.3 9.4	2 '250
1727	+41° 1280		42.9	+41	4	51.4	2.49	9.4 9.5	2 '163
1728	+41° 1298		47.5	+41	2	264.0	5.43	9.1 9.2	2 '189
1729	+40° 1484		56.1	+41	0	313.0	6.83	8.9 10.7	2 '204
1730	+41° 1390	6	6.1	+41	25	140±	4±	9.5 14	1 '161
1731	+39° 1989	7	35.6	+39	50	98.5	1.28	9.2 9.3	4 '158
1732	+38° 1907	8	17.7	+37	56	67.0	8.01	8.5 9.2	2 '247
1733			54.3	+38	46	323.2	2.83	9.5 10.7	3 '207
1734		9	11.4	+37	6	67.3	2.62	10.2 10.7	2 '236
1735			14.4	+37	34	181.0	4.11	10.1 10.6	2 '247
1736	+38° 2071		43.4	+38	14	106.3	1.16	9.2 10.5	2 '220
1737	+36° 2121	10	41.1	+36	10	279.4	1.75	9.5 9.6	2 '282
1738	+38° 2276	11	40.8	+38	3	162.4	1.97	9.3 9.6	3 '323
1739	+37° 2258	12	9.0	+37	28	291.7	4.51	9.4 12.0	3 '323
	+56° 1904	16	33.6	+56	45	188.7	9.61	9.2 9.7	2 '666
1740	+56° 1969	17	16.7	+56	14	314.7	1.61	9.5 12.0	4 '737
	+56° 1977		20.2	+56	43	73.1	11.47	10.0 10.3	2 '742 BC
						92.1	29.94	A=7.5	2 '742 AB
	+57° 1765		25.3	+57	22	2.3	10.16	8.9 11.0	2 '653
1741	+57° 1768		26.8	+57	7	181.1	2.56	9.3 9.5	2 '675
1742	+57° 1772		28.5	+57	47	33.4	1.76	9.5 10.2	3 '649
	+57° 1775		30.1	+56	59	210.5	13.85	8.0 9.2	4 '719
1743			44.3	+59	16	73.8	2.04	10.5 10.7	2 '735 BC
						231.3	30.17	A=9.6	2 '735 AB
1744	+57° 1823		54.7	+57	32	264.9	6.89	9.2 9.4	2 '630
1745	+56° 2058	18	1.0	+56	22	226.4	4.91	9.5 13.0	3 '692
1746			51.4	+58	7	114.5	1.62	9.6 9.8	2 '691
1747	+57° 1923		55.1	+57	15	163.5	1.62	9.2 9.4	3 '714

*New Double Stars—continued.*

No.	B.D.	R.A. 1900.	Decl.	P.	D.	Mags.	Nts.	Date.
		h m	° ′	°	″			1918.
1748	+55° 2134	18 57·8	+55 35	57·1	6·35	8·7 10·0	2	·861
1749	+56° 2186	19 1·6	+56 5	179·5	6·14	9·4 9·8	2	·830
1750	+58° 1883	11·6	+58 24	313·6	4·88	9·5 13·5	3	·710
1751	+56° 2215	12·6	+56 14	351·1	6·74	8·8 14·0	3	·822
1752		13·5	+59 14	321·6	3·79	9·6 12·2	3	·805
1753	+56° 2219	14·0	+56 15	57·4	3·09	8·2 12·5	3	·822
1754	+57° 1994	19·7	+57 19	85·7	5·68	9·3 13·5	3	·754
	+55° 2265	46·3	+55 45	257·1	9·04	8·5 9·6	2	·855
1755	+59° 2151	54·9	+59 43	173·5	5·39	8·5 9·2	2	·871
1756	+56° 2339 ?	58·2	+56 12	180·9	2·29	9·5 9·6	2	·845
1757	+58° 2039	20 1·2	+59 4	213·3	2·62	9·6 10·8	4	·899
1758	+58° 2062	7·9	+58 38	174·2	5·23	9·5 10·7	2	·890
1759		27·2	+59 12	220·1	2·43	10·0 10·2	3	·902 AB
				303·0	5·45	C=10·3	2	·880 AC
	+58° 2209	58·4	+59 7	52·2	10·09	9·2 9·2	2	·695
1760	+56° 2537	21 7·8	+56 46	39·9	2·56	9·0 12·5	3	·868
	+58° 2259	20·7	+58 56	265·1	12·81	9·3 10·5	3	·967
1761	+58° 2321	41·8	+59 9	340·4	3·56	9·4 9·8	3	·924
1762	+57° 2513	22 18·5	+58 13	341·4	6·35	9·2 13·7	2	·997
1763		33·6	+59 44	213·2	2·42	10·7 11·1	3	·981
1764		36·6	+59 49	255·5	3·87	9·5 12·7	3	·966
1765	+59° 2709	23 18·0	+59 19	232·2	2·02	9·2 10·2	2	·907
1766	+59° 2733	25·0	+59 35	319·2	3·37	9·5 9·6	2	·873
1767	+59° 2767	41·2	+59 40	36·0	5·55	9·5 11·6	2	·861
	+58° 2650	43·2	+59 14	84·2	8·81	9·0 10·2	2	·873
1768	+59° 2792	52·2	+60 5	0·2	6·89	9·2 10·8	2	·855

*Notes.*

1712. An 8·0 mag. at 185°·0, D. 49"·11, orange, B.D. +58°·230. B.D. +58°·231 is much underrated in Argelander.
1716. Also a 10·5 mag. at P. 341°·4.
1720. A 14 mag. at P. 140°·4, D. 15"±.
1734. s.p.  $\Sigma$  1334.
1745. This star is given in the B.D. as 9·1 mag.; it is certainly less.
1749. Also an 11·5 mag. at 257°·3, D. 17"·5 from B.
1756. The R.A. agrees with the B.D., but this star is some 2' north of Argelander's place. There is no star above 12·5 mag. in his place, and no star on the Harvard Map of the sky.
1758. A 9·7 mag. at 357°·8.



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*New Double Stars.*

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*New Doubles.*

No.	B.D.	R.A. 1900	Decl.	P.A.	D.	Mags.	Nts.	Date.
1769	+57° 99	0 <sup>h</sup> 27 <sup>m</sup> 7	+58° 4'	94° 0'	2" 80	9.5 10.5	3	1919. '579
1770	...	0 28.7	57 43	341.3	3.31	9.5 9.6	2	'981 AB
				126.8	13.20	C=12.0	2	'981 AC
1771	57 169	0 49.6	57 27	356.0	7.94	9.3 12.3	3	'871
1772	55 397	1 38.2	55 37	141.1	2.35	9.6 10.0	2	'956 BC
				106.0	24.01	A=9.0	2	'956 AB
1773	55 399	1 38.4	55 36	334.2	5.16	10.7 11.5	2	'956 BC
				284.7	53.62	A=8.5	2	'982 AB
1774	58 516	2 39.1	58 17	72.2	3.87	9.5 10.8	2	'165
1775	57 674	2 52.9	58 5	280.8	6.27	9.5 9.8	2	'981
1776	...	2 56.9	58 54	331.5	3.89	10.1 10.5	2	'921
1777	...	3 20.5	56 7	242.9	2.36	10.2 10.3	3	'074
1778	...	3 50.8	59 56	162.6	4.07	9.4 12.2	3	'152
1779	...	5 5.7	57 16	43.6	3.04	9.5 10.5	3	'166
...	58 884	5 50.7	58 52	46.7	12.24	8.6 9.0	2	'139
1780	58 905	6 5.6	58 34	333.5	3.08	9.4 13.3	4	'161
1781	59 1169	8 26.7	59 4	301.7	4.23	9.4 10.0	2	'163
1782	59 1216	8 56.2	59 9	332.7	3.30	9.1 11.2	3	'214
1783	...	9 29.3	58 21	10.6	2.29	9.8 10.7	3	'246
1784	58 1205	9 31.8	58 2	283.4	5.60	9.4 12.0	2	'272
1785	59 1286	10 0.4	59 37	218.3	5.56	9.0 10.1	2	'220
1786	59 1365	11 11.8	59 33	336.3	4.35	9.4 9.5	2	'272
...	59 1397	11 36.0	59 29	352.4	30.53	8.6 8.9	2	'329
				352.9	29.67	...	3	'371 M
1787	59 1418	12 2.7	59 14	130.8	5.66	9.5 12.0	2	'329
				132.5	5.00	...	3	'371 M
1788	59 1430	12 9.8	59 26	184.8	2.96	9.9 10.2	2	'329
				182.0	3.37	...	3	'371 M
1789	59 1447	12 27.4	59 26	190.8	1.75	9.5 9.6	2	'424
1790	59 1515	13 26.1	59 36	250.7	4.47	9.5 9.7	2	'424
1791	59 1549	13 57.0	59 10	165.1	1.54	9.5 9.7	1	'408
1792	59 1550	13 58.5	59 21	165.1	3.25	9.1 10.7	1	'408
...	58 1622	16 7.1	58 12	140.8	12.30	7.2 11.5	3	'591
1793	58 1625	16 10.6	58 3	57.4	5.87	8.2 10.5	2	'593
1794	59 1801	17 14.6	59 0	140.2	3.90	9.5 9.6	3	'591
...	55 1934	17 19.7	55 43	63.5	10.81	9.1 11.0	2	'613
1795	...	17 32.7	60 13	151.5	3.27	10.6 11.4	2	'683
...	60 1788	17 51.5	60 31	106.9	12.08	9.4 9.8	2	'694
				109.6	12.12	9.6 10.2	1	'687 M

No.	B.D.	R.A. 1900.	Decl.	P.A.	D.	Mags.	Nts.	Date.
...	+60° 1827	18 <sup>h</sup> 24 <sup>m</sup> ·6	+60° 25'	272°·6	45''·40	8·2 8·8	1	1919. ·682
				268°·8	44''·81	8·5 9·0	2	·689 M
1796	60 1880	19 2'·0	60 55	102°·9	6'·39	9·2 13'·0	2	·709
1797	60 2038	19 51'·8	60 36	296°·3	5'·20	9·5 11'·0	2	·705
1798	60 2048	19 53'·9	60 33	313°·8	5'·24	9·5 9'·6	3	·708
1799	58 2048	20 2'·9	58 38	153°·7	2'·08	12'·5 12'·7	3	·648 BC
				278°·0	21'·72	A=9'·5	2	·642 AB
...	58 2169	20 43'·1	58 44	96°·7	12'·33	9·5 9'·6	1	·652
				95°·6	12'·22	10'·0 10'·3	2	·689 M
1800	57 2343	21 28'·5	57 27	88°·7	3'·14	9'·0 12'·5	2	·767
1801	56 2667	21 55'·7	56 28	106°·7	6'·51	8'·5 13'·5	2	·919
1802	...	22 19'·2	57 33	78°·2	4'·01	10'·2 10'·3	3	·778
1803	...	23 35'·2	58 13	145°·8	2'·59	10'·5 11'·5	4	·856
1804	57 2823	23 46'·9	58 10	80°·1	4'·75	9'·2 12'·5	2	·784
1805	56 3140	23 59'·6	56 54	43°·2	2'·54	9'·5 12'·0	2	·998

*Notes.*

1783, 9<sup>h</sup> 29<sup>m</sup>·3.—In field at P. 221°·3 with B.D. +58°·1199.  
 1786, 11<sup>h</sup> 11<sup>m</sup>·8.—Also a 10·5 mag. at P. 127°, D. 36''.  
 1795, 17<sup>h</sup> 32<sup>m</sup>·7.—In low power N. of B.D. +60°·1764.

*New Double Stars.*

No.	B.D.	R.A. 1900.	Decl.	P.	D.	Mags.	Nts.	Date.
		h m	° ′	° ′	″			1920
1806	+56°112	0 36'9	+57° 3'	236°1	5''48	8.2 12.5	2	'460
1807	+56°130	43'3	56 47	267°1	4'66	8.3 12.7	2	'865
1808	+57°253	1 13'3	57 48	325°6	5'35	9.3 13	3	'976
1809	+56°249	14'2	56 20	115°1	5'93	8.7 10.0	3	'914
1810	+55°443	49'4	56 10	300°5	5'66	9.3 13.2	3	'863
1811	+55°450	50'8	55 29	289°5	4'37	9.5 11.5	3	'965
1812	+60°556	2 35'9	60 30	84°9	1'79	9.4 10.7	3	'011, 1921
1813	+60°579	43'4	60 22	2°0	4'14	9.2 12.5	2	'863
1814	+56°729	44'6	57 7	303°9	7'22	9.5 9.7	2	'122
1815	+60°586	46'4	60 14	233°4	7'28	8.5 10.2	2	'943
1816	+60°717	3 30'1	60 13	299°2	3'35	9.3 9.3	2	'943
1817	+56°853	44'4	56 52	300°4	7'07	9.1 12.5	2	'058
1818		46'9	56 44	183°5	3'45	10.1 10.3	2.	'119
1819	+60°765	47'4	60 27	128°0	7'07	8.8 12.2	3	'966

No.	B. D.	R. A. 1900.	Decl.	P.	D.	Mags.	Nts.	Date.
1820	°	<sup>h</sup> <sup>m</sup> 3 49·6	+56° 54'	242°1	4"47	10·0 11·1	2	1920 '058
1823	+55·925	4 38·7	56 0	205·3	5·79	9·0 10·3	4	'110
1824	+56·974	41·3	56 7	81·3	6·66	9·5 12·0	2	'144
1825	W Ursæ	9 36·7	56 25	49·9	7·01	var. 13·1	3	'230
1826	+57·1339	11 47·4	57 20	232·7	7·62	8·5 12·5	2	'371
1827		16 21·6	60 31	38·4	5·18	9·6 12·0	3	'651
1828	+60·1675	22·4	60 34	242·7	3·72	9·5 10·1	3	'651
1829	+60·1711	51·0	60 38	77·3	8·45	9·4 10·2	2	'641
1830		53·7	61 18	123·0	3·26	10·3 10·7	3	'648
1831		17 18·2	62 38	266·5	4·15	9·6 12·7	3	'731
1832	+62·1555	29·7	62 39	153·9	3·64	9·5 12·0	2	'708
1833	+61·1707	52·5	61 4	261·4	7·66	7·4 12·2	2	'632
1834		18 6·2	62 29	304·3	2·77	10·0 10·3	2	'701
1835		11·0	64 16	308·5	4·06	9·6 10·7	2	'751
1836	+62·1604	12·3	62 32	152·8	3·96	9·2 11·0	2	'701
1837	+63·1422	21·2	63 55	269·3	6·60	9·2 11·0	3	'860
1838	+61·1765	39·5	61 17	141·4	6·22	9·2 12·5	2	'691
1839	+63·1449	40·5	63 5	49·3	5·25	9·5 11·5	2	'835
1840	+63·1460	44·9	63 57	221·9	9·35	8·5 9·0	2	'872
1841		50·7	62 15	104·8	2·97	9·5 12·0	5	'732
	+61·1787	53·9	61 35	165·8	11·26	9·1 9·5	2	'687
1842	+61·1791	55·4	61 36	264·1	7·17	9·5 12·7	3	'691
1843		56·9	61 51	118·2	2·75	9·5 10·8	2	'720
1844		58·5	63 39	17·8	3·32	9·6 10·5	3	'878
1845	+61·1839	19 15·7	61 49	147·0	6·64	8·3 10·0	3	'710
1846		24·2	61 38	279·6	5·64	9·6 11·0	2	'691
	+61·1863	24·6	61 34	280·4	9·08	9·2 9·4	2	'691
1847	+62·1723	28·8	62 47	223·3	3·83	9·5 10·7	3	'745
1848	+62·1732	33·1	62 36	319·7	5·66	8·2 9·9	3	'731
1849	+61·1910	46·0	61 10	152·4	4·25	8·5 11·7	3	'678
1850		54·7	63 29	214·8	6·12	9·5 12·5	3	'878
1851	+60·2055	55·0	61 6	107·7	5·56	9·5 11·7	2	'701
1852	+61·1974	20 5·7	61 25	152·2	6·48	8·5 9·1	3	'710
1853		8·1	62 2	294·3	3·75	10·9 10·9	2	'728
1854		22·3	62 2	289·4	2·43	10·6 10·7	2	'728
1855	+62·1861	47·2	62 50	27·4	4·94	9·0 11·7	2	'812
1856	+61·2186	21 40·4	61 45	52·5	5·35	8·2 12·2	4	'780

No.	B.D.	R.A. 1900.	Decl.	P.	D.	Mags.	Nts.	Date.
		h m						1920
1857	+61°2198	21 43'6	+61° 24'	208°7	2''75	9·2 9'3	3	'740 AB
				109'3	14'37	C=10'5	3	'740 AC
1858	+61°2200	45'3	62 2	208°2	4'50	9'1 13'2	4	'821 AB
				349'5	11'19	C=11'0	3	'832 AC
1859	+61°2238	22 0'4	62 4	91'7	2'79	9'3 9'5	2	'773
1860	+61°2357	48'7	61 47	153'0	4'87	9'1 11'5	3	'973
1861	+61°2384	58'1	61 58	290'0	4'29	8'1 12'3	3	'832
1862	+61°2420	23 14'3	62 6	43'2	2'89	9'5 10'5	3	'947 AB
				15'0	13'97	C=13'5	2	'951 AC
1863	+60°2519	14'8	60 58	313'6	4'33	9'0 12'5	3	'797 AB
				158'2	10'03	C=10'7	3	'797 AC
1864	+61°2420	36'9	62 12	32'4	3'60	9'1 10'0	2	'913 AB

*Notes.*

1808. Also a 14 mag., P. 134°0, D. 6''0; and a 12 mag., P. 188°7, D. 9''2.  
 1815. Distant comes at P. 51°9.  
 1820. In field at P. 250°8, with B.D. +56°860.  
 1841. In field at P. 244°5, with B.D. +62°1656.  
 1844. Comes, 14 mag., P. 112°2, D. 14''8.  
 1850. At P. 167°1, D. 47''9 from B.D. +63°1580.

*New Double Stars.*

No.	B.D.	R. A. 1900.	Decl.	P.	D.	Mags.	Nts.	1921.
1865	+61°14	h m 0 7.6	+61° 17'	177°1	2"97	9.7 9.8	3	.295 BC
				121°1	25.00	A=9.0	3	.295 AB
1866	+61.125	29.7	61 19	18.3	5.02	8.5 13.0	2	.983
1867	+60.100	40.7	60 59	271.4	6.66	9.0 9.2	2	.843
1868	+56.139	45.6	56 32	183.8	6.83	9.2 11.0	3	.077
1869	+60.146	56.4	61 3	139.5	6.67	8.6 9.5	2	.981

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No.	B.D.	R.A. 1900.	Decl.	P.	D.	Mags.	Nts.	1921.
	°	h m	° '	°	"			
1870	+60°204	1 12'6	+60 21	284'6	4'10	9'2 9'3	2	'850
1871		30'1	60 15	244'4	1'87	9'9 12'0	2	'847
1872	+60°361	43'9	60 35	349'2	3'14	10'5 10'6	2	'981 BC
				270'8	25'51	A=9'5	2	'981 AB
1873	+60°407	52'6	60 26	232'9	3'50	9'2 14'0	2	'981
1874		2 10'1	56 17	144'1	3'53	9'5 12'2	2	'072
1875	+60°544	33'4	60 42	161'9	1'85	9'1 9'8	4	'155
1876		40'0	60 43	297'7	3'57	10'0 10'2	4	'078
1877	+60°571	40'9	60 58	267'1	5'27	9'5 13'2	2	'158
1878	+60°639	3 4'1	60 34	80'9	5'37	9'0 9'6	2	'013
1879	+61°570	16'0	61 11	284'7	5'83	8'4 11'7	2	'013
1880	+62°586	29'0	62 26	36'4	4'16	9'4 13'5	4	'132
1881		31'4	62 50	335'6	3'00	10'5 10'6	2	'134
1882	+62°657	4 0'1	62 15	289'6	7'22	8'1 11'2	2	'046
1883	+63°495	14'2	63 7	234'5	3'47	9'0 10'8	2	'170
1884		27'0	63 8	291'4	2'08	10'0 10'2	2	'152
1885	+62°715	48'0	62 17	109'8	3'26	9'5 11'5	3	'067
1886	+63°589	5 23'2	63 54	54'1	6'60	9'3 11'5	2	'609
1887	+62°764	23'9	62 7	105'8	5'35	8'5 9'6	3	'064
1888		40'4	62 20	63'6	3'89	10'0 11'2	2	'134
1889		6 7'1	62 5	22'6	2'93	11'0 11'4	4	'163
1890		22'1	62 57	120'7	5'43	9'9 10'7	3	'224
1891	+60°974	23'3	60 48	192'4	4'57	8'6 9'2	2	'041
1892	+60°1009	46'5	60 37	285'3	7'18	9'2 9'8	2	'119
1893	+63°676	51'4	63 39	154'1	5'93	9'2 11'2	2	'248
1894	+62°915	7 4'0	61 59	100'9	6'06	9'2 13'0	2	'140
1895	+62°933	22'5	62 43	284'5	9'33	7'1 9'4	2	'152
1896		42'5	64 40	23'3	2'96	9'7 10'8	2	'272
1897		45'2	62 28	241'1	3'15	10'5 11'1	3	'134
1898		46'5	62 29	235'4	2'79	10'0 10'1	2	'140
1899	+63°774	8 13'7	63 37	204'0	8'52	8'7 10'4	4	'283
1900	+63°780	19'3	63 27	66'7	2'96	9'5 13'2	3	'259
1901	+62°1056	9 5'5	62 6	75'2	6'43	9'5 13'2	3	'167
1902	+63°853	30'4	63 16	268'2	8'79	8'8 9'2	2	'248
1903	+62°1104	10 0'1	62 42	266'9	4'34	9'0 11'3	3	'209
1904	+64°773	6'4	64 0	17'3	6'37	9'0 12'5	3	'294
1905	+64°788	23'4	63 52	200'3	3'99	11'2 13'0	4	'302 BC
				65'6	47'27	A=7'0	2	'279 AB
1906		11 3'7	61 56	273'3	2'83	10'0 10'5	2	'279
1907		21'2	59 56	263'8	2'07	10'0 10'2	4	'294

No.	B.D.	R.A. 1900.	Decl.	P.	D.	Mags.	Nts.	1921.
		h m	° '	°	"			
1908	+64°1178	17 10·5	+63 59	138°7	5'93	9·4 13·0	4	'665
1909		19·7	63 21	254°1	5'93	10·2 10·3	2	'591
1910	+65°1211	42·2	65 8	55°9	5'39	9·3 9·4	3	'721
1911	+66°1113	18 34·1	66 4	296°1	6'29	8·5 10·0	3	'819
1912		49·0	65 21	23°5	7'47	9·4 11·0	3	'836
1913	+64°1319	19 2·8	64 7	313°4	6'31	9·3 14·0	2	'623
1914		4·6	64 54	350°8	3'77	10·5 11·5	2	'680
1915		6·2	64 40	146°3	3'54	10·5 11·0	3	'673
1916		22·9	64 25	230°9	6'00	9·6 9·8	3	'614
1917	+63°1563	46·6	63 48	344°3	7'72	8·1 12·2	3	'660
1918	+63°1646	20 37·3	63 44	283°4	2'58	9·4 10·2	3	'670
1919	h 1656	21 26·0	64 59	5·2	6'18	8·6 14·0	2	'831 AB
				157·2	13'78	C=9·5	2	'831 AC
				13·5	14'69	D=8·9	3	'836 AD
	+63°1744	30·2	63 23	351°7	12'14	9·5 10·3	2	'796
	+63°1748	31·7	63 34	227°7	12'98	7·5 12·0	2	'796
1920		47·8	63 33	152°3	4'24	9·8 11·5	3	'792
1921		48·5	63 46	352°1	4'25	10·0 10·2	3	'792
1922		51·3	61 6	168°4	3'93	11·0 11·1	2	'820
1923	+60°2346	22 5·2	60 36	229°5	3'14	10·5 12·7	2	'813 BC
				341·3	25'01	A=8·2	3	'817 AB
1924	+60°2365	10·9	60 58	142°7	6'21	9·4 9·7	2	'838
1925	+61°2275	13·3	61 54	357°2	4'50	9·0 12·0	2	'847
1926		13·4	61 33	255°5	3'37	10·0 12·0	2	'854
1927	+60°2463	54·5	60 39	227°1	3'19	9·3 12·5	3	'825
1928	+60°2527	23 17·9	60 29	179°7	2'73	9·5 11·0	2	'813
1929	+60°2572	28·7	61 10	295°1	2'85	9·4 11·7	3	'852
1930		31·2	61 16	203°8	1'87	10·0 10·5	3	'878
1931	+60°2620	43·7	60 43	213°6	5'07	9·1 11·8	3	'573
1932	+61°2555	48·2	61 24	343°4	6'20	9·2 9·3	3	'573
1933	+60°2659	56·9	60 24	350°2	2'22	9·5 9·6	2	'824

## Notes.

1868. A comes f.

1889. In field with B.D. +62°827 at P. 23°·2.

1893. Comes, 14 mag. f.

1899. A is very much underrated in B.D., one or both variable?

1923. Another 10 mag. at P. 17°·6, D. 25" ±.



*New Double Stars found with the 24-inch Reflector.*

No.	B.D.	R.A. (1900).	Decl.	P.	D.	Mags.	Nts.	Date.
	°	h m	° ′	°	"			1922
1934		0 1.9	+62 36	68.9	4.75	9.2 10.8	2	.004
				69.4	4.55	9.5 11.5	2	.875 M
1935	+36.5155	2.1	37 7	134.0	8.64	8.9 10.4	2	.873
1936	+38.21	11.5	38 37	75.5	6.02	9.3 10.5	2	.862
1937	+60.34	15.9	61 2	308.9	4.60	9.5 14.0	2	.004
1938	+36.52	20.0	36 51	9.3	7.24	9.4 9.8	3	.965
1939	+38.54	23.4	38 33	274.3	6.06	8.3 12.0	2	.836
1940	+37.86	28.1	37 16	340.6	4.23	9.5 11.5	3	.901
1941	+37.92	29.3	37 44	346.0	2.60	9.2 9.3	2	.865
1942		38.1	38 57	276.9	2.92	9.4 11.1	2	.931
1943	+37.154	46.2	37 49	135.2	4.95	9.5 10.5	2	.862
1944		47.5	38 0	106.5	3.27	10.7 11.5	2	.868
1945	+60.168	1 2.5	61 13	163.7	3.58	9.3 9.5	4	.017

No.	B.D. °	R.A. (1900).		Decl. ° /	P. °	D. "	Mags.	Nts.	Date. 1922
		h	m						
1946	+38.196	1	3.1	+38 58	134.0	4.26	9.2 11.2	3	.855
1947	+37.245		10.5	37 35	43.7	6.54	9.0 14.0	3	.956
1948	+37.288		22.7	37 50	242.4	4.76	9.5 10.5	2	.931
1949	+60.291		31.9	60 59	65.1	5.95	9.5 12.5	2	.101
1950	+60.339		39.5	60 45	77.0	1.92	12.0 12.5	2	.125 BC
					75.7	2.20		4	.921 BC-M
					253.3	28.36	A= 8.6	2	.125 AB
					252.9	28.78		4	.896 AB-M
1951	+60.354		42.4	61 5	159.0	6.00	9.3 9.4	3	.127
1952	+60.433		59.7	60 28	223.6	5.80	9.3 11.0	3	.123
1953	+37.487	2	2.8	38 13	275.7	2.63	10.0 10.1	4	.908
1954		2	18.7	60 39	124.0	3.93	10.1 11.5	2	.130 BC
					125.3	3.95		2	.960 BC-M
					52.6	22.63	A= 9.9	2	.130 AB
					53.4	21.62		2	.969 AB-M
1955	+37.558		22.2	38 3	20.2	8.76	8.5 11.5	3	.932 AB
					335.3	9.16	C=13.0	3	.932 AC
					276.9	7.12		3	.956 BC
1956	+38.531		33.6	38 24	206.8	1.94	9.5 11.0	3	.960 AB
					72.3	3.79	C=12.0	4	.918 AC
1957	+61.571	3	16.9	61 44	171.3	4.47	9.5 12.0	3	.111
1958	+60.727		32.7	60 44	187.9	3.37	8.7 11.6	2	.123
1959	+61.657		53.0	61 9	24.8	2.85	9.4 11.6	3	.111
1960	+61.705	4	14.1	61 26	103.2	2.67	9.5 10.1	2	.101
					+64.439	15.2	64 9	266.7	11.99
1961	+64.441		17.6	64 8	135.5	3.97	9.5 10.6	2	.175
1962	+64.455		22.1	64 6	60.8	7.01	9.0 11.0	2	.175
1963	+61.770	5	5.2	61 20	271.9	3.77	8.8 12.5	2	.138
1964	+64.519		10.8	64 30	259.9	5.20	10.2 10.3	2	.183
1965	+36.3376	18	58.6	36 31	242.1	7.28	9.2 11.0	2	.634
1966	+39.3696	19	11.3	39 8	331.6	4.58	9.2 12.8	3	.726
1967	+39.3840		33.1	39 46	234.6	5.56	10.0 11.0	3	.664 BC
					60.9	23.92	A= 9.2	2	.654 AB
					308.6	10.51	D=14.0	3	.684 AD
1968	+39.3858		35.4	39 56	277.6	4.16	10.5 11.7	3	.650 BC
					115.5	41.19	A= 8.8	2	.652 AB
1969	+38.3727		39.9	38 41	170.6	2.48	9.1 9.4	3	.831
1970	+39.3986		55.6	39 26	328.0	4.74	10.7 12.1	3	.746 BC
					148.7	19.11	A= 9.3	3	.746 AB

No.	B.D.	R.A. (1900).		Decl.	P.	D.	Mags.		Nts.	Date.
		h	m				o	o		
	o			o	o	"				1922
1971	+39°4037	20	3·3	+39 21	287·1	2·81	9·2 9·4	2		·809
1972	+39°4048		4·5	39 9	109·6	5·18	9·4 10·5	2		·865
1973			8·2	39 20	358·3	4·27	10·0 12·2	4		·846
1974			12·2	39 19	175·0	3·72	9·3 12·0	3		·845
1975	+38°4084		22·6	39 5	34·8	4·20	9·5 11·0	2		·845
1976			23·6	39 29	79·2	3·51	10·2 10·5	2		·715
1977			29·0	39 35	28·2	2·54	10·6 11·5	3		·693
1978	+39°4258		34·2	39 44	134·5	3·24	9·5 10·5	2		·654
1979	+39°4264		35·0	40 3	301·5	7·11	9·1 13·0	2		·634
1980	+39°4267		35·5	39 56	62·0	7·56	9·4 12·0	2		·643
1981	+38°4210		40·4	39 5	295·6	3·00	9·3 11·3	2		·845
1982	+39°4312		42·9	39 58	297·0	4·43	9·2 9·5	2		·684
1983	+38°4276		51·2	38 51	268·2	5·41	8·5 14·0	2		·862
1984			51·6	38 47	114·3	3·32	10·5 11·0	3		·882
1985	+38°4300		54·2	38 55	293·0	6·27	9·6 12·0	4		·925
1986	+39°4420		59·3	40 0	32·4	4·26	8·7 12·0	2		·634
1987	+38°4338	21	1·2	38 50	355·2	6·58	9·1 10·7	2		·929
1988	+38°4340		1·9	39 5	271·8	4·95	9·5 12·0	2		·913 BC
					314·9	27·88	A= 9·0	2		·913 AB
1989	+39°4439		3·0	39 57	169·1	4·66	9·3 9·6	2		·643
1990	+39°4442		3·4	39 34	40·7	5·91	9·5 12·0	3		·836
1991	+38°4377		7·3	38 30	25·4	2·62	9·5 10·0	1		·961
1992	+38°4383		7·9	39 6	204·5	3·26	9·5 12·0	2		·890
1993	+38°4438		14·2	38 25	272·8	6·93	9·4 14·0	3		·931
1994	+39°4544		20·2	39 36	104·2	4·97	9·5 11·5	2		·715
	+38°4545		31·1	38 12	97·1	17·26	8·6 9·1	2		·932
1995			31·3	38 10	50·3	2·12	10·6 11·2	2		·932
1996			46·0	37 22	167·2	2·17	10·6 11·1	4		·927
1997		22	39·1	39 40	87·4	4·28	10·2 10·5	2		·834
1998	+37°4731		52·6	38 0	92·4	5·00	9·3 12·2	3		·855
1999			59·5	37 20	64·8	2·97	10·0 10·2	3		·925
2000	+39°5003	23	1·0	39 33	67·1	7·91	8·2 12·2	2		·736
2001	+36°3050		16·2	36 36	295·3	6·30	9·3 10·6	2		·929
2002	+37°4832		19·4	37 20	98·4	4·54	9·5 10·0	2		·862
2003			26·4	36 26	264·4	4·79	9·5 10·7	3		·931
2004			49·1	37 4	350·1	4·14	10·0 10·1	3		·885
2005	+36°5129		49·3	36 27	155·1	5·78	9·3 10·5	2		·957
2006			59·3	62 30	267·5	2·01	10·0 11·1	4		·017

*Notes.*

1944. In field with B.D. +37°·158 at P. 115°.  
1950. Comes, 13 mag. S., a more distant one *np*.  
1956. Thought to be nebulous on one night.  
1968. This is A of Scheiner 672.  
1970. AB is Scheiner 768, P. 148°·5, D. 19"·32; 1896·5.  
1977. 51" from B.D. +39°·4228 at P. 5°.  
1985. This is B of Scheiner 1338, P. 93°·6, D. 26"·28; 1895·6, now P. 98°·0,  
D. 31"·99, 2 nts. 1922·925. B is apparently the B.D. star, and if the  
measures are correct A must have a P.M. of 0"·2 towards P. 296°.  
1988. A is Aitken 2691.  
2003. In field with B.D. +36°·5075 at P. 345° D. 67".

Jan. 1924.

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*New Double Stars.*

The following double stars have been found and measured with the 24-inch Calver reflector.

E.	B.D.	R.A. (1900).	Decl.	P.	D.	Mags.	Nts.	Date 1923.
	+35°46'	<sup>h</sup> 0 <sup>m</sup> 13.4	+35° 26'	90°8'	14"20	7.5 11.2	2	.838
2007	+35°75'	22.4	36 7	33°6'	3.62	10.5 10.7	2	.347 BC
				60.7	29.13	A=9.3	3	.540 AB
2008		55.0	36 46	42°3'	2.02	10.5 11.0	4	.631
2009		1 22.8	36 37	279°8'	4.46	10.0 10.5	2	.909
2010	+37°478	59.8	37 31	172°9'	7.13	9.1 12.0	3	.580
2011		2 8.4	37 6	345°7'	4.04	10.2 11.7	3	.981
	+38°461	14.9	38 27	91°3'	10.70	9.1 9.2	2	.448
	+37°572	25.6	37 51	330°4'	19.86	7.2 11.7	2	.883
2012	+38°1915	8 23.7	38 35	88°3'	5.58	9.7 10.3	2	.198
2013		45.0	38 46	62°8'	4.16	10.2 10.3	1	.224
2014	+38°2938	17 24.1	38 52	88°6'	1.81	9.2 11.7	3	.606
2015	+39°3166	32.2	39 36	29°0'	4.87	9.7 10.9	3	.582
2016	+37°2940	41.5	37 54	217°3'	4.04	7.9 12.0	2	.657
2017	+38°3078	18 3.0	38 37	260°3'	2.22	9.1 12.0	3	.601
2018	+39°3325	4.4	39 4	238°5'	5.46	8.9 9.6	2	.563
	+37°3060	12.3	37 21	80°3'	9.72	9.0 9.1	2	.671
2019	+37°3181	34.2	38 1	115°7'	6.69	9.1 11.5	2	.616
2020	+37°3226	41.7	37 50	347°1'	2.91	9.3 11.0	2	.608
2021	+38°3294	43.2	38 46	306°5'	3.58	10.5 11.7	2	.563 BC
				252.4	21.32	A=9.6	3	.569
2022	+36°3267	44.0	36 40	316°3'	4.31	9.4 11.0	2	.765
2023	+36°3271	44.9	36 5	249°3'	6.26	8.7 12.0	2	.810
2024	+36°3285	46.9	36 7	355°3'	7.22	9.4 13.0	3	.817
2025	+37°3259	48.2	37 32	82°5'	4.01	10.2 13.9	3	.712 BC
				11.8	5.60	D=10.7	2	.707 BD
				324.0	19.68	A=9.5	3	.712 AB
2026	+37°3262	48.6	37 24	339°9'	5.05	13.2 13.7	2	.712 BC
				107.9	19.74	A=7.5	3	.732 AB
2027	+37°3272	50.2	37 44	138°8'	3.87	9.1 13.0	2	.704
2028	δ <sup>2</sup> Lyræ	51.0	36 46	137°7'	2.18	11.2 11.6	2	.793 BC
				350.2	87±	A=4.5	2	.793 AB
2029	+35°3405	51.3	36 3	209°4'	5.35	9.2 9.6	2	.823
2030	+36°3340	53.7	36 56	217°3'	4.08	9.5 12.5	2	.753 AB
				231.1	13.59	C=10.5	2	.753 AC
2031	+35°3431	54.8	35 46	40°4'	5.78	9.5 10.8	2	.842

E.	B.D.	R. A. (1900).	Decl.	P.	D.	Mags.	Nts.	Date 1923.
2032	+36°3353	<sup>h</sup> 18 <sup>m</sup> 55'5	36° 46'	217°6	4''15	9'4 12'2	4	'770
2033	+37°3314	58'6	37 52	262'4	4'83	9'3 9'5	3	'682
	+37°3324	19 0'1	37 59	299'5	11'81	8'5 10'2	2	'630
2034	+38°3440	4'0	38 41	73'5	5'02	9'5 14'0	3	'602
2035	+38°3457	6'3	38 39	176'0	3'74	9'4 10'5	2	'652
2036	+37°3467	24'2	37 52	148'7	3'13	9'6 11'5	3	'721
2037		24'6	37 15	40'4	5'18	9'3 12'5	4	'813
2038	+37°3488	27'2	37 44	219'7	4'92	9'5 12'5	3	'736
2039	+38°3637	28'4	38 16	276'0	1'64	9'3 9'4	3	'638
2040		35'7	36 53	108'4	1'60	10'5 11'0	3	'851
2041	+36°3665	37'7	36 54	341'6	6'03	9 3 11'0	2	'842
2042	+38°3804	50'0	38 11	84'6	6'93	9'5 13'0	2	'630
2043	+37°3686	52'9	37 20	114'2	1'47	10'0 10'5	2	'853
2044	+38°3872	58'6	38 32	26'4	6'37	9'5 13'7	2	'657
2045		59'4	37 26	129'4	2'72	10'5 11'0	3	'832
2046	+38°3933	20 7'1	38 42	99'2	5'98	9'1 12'7	3	'767
2047	+38°3965	11'0	38 37	197'3	4'35	10'1 10'3	2	'845
				174'9	32'13	A=9'0	2	'845
2048		12'0	38 51	259'7	3'08	9'1 10'6	3	'733
2049		14'6	38 6	265'4	3'14	10'5 10'5	2	'853
2050	+38°4020	15'6	39 2	92'5	5'98	9'2 12'7	2	'693
2051	+39°4134	15'6	39 19	302'9	4'91	9'5 12'0	3	'615
2052		16'5	38 19	147'9	2'07	10'6 11'2	4	'774
2053		39'2	38 28	216'8	4'04	10'2 11'7	3	'733
2054	+37°4054	43'2	38 6	188'9	2'96	9'5 12'2	2	'765
2055	+38°4286	52'4	38 37	303'4	6'36	9'0 12'5	2	'845
2056		53'9	38 25	78'9	2'21	9'7 12'5	3	'682
2057	+38°4315	56'5	38 22	254'2	4'43	9'4 11'2	3	'733
2058		58'5	37 29	308'7	3'39	10'7 10'7	3	'858
2059	+38°4351	21 3'1	38 15	265'9	6'48	9'5 12'0	2	'657
2060		3'7	37 33	267'4	3'93	10'2 11'1	2	'798 AB
				271'8	17'66	C=11'2	2	'798 AC
2061		11'2	38 8	297'7	2'79	9'6 11'5	3	'769
2062	+37°4273	15'9	37 50	324'9	4'41	9'4 13'0	2	'780
2063		27'9	37 44	226'9	2'68	10'0 10'2	3	'750
2064	+37°4338	28'0	38 7	246'7	11'89	9'0 9'5	2	'693
2065	+36°4620	33'5	36 45	185'1	4'97	9'5 9'6	4	'849
2066		35 8	37 46	224'6	5'46	10'2 10'5	2	'657
2067	+36°4639	36'4	36 53	226'1	5'28	9'5 13'5	3	'863

E.	B.D.	R.A. (1900).	Decl.	P.	D.	Mags.	Nts.	Date 1923.
2068	°	h m 21 49·6	° ′ 35 42	346·1	2·41	10·1 10·5	2	·957
2069	+36·4713	52·2	36 32	111·8	4·22	9·5 13·0	3	·800 AB
				217·9	6·83	C=11·0	2	·793
2070		22 18·9	36 12	152·3	3·93	10·6 11·2	3	·758
2071	+36·4842	24·0	36 57	29·5	4·31	12·0 15·0	2	·734 BC
				262·7	26·87	A=7·5	2	·734 AB
2072		26·2	36 58	264·8	1·58	9·8 10·5	3	·783 BC
				314·5	13·16	A=9·7	3	·783 AB
2073	+35·4838	29·7	35 27	209·2	7·45	9·1 9·4	3	·954
2074	+36·4889	33·1	36 30	80·3	2·03	9·4 11·5	4	·826
2075	+35·4902	48·0	36 1	269·4	5·70	9·5 10·5	3	·818
	+35·4913	50·8	36 8	101·3	10·09	9·2 10·0	2	·813
2076		55·9	36 43	169·5	1·74	9·5 9·5	3	·773
2077	+35·4944	57·2	36 10	152·6	5·62	9·3 12·5	3	·870
2078	+35·4962	23 3·9	35 48	300·3	7·09	9·5 12·5	4	·938

*Notes.*

- No. 2008. At P.  $230^\circ$  from B.D. +36°·176.  
 2019. *Comes*, 12·5 mag., P. 26°·8, D. 16''·4.  
 2028.  $\delta^2$  Lyræ. Mr. Mervyn Ellison at Armagh kindly measured AB on 1923,  
 November 14. P.  $348^\circ\cdot9$ , D. 86''·2.  
 2047. *Comes* to A, 13·5 mag., P.  $99^\circ\cdot6$ , D. 11''·24: another more distant in  
 same direction.

The following Double Stars have been found and measured with the 24-inch Calver reflector.

*New Double Stars.*

No.	B.D.	R.A. (1900).		Decl.	P.	D.	Mags.	Nts.	Date 1924.
		h	m						
E 2079	+34.60	0	22.8	+35 12	344.8	4.62	9.3 12.0	2	.843
2080	+34.96		34.7	35 7	53.8	4.96	9.0 13.5	3	.878
2081	+34.97		35.3	34 59	48.5	2.74	9.2 11.0	2	.897
2082	+34.291	1	34.1	34 55	291.4	2.34	9.2 10.5	3	.878
2083	+37.633	2	41.0	38 10	335.5	6.10	9.1 11.2	2	.035
2084	+37.673		53.2	37 29	248.5	6.06	8.3 12.0	2	.977
2085	+37.867	3	57.2	37 43	263.8	3.88	7.7 9.8	2	.980
2086		4	14.0	38 22	202.8	3.28	10.0 10.1	2	.038
2087	+38.889		19.0	38 33	207.3	3.02	9.5 11.7	2	.111
2088			40.7	39 36	270.4	3.24	11.0 11.0	2	.111
2089			52.7	39 46	94.5	1.81	10.5 11.0	3	.078
2090	+40.1174	5	0.1	40 13	233.3	4.89	9.5 14.0	3	.179
2091			5.1	40 1	250.4	3.70	11.0 11.0	3	.179
2092	+39.1210		5.7	39 57	113.2	2.78	9.6 10.5	3	.179
2093	+39.1292		17.6	39 3	315.5	1.51	9.5 10.5	2	.196
2094			23.9	39 7	121.4	2.41	9.6 11.1	3	.195
2095	+39.1534	6	2.8	39 27	233.5	3.31	9.4 12.7	3	.144
2096	+39.1674		28.6	39 51	93.9	6.45	9.3 12.5	2	.178
2097	+39.1711		35.5	39 8	16.4	5.33	8.5 11.0	1	.194
2098	+39.1718		36.6	39 35	306.2	4.70	9.4 12.0	3	.188 BC
					199.9	28.24	A= 9.3	2	.186 AB
2099	+38.1753	7	18.2	38 20	280.4	4.14	9.5 13.0	2	.167
	+37.1729		23.7	36 59	292.8	11.32	8.4 12.0	1	.197
2100	+37.1739		26.5	37 47	190.3	2.91	9.3 9.8	2	.186
2101	+37.1771		40.5	37 25	4.9	5.29	9.2 9.3	3	.172
2102	+37.1797		47.8	37 2	268.9	6.35	9.2 12.2	2	.196
2103	+37.1811		52.0	37 16	180.7	3.08	9.4 10.5	3	.182
2104		8	30.4	36 18	158.9	2.83	9.8 12.0	2	.233
2105			47.9	37 11	102.1	2.10	9.5 10.5	2	.289
2106	+37.1954	9	6.9	36 58	337.2	4.27	9.4 10.5	2	.282
E 2107	+37.2017		37.2	36 53	170.2	2.23	9.5 10.5	3	.278



No.	B.D.	R.A. (1900).		Decl.		P.	D.	Mags.	Nts.	Date 1924.
		h	m	°	'					
E 2108	+36°2025	9	59.3	+36	8	226.6	3.79	9.5 10.5	1	.290
2109	+37.3012	18	2.2	37	26	147.6	4.26	9.0 11.0	2	.607
2110	+36.3099		17.5	36	27	99.3	5.85	9.0 10.5	2	.735
2111		19	5.4	37	14	245.2	4.85	11.5 12.5	4	.768 BC
						174.1	5.48	A=10.5	3	.766 AB
2112	+37.3361		7.1	37	16	79.7	7.12	8.8 13.0	3	.704 AB
						344.7	9.80	C=11.5	3	.704 AC
2113			15.7	37	4	352.1	4.54	10.0 10.0	3	.710
2114	+37.3644		47.8	37	31	239.4	5.97	9.0 12.7	3	.629
2115	+37.3650		48.3	37	39	214.5	4.55	9.3 13.5	3	.658
2116	+36.3767		51.3	36	36	18.4	7.80	9.0 9.4	2	.818
2117			51.5	37	5	320.8	2.24	10.5 10.5	3	.704
2118	+37.3673		51.6	37	8	299.2	7.20	8.8 13.0	3	.704
2119	+37.3763	20	2.3	37	38	252.6	4.64	9.6 13.5	3	.798 BC
						257.1	12.32	A=9.5	2	.764 AB
2120	+37.3816		8.1	37	15	286.0	5.95	8.2 12.7	2	.854
2121			9.9	38	10	233.5	3.10	9.2 10.6	2	.751
2122			39.4	37	27	63.6	4.72	9.6 11.5	3	.747
2123			48.0	37	57	99.6	4.39	8.7 11.5	4	.735
2124	+36.4536	21	19.0	36	21	268.9	6.45	9.5 11.0	2	.745
2125	+35.4513		20.4	36	6	45.0	2.20	9.4 10.5	2	.842
2126			20.6	36	5	172.4	4.23	11.0 11.2	2	.842
2127	+35.4535		23.7	36	10	298.2	4.43	9.8 10.0	2	.818
2128	+35.4542		25.4	36	9	287.5	7.14	9.0 13.5	4	.787
2129	+35.4602		35.8	35	38	310.0	5.02	10.0 10.1	2	.818
2130			36.5	35	45	121.8	3.18	10.5 12.0	3	.784
2131	+35.4609		37.7	35	45	221.6	6.41	9.3 10.5	2	.775
2132	+34.4719	22	29.9	35	11	215.8	2.18	9.0 11.0	2	.735
2133	+34.4726		31.4	34	48	68.8	3.87	9.0 12.5	2	.818
2134	+34.4828		59.2	34	38	113.7	1.45	9.3 11.5	2	.735
2135	+35.4971	23	6.8	35	16	207.9	2.37	9.3 9.5	3	.569
2136	+34.4922		20.4	34	55	357.7	3.37	9.3 11.0	3	.880
E 2137	+34.4987		36.7	35	9	138.2	6.50	9.5 11.5	3	.569

## Notes.

2083. Distant comes at P. 284°.8.  
 2091. This is a distant comes to B.D. +39°.1203 at P. 143°.4.  
 2094. At P. 241°.7, from B.D. +39°.1324.  
 2101. Comes to B., 13 mag., P. 50°.2, D. 16".7 single setting.  
 2109. Distant comes, 13 mag. N.  
 2123. The south star of a wide pair. The other star mag. 8.6 is at P. 327°.8,  
 D. 60"±. Neither star is in the B.D.  
 2128. Distant comes F.

*New Double Stars.*

The following double stars have been found and measured with the 24-inch Calver reflector.

No. E.	B.D.	1900.		P.	D.	Mags.	Nts.	Date 1925.
		R.A.	Decl.					
		h	m	°	"			
2138	°	0	19.6	+34 31	49.1	4.20	9.6 11.0	3 .874
2139	+34.93		33.2	34 43	68.8	4.89	9.5 14.0	2 .866
2140	+33.103		40.0	34 1	229.6	2.22	9.4 11.5	2 .902
2141	+35.212	1	3.8	35 40	271.4	4.20	9.3 9.5	2 .014
2142			27.9	34 55	246.8	4.23	9.4 9.7	2 .858
2143			45.0	34 25	182.9	2.48	9.8 10.7	2 .880
2144	+34.339		50.8	34 36	142.6	6.47	9.2 9.3	2 .873

No. E.	B.D.	1900.		P.	D.	Mags.	Nts.	Date 1925.
		R.A. h m	Decl. ° ′					
2145	+36°522	2 30·7	36° 13′	26°2	3·81	9·3 9·5	3	·620
2146		50·1	36 52	93·7	3·31	9·8 10·5	3	·103 AB
				66·7	12·28	C=10·0	3	·103 AC
2147	+37·764	3 18·8	38 4	55·6	2·83	9·5 10·8	3	·956
2148		4 6·1	36 58	180·1	1·95	10·5 11·0	3	·972
2149	+38·911	27·9	38 11	221·0	5·76	8·8 9·2	2	·102
2150	+39·1131	52·6	39 11	35·2	2·12	9·5 11·0	2	·102
2151	+38·1137	5 16·5	38 57	111·1	5·68	8·8 11·7	3	·171
2152	+38·1219	29·6	38 59	321·2	3·10	9·5 11·0	2	·119
2153	+38·1336	50·4	38 50	76·6	3·66	8·5 10·0	2	·119
2154	+39·1555	6 7·8	39 21	359·6	2·67	9·5 12·0	2	·157
2155	+38·1543	30·1	38 55	54·2	4·56	9·0 13·0	3	·161
2156	+38·1690	7 0·7	38 36	222·7	5 54	9·1 9·3	2	·119
2157	+37·1743	29·4	37 5	166·1	2·40	9·5 10·5	3	·228
2158	+37·1757	35·3	37 9	332·1	2·96	9·3 11·0	2	·119
2159	+36·1757	8 4·4	36 13	54·2	7·95	8·5 9·2	3	·169
2160	+36·1818	19·7	36 28	342·5	3·71	9·1 9·2	2	·119
2161		25·4	35 44	5·5	3·70	10·0 10·5	2	·266
2162		9 12·7	35 33	102·2	3·96	10·5 12·0	3	·295
2163		29·8	36 0	94·6	4·06	10·7 11·7	2	·223
2164	+35·2170	10 34·3	35 36	87·2	1·89	9·3 9·5	2	·266
2165	+36·2167	11 8·8	36 26	87·6	1·85	9·3 9·5	2	·315
2166		12 30·4	37 7	354·4	4·31	10·7 11·0	2	·333
2167	+38·2353	34·9	37 46	269·9	5·95	9·5 9·7	2	·304
2168	+36·2931	17 40·3	36 58	287·9	5·74	9·5 10·1	3	·614
2169	+36·2951	46·1	36 51	336·2	8·47	9·3 9·6	2	·620
2170	+35·3163	18 5·8	35 46	261·5	7·31	9·3 13·0	3	·640
2171		7·9	35 57	70·3	3·79	10·2 10·7	2	·638
2172		19·2	35 19	39·1	3·08	10·5 11·5	3	·667
2173	+36·4130	23·2	36 6	300·3	5·56	7·8 12·0	2	·605
2174	+36·3454	19 10·0	36 12	157·7	5·41	9·3 9·4	2	·636
2175		10·6	36 36	156·2	2·32	10·0 12·0	4	·639
2176	+36·3476	12·6	36 10	189·8	5·43	9·4 12·0	4	·671
2177	+36·3517	17·9	36 23	180·8	2·48	9·5 10·5	3	·695 AB
				153·6	11·87	C=13·7	3	·782 AC
				262·7	16·63	D=13·0	3	·731 AD
2178	+36·3546	21·3	36 41	130·7	2·50	9·5 9·7	2	·605
2179	+36·3554	22·1	36 46	132·0	6·29	9·0 11·5	2	·605
2180	+36·3629	32·9	36 24	120·1	6·05	8·7 10·7	3	·685
2181	+36·3660	37·1	36 24	121·7	2·54	9·3 10·0	2	·760

No. E.	B.D.	1900.		P.	D.	Mags.	Nts.	Date 1925.
		R.A. h m	Decl. ° ′					
2182	+35°3803	19 43.9	35 42	42.2	1.98	9.3 9.4	3	.843
2183		51.6	36 0	96.5	2.54	10.0 11.5	2	.835
2184	+36.3802	55.6	36 16	84.7	4.45	9.2 13.0	2	.758
2185	+36.3890	20 4.6	36 56	240.8	1.99	9.4 9.5	2	.856
2186	+37.3799	6.4	37 11	186.1	3.78	9.5 13.0	4	.683
2187	+37.3810	7.5	37 8	342.0	3.16	9.5 12.5	3	.704
2188	+36.3936	9.3	36 11	67.2	1.81	9.3 11.2	4	.874
2189	+36.3969	11.8	36 55	105.3	5.87	9.3 12.5	3	.846
2190	+36.4037	18.9	36 32	167.5	1.51	9.5 9.6	4	.870
2191	+35.4095	19.7	35 59	179.1	2.16	8.3 11.0	3	.886
2192		21.9	36 49	83.7	2.64	9.7 12.0	3	.738
2193	+35.4126	23.9	35 45	337.0	4.01	9.3 10.5	4	.902 AB
				230.2	6.60	C=14.0	2	.898 AC
				33.2	13.24	D=11.0	4	.902 AD
2194	+36.4169	35.8	36 49	296.6	6.29	9.5 12.5	2	.794
2195	+35.4235	39.6	35 47	92.2	1.77	10.1 11.5	2	.883 BC
				362.7	22.93	A=8.7	3	.886 AB
2196	+35.4260	42.6	35 28	65.8	6.47	9.0 10.5	2	.920
2197	+36.4373	57.5	37 3	82.2	3.83	9.5 12.0	2	.771
2198		59.3	35 27	28.4	2.87	10.0 10.2	2	.931
2199	+35.4450	21 11.2	35 52	93.8	4.12	8.7 12.5	3	.886
2200	+34.4544	46.0	34 23	173.3	1.22	9.7 10.7	3	.860 BC
	<i>h</i> 1699			59.2	13.45	A=9.3	2	.861 AB
2201	+33.4491	22 18.4	33 32	278.6	2.99	9.3 13.0	2	.946
2202	+33.4536	29.8	33 53	271.4	2.33	9.5 12.0	4	.912
2203		39.7	34 11	90.7	2.14	9.5 9.6	3	.799
2204	+33.4620	54.0	33 50	163.0	2.31	9.5 9.6	3	.927
2205	+33.4639	59.4	34 12	78.0	4.70	9.5 12.0	2	.813
2206		23 25.2	33 4	357.2	2.06	10.5 10.9	3	.956
2207	+33.4743	30.5	34 8	243.3	6.91	9.0 10.5	2	.860
2208	+34.4965	32.0	34 23	81.9	2.75	9.4 9.6	3	.829
2209	+33.4823	58.2	33 23	240.3	4.41	8.9 12.0	2	.965

## Notes.

2138. S of two stars.  
 2162. In field with B.D. +35°1974 at P. 67°3, D. 60".  
 2171. S of three stars. At P. 214°6 from B.D. +35°3175.  
 2177. C added by Mr. Milburn, distance uncertain.  
 2192. In field at P. 224°3 with B.D. +36°4065.  
 2193. AD is Scheiner 1128.  
 2200. *h* for AB gives P. 70°0 and, under "Remarks" notes, "Points back to *h* 1697." This would be exactly true with P. 70°0. It does so now no longer.

*New Double Stars.*

Espin No.	B.D.	1900.		P.	D.	Mags.	Nts.	Date 1926.	
		R.A.	Decl.						
		h	m						
2210	..	0	12.1	+32 59	267.8	3.14	9.5 9.6	2	.832
2211	..	1	19.8	33 22	224.2	2.93	10.0 12.0	2	.908
2212	+33.237		22.9	33 32	179.2	6.06	9.2 12.5	2	.011
2213	..		41.7	33 53	207.5	2.19	10.0 10.2	3	.050
2214	+38.985	4	51.4	38 34	37.1	6.37	9.1 13.0	3	.141
2215	..		51.7	38 44	354.8	2.26	9.7 10.5	3	.082
2216	+38.1194	5	24.7	38 38	122.7	3.10	9.5 9.7	3	.167
2217	+38.1257		35.5	38 28	125.4	3.73	9.3 9.5	2	.119
2218	+38.1404	6	4.8	38 57	34.8	2.48	9.3 12.0	3	.162
2219	+39.1618		18.6	39 8	278.2	9.67	9.5 9.5	2	.194
2220	+38.1512		24.9	38 57	13.3	4.29	9.5 9.6	2	.202
2221	..	9	20.2	34 19	249.9	4.73	11.0 11.0	2	.279
2222	+33.1980	10	18.8	33 29	288.3	7.87	9.2 10.5	1	.282
2223	+34.2173		47.9	34 10	199.5	3.43	9.5 13.7	4	.273
2224	+35.2313	12	1.9	34 54	34.8	1.85	9.0 12.0	2	.279
2225	+39.3025	16	37.3	39 51	136.7	2.48	9.5 11.2	3	.574
2226	+39.3028		38.8	39 18	277.5	4.49	9.3 9.8	2	.557
2227	+36.2859	17	18.7	36 13	355.3	4.97	9.5 9.5	2	.579
2228	+35.2975		22.6	35 51	31.1	4.61	9.4 9.5	3	.606

Espin No.	B.D.	1900.		P.	D.	Mags.	Nts.	Date 1926.
		R.A.	Decl.					
2229	+36°2885	h 17 m 28.1	+36° 5'	38.2	4.14	9.3 12.0	2	.583
2230	+36.2887	28.2	36 8	90.2	8.61	9.3 9.5	2	.583
2231	+34.3173	18 14.1	34 53	270.2	7.45	9.0 10.5	3	.640
2232	..	19.8	34 46	191.3	2.85	9.5 11.5	4	.619
2233	+33.3241	48.6	33 14	83.2	2.27	11.5 11.7	2	.710 BC
				123.0	7.12	D = 13.5	2	.710 BD
				246.6	44.86	A = 8.5	1	.709 AB
2234	+32.3251	50.9	33 3	305.3	6.22	9.5 10.5	2	.751
2235	..	53.9	34 45	166.1	2.41	10.1 10.6	2	.606
2236	+34.3387	56.6	34 39	177.8	6.95	9.0 13.0	2	.638
2237	+33.3314	19 1.0	33 25	42.9	9.25	9.1 9.2	2	.821
2238	..	10.1	34 44	216.3	3.43	10.2 10.5	4	.739
2239	+34.3477	11.1	34 56	52.8	5.81	9.5 12.0	3	.759
2240	+34.3577	25.9	34 41	143.5	2.62	12.0 12.5	2	.791 BC
				346.8	11.70	A = 9.2	2	.791 AB
2241	+34.3582	27.3	34 54	30.5	3.10	11.5 11.8	2	.723 BC
				350.3	9.16	D = 13.0	3	.737 BD
				301.0	28.05	A = 9.5	2	.723 AB
2242	+34.3656	35.6	34 27	353.7	2.04	9.3 12.7	3	.827
2243	..	38.4	34 37	218.3	3.52	10.5 11.5	2	.784
2244	+35.3804	44.0	35 16	25.4	3.39	9.6 12.5	5	.675
2245	+35.3808	44.1	35 18	64.6	4.12	9.6 12.5	3	.659
2246	+35.3834	47.5	35 36	239.6	6.55	9.0 13.0	3	.683
2247	+35.3905	55.9	35 27	269.0	4.39	9.2 13.0	3	.708
2248	+35.3969	20 3.5	35 17	34.0	7.79	9.0 13.7	2	.700
2249	..	12.5	35 14	171.2	4.29	10.0 11.5	2	.701
2250	+34.4089	31.4	35 4	123.3	5.74	9.3 12.0	2	.894
2251	+35.4191	33.4	35 20	192.0	4.04	9.5 12.0	2	.650
2252	+35.4258	42.3	35 11	295.4	3.96	8.5 11.0	2	.653
2253	..	44.5	47 32	334.6	3.75	10.0 10.2	1	.704
2254	+35.4405	21 3.6	35 22	275.9	8.08	9.1 9.3	2	.729
2255	+34.4292	4.1	34 25	249.2	4.29	9.5 10.5	2	.894
2256	+34.4308	5.6	34 12	128.0	5.70	8.5 13.0	2	.908
2257	+34.4311	5.7	34 40	271.2	4.19	9.9 12.0	4	.895 BC
				261.4	16.71	A = 9.5	2	.882 AB
2258	+34.4341	9.9	34 39	172.6	3.22	9.2 12.0	3	.853

Espin No.	B.D.	1900.		P.	D.	Mags.	Nts.	Date 1926.
		R.A.	Decl.					
2259	+34°43'69	h 21	m 17°9	+34°59	241°7	4.37	10.0 12.0	2 .650
2260*	+32°41'59		22.3	32 49	63.3	1.58	9.7 12.0	2 .730 BC
	<i>h</i> 935 ?	..	..	23.3	14.58	A = 9.5	3	.724 AB
2261	..		22.5	33 47	139.6	3.95	9.8 10.5	2 .715
2262*	..		22.9	33 53	70±	1.3±	9.5 11.0	2 .907
2263	+33°42'72		24.9	33 31	30.1	3.43	9.7 12.0	2 .782
2264	+32°42'55		42.5	33 0	281.2	7.70	9.3 12.0	3 .789
2265	..		44.9	32 26	23.3	3.20	9.6 10.0	2 .940
2266	+32°42'70		45.4	32 53	108.0	5.89	9.4 10.0	2 .793
2267	+32°43'82	22	13.0	33 8	223.9	2.62	9.5 11.0	2 .676
2268	+32°44'27		22.3	32 15	262.3	5.85	9.3 10.0	2 .793
2269	..		27.0	32 4	61.2	4.00	9.7 13.0	2 .928
2270	..		30.8	32 29	159.9	3.20	9.6 12.0	3 .763
2271	+32°45'03		39.9	32 31	205.4	2.02	9.5 9.5	2 .777
2272	..		44.5	32 38	20.1	2.14	9.5 9.6	2 .777
2273	..	23	30.8	33 52	319.4	4.51	9.6 12.0	3 .863 (1925)

## Notes.

2260. *h* notes that the two observations differ in Decl. by 1°. *β* failed to find the double. The wide pair agrees well with *h*'s place, allowing for the error of 1°.
2262. I was unable to be sure that this star is really double.

*New Double Stars.* By Rev. T. E. Espin and W. Milburn.

The measures of new double stars are arranged as in previous lists. An asterisk in column 1 denotes that additional information is given in the notes. Throughout the year the clear nights have been few and the definition generally poor.

Espin No.	B.D.	R.A. (1900).	Dec.	P.	D.	Mags.	Nts.	Date 1927.
		h m	° ′	°	″			
2274	+32°35	0 12.2	+32 30	166°0	2.16	9.4, 11.7	3	.952
2275	+32.178	57.6	32 20	144.5	3.56	9.7, 10.7	2	.004 (1928)
2276	+34.498	2 36.0	34 19	54.8	5.12	9.5, 9.6	2.	.098 BC
				46.0	31.30	A= 9.3	2	.098 AB
2277	+36.649	3 5.8	36 12	231.8	2.64	9.5, 9.7	2	.563
2278	+38.960	4 46.7	38 14	201.0	3.87	9.5, 13.0	3	.717
2279	..	6 3.8	37 45	285.6	5.33	9.4, 11.5	2	.098
2280 *	+35.1817	8 18.1	34 54	262.4	3.74	9.4, 10.7	2	.250
2281	..	9 8.7	34 25	59.3	2.87	10.0, 12.0	1	.241
2282 *	+33.2034	10 42.1	33 16	330.0	4.16	9.2, 13.5	2	.317
2283	+33.2059	53.4	33 29	104.7	5.29	9.5, 11.0	2	.272
2284	+34.2228	11 27.0	33 56	73.9	2.94	9.5, 9.6	3	.286
2285	+33.2134	32.8	33 20	341.5	9.35	9.5, 10.5	2	.317
2286	+34.3123	18 3.4	34 39	172.4	5.49	9.5, 13.0	3	.642
2287	..	45.6	32 54	287.4	2.87	9.6, 11.0	2	.652
2288	+33.3829	19 4.0	33 53	58.4	4.47	9.5, 9.7	2	.713
2289	+34.3460	9.2	34 17	199.4	2.06	9.5, 12.0	2	.652
2290 *	+33.3373	9.5	33 50	329.2	2.58	9.3, 11.5	3	.721
2291	+33.3399	13.3	33 47	211.9	2.96	9.5, 12.0	3	.748
2292	+33.3398	13.5	33 21	259.4	5.79	9.1, 11.5	2	.755
2293	+33.3418	16.0	33 53	88.6	6.50	9.3, 10.6	2	.701
2294	+33.3420	16.3	33 47	50.5	2.64	9.4, 12.5	2	.713



Espin No.	B.D.	R.A. (1900).	Dec.	P.	D.	Mags.	Nts.	Date 1927.	
		h m	° ′	°	"				
2295	+33°34'85	27.3	33 46	202.2	4.18	9.0, 12.0	2	.762	
2296	+34°36'11	30.4	34 25	126.1	3.60	9.3, 12.0	2	.652	
2297 *	+33°35'25	33.7	33 19	180.0	7.66	8.7, 9.0	3	.821	AB
				283.2	20.23	C= 10.0	2	.834	AC
2298	+34°36'63	37.5	34 13	317.5	7.74	9.2, 13.0	2	.685	
2299	+34°37'62	48.2	34 34	125.4	6.74	9.5, 14.0	3	.721	
2300	+34°37'64	48.4	34 34	252.2	3.70	9.5, 12.4	3	.721	
2301	+33°36'50	51.3	33 59	286.8	3.29	9.5, 13.0	3	.705	
2302	+34°39'59	20 13.9	34 59	350.5	3.30	9.3, 11.5	3	.661	
2303	+34°40'02	20.4	34 57	22.6	4.97	9.2, 10.6	4	.711	
2304	+34°40'52	26.1	34 34	45.7	3.16	9.2, 13.0	3	.748	
2305	+34°40'54	26.7	34 32	288.4	6.47	9.2, 12.0	3	.748	
2306	+34°40'72	29.0	34 55	326.2	6.85	9.2, 13.5	3	.661	
2307	+34°40'90	31.6	34 29	84.0	4.14	9.3, 12.0	3	.680	
2308	+33°39'65	32.2	34 5	237.5	7.28	9.4, 12.0	2	.734	
2309	+33°39'95	38.4	33 18	162.4	4.60	9.4, 11.2	2	.862	
2310	+33°40'00	39.1	33 49	34.8	4.77	9.3, 9.8	2	.839	
2311	+33°40'14	40.7	33 35	38.0	7.30	9.2, 14.0	3	.833	
2312	+33°40'91	52.1	33 12	17.6	3.10	9.5, 11.5	2	.846	
2313	+33°41'71	21 3.7	33 57	183.5	6.68	9.5, 14.0	3	.705	
	(h 1614)	..	..	257.8	10.34	C= 10.5	3	.705	
	+33°41'74	6.4	33 54	33.6	13.66	9.0, 10.0	2	.713	
2314	+33°41'86	7.1	33 57	212.5	5.93	9.2, 9.4	3	.705	
2315	+33°41'88	7.5	33 54	38.4	4.82	9.3, 11.5	2	.669	AB
				56.5	11.18	C= 13.0	2	.698	AC
2316	+32°40'97	10.1	33 8	5.9	5.67	8.5, 9.6	3	.820	
2317	+33°42'13	12.1	33 15	305.7	8.70	8.5, 13.2	2	.755	
2318	+32°41'78	26.2	32 24	75.8	4.29	9.5, 11.0	2	.772	
2319	+31°45'19	34.2	31 50	56.2	6.10	9.2, 13.0	3	.825	
2320	+32°42'21	34.9	32 14	322.7	2.84	9.5, 12.0	3	.687	BC
				199.0	13.55	A= 9.2	3	.687	AB
2321	+32°42'79	47.8	32 24	99.0	2.11	8.5, 11.5	3	.714	
2322 *	..	48.8	31 37	276.3	4.26	10.0, 11.5	2	.884	
2323	..	22 5.5	31 40	326.4	3.29	9.5, 13.0	2	.755	
2324	+31°46'86	17.6	31 18	142.1	3.43	9.5, 9.6	2	.758	
2325	+31°48'04	48.8	31 31	244.8	5.77	9.5, 9.5	2	.755	
2326	+32°46'81	23 34.4	32 28	172.5	1.95	9.8, 12.0	4	.793	
2327	+31°49'53	36.5	32 14	48.5	3.59	9.5, 9.7	2	.992	
2328	+32°46'94	38.2	33 0	167.9	6.71	9.2, 11.2	3	.806	AB
				346.2	7.41	C= 11.0	3	.806	AC

## Notes.

2280. S.P. of two.

2282. An 11 mag. at P. 252°, D. 26", and a 10 mag., more distant at P. 318°.

2290. A 12 mag. at P. 73°, D. 17", another more distant at P. 67°.

2297. An 11 mag., more distant than C., at P. 148°.

2322. Forms distant comes to B.D. +31°45'69, which star has at P. 80° an 11.5 nearer, with a 14 mag. S.F.

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*New Double Stars.* By Rev. T. E. Espin

The arrangement of the lists of New Double Stars is similar to that of previous communications, and therefore needs no further explanation.

Espin. No.	B.D.	(1900).		P.	D.	Mags.	Nts.	Date 1928.		
		R.A.	Decl.							
		h	m	°	'					
2329	+33°197	1	10·9	+33	16	127·7	3·85	9·5 13·0	2	·018
2330*		2	9·3	32	58	198·9	2·01	10·0 10·2	3	·047
2331	+36·659	3	7·3	36	26	124·7	1·94	9·5 10·6	4	·027
2332	+35·675		16·7	36	3	250·2	7·40	9·5 11·0	3	·067
2333	+36·748		39·5	36	16	150·8	5·65	9·5 11·7	2	·023
2334*			46·0	35	27	242·4	3·49	10·5 11·0	4	·098

Espin. No.	B.D.	1900.		P.	D.	Mags.	Nts.	Date 1928.
		R.A.	Decl.					
		h	m					
2335	+36°774	47	8	248°4	2"81	8.5 12.0	2	.023
2336	+36°869	4	13.4	36 8	103.2	1.81	4	.075
2337	+37°979	45	8	37 39	244.5	2.39	3	.034 BC
				116.5	24.55	A = 9.5	3	.049 AB
2338	+38°981	50	4	38 28	271.5	6.02	3	.047
2339	..	59	5	37 20	340.5	3.51	2	.157
2340	+37°1213	5	23.9	37 20	191.3	2.91	1	.027 BC
				356.8	40±	A = 9.3	1	.027 AB
2341	+37°1343	45	9	37 29	303.2	4.01	2	.026
2342	+37°1442	6	6.4	37 43	241.2	7.16	2	.115
2343	+37°1445	7	1	37 27	144.8	3.62	1	.159
2344	+35°1681	7	40.9	35 42	42.7	3.70	2	.157
2345	+34°1819	8	18.1	34 29	214.0	6.41	1	.238
2346	+34°1866	30	9	34 41	190.6	2.21	3	.184
2347	+32°1928	9	38.8	32 46	249.0	7.54	1	.238
2348	..	48	3	32 45	312.5	2.16	1	.238 AB
				124.2	5.75	C = 12.5	1	.238 AC
2349	+33°3563	19	37.8	33 9	7.4	3.76	4	.833
2350	+33°3723	20	1.0	33 17	211.6	2.78	3	.859
2351	..	1	8	33 12	271.7	4.45	3	.876
2352	+33°3741	2	9	33 11	230±	3±	1	.868 BC
				47±	30±	A = 8.0	1	.868 AB
2353	+32°3815	21	1	32 44	148.1	2.49	4	.882
2354*	+33°2933	27	3	33 17	311.4	6.58	2	.696
2355*	..	31	1	33 12	7.3	2.50	1	.717
2356	+32°3978	49	1	32 38	240.2	5.53	3	.892
2357	+32°4028	57	9	32 22	334.0	8.43	3	.889
2358	..	57	9	32 25	193.4	5.22	2	.885
2359	+31°4512	21	33.5	31 16	78.9	2.71	2	.829
2360	..	51	5	31 13	262.1	3.76	2	.912
2361	..	22	1.3	30 31	275.0	4.41	2	.932
2362	+30°4861	56	7	30 31	171.2	2.00	3	.942

## Notes.

2330. Two stars here; the S. one is assumed to be B.D. +32°406.  
 2334. Star, mag. 11.5, at P. 224°3, D. 17"9.  
 2354. M.P. 312°5, D. 6.66, 9.3, 10.7, 1 nt. 1928.797.  
 2355. M.P. 9°4, D. 2"22, 1928.797.

*New Double Stars.*

Espin No.	B.D.	1900.		P.	D.	Mags.	Nts.	Date 1929.	
		R.A.	Decl.						
		h	m						
2363	+30° 115	0	41·1	+30° 48	30·3	2·93	9·5 9·6	4	·976
2364	+30° 126		48·3	30 27	133·4	7·61	9·0 12·5	3	·992
2365	+31° 189	1	4·8	32 12	65·8	5·95	9·0 11·0	2	·995
2366	..		58·0	33 20	85·4	7·43	10·2 10·5	2	·001 (1930)
2367	+31° 3462	19	2·5	31 49	319·8	6·55	9·2 9·4	2	·719
2368	+31° 3496		7·9	32 2	298·7	4·08	9·0 12·5	2	·679
2369	+31° 3628		26·6	31 47	98·6	7·82	9·2 13·0	2	·742
2370	+32° 3555		42·3	32 25	97·7	3·44	9·5 9·6	2	·679.
2371	..	19	46·1	32 28	256·4	7·93	10·0 11·5	3	·779 AB
					168·2	2·65	12·0 13·0	4	·788 CD
					127·8	16·82	..	4	·800 AC

Espin No.	B.D.	1900.		Decl.	P.	D.	Mags.	Nts.	Date		
		R.A.									
	°	h	m	°	'	"			1929.		
2372	..	19	47.1	+32	21	127.8	2.49	11.0 12.0	3	.741	
2373	..	20	2.3	33	11	107.1	4.64	10.0 13.5	3	.830	AB
						60.2	7.57	C=13.0	3	.830	AC
2374	+31.4038		16.0	31	4	101.2	9.80	9.5 11.0	2	.872	
2375	+31.4095		24.0	32	0	14.0	6.89	8.5 12.0	2	.812	
2376	+32.3912		39.7	32	21	124.0	6.74	9.3 11.0	2	.821	
2377	..		44.1	33	4	207.4	3.45	10.8 11.0	2	.872	
	+33.4033		44.7	33	11	83.8	24.86	8.5 9.5	1	.871	
2378	..		46.3	33	15	18.2	5.91	10.5 10.8	3	.866	
2379	+31.4251		49.0	31	58	123.8	6.58	9.0 12.0	2	.857	
2380	..		49.3	31	57	321.9	5.33	10.7 10.9	2	.857	
2381	+31.4283		53.6	31	48	102.3	3.88	9.5 13.0	3	.858	
2382	..	21	22.6	33	11	235.9	5.65	..	2	.934	
2383	..		28.0	33	14	35.2	5.90	9.8 12.0	2	.921	
2384	..		28.7	33	14	40.7	6.37	10.5 11.0	2	.884	
2385	+32.4245		40.6	32	54	265.4	4.74	9.3 14.0	3	.893	
2386	..		44.4	32	23	230.2	5.66	9.8 11.0	3	.901	
2387	..		55.9	31	59	312.6	6.60	10.0 10.0	3	.950	
2388	+32.4356	22	6.5	33	3	121.2	6.08	9.4 13.3	3	.815	
2389	+35.4772		16.7	35	14	26.8	6.86	9.2 11.5	3	.987	
2390	..		19.4	31	56	321.2	7.01	10.5 10.7	2	.953	
2391	..		21.7	33	13	55.5	4.58	12.0 12.0	3	.944	
2392	+34.4709		27.9	34	44	46.7	6.91	9.5 12.0	3	.987	
2393	..		33.3	34	35	209.3	5.28	11.0 11.0	3	.959	
2394	..		35.1	34	43	315.9	5.10	10.2 11.5	2	.953	
2395	..		42.8	32	54	333.7	7.01	11.0 11.0	3	.980	
2396	..		47.5	32	17	153.9	5.08	9.6 10.2	1	.996	
	+34.4814		55.3	34	35	264.3	11.67	9.4 10.5	3	.939	
	+32.4611	23	11.1	32	39	105.7	13.87	9.3 11.0	1	.846	
2397	..		31.3	34	6	317.2	5.14	9.7 12.2	4	.973	
2398	..		37.4	32	35	272.8	8.72	9.7 9.9	2	.898	
2399	+34.4991		37.7	34	31	72.4	6.29	9.6 10.7	2	.990	
2400	..		58.1	32	42	104.6	6.10	10.5 10.5	3	.961	

## Notes.

2366. 10 sec. P.,  $4\frac{1}{2}'$  N. of Ho. 3.  
 2385. S. star of pair.  
 2391. 20 sec. P., B.D. +32°.4429.  
 2392. Two comites N.  
 2396. Some doubt as to place.  
 2398. S.P. star of a triangle.

*New Double Stars.* By T. E. Espin

The following new double stars have been found and measured with the 24-inch and 17 $\frac{1}{4}$ -inch Calver reflectors during the year 1930. The arrangement of the lists is similar to that of the previous ones.

Espin No.	B.D.	1900.		P.	D.	Mags.	Nts.	Date 1930.
		R.A.	Decl.					
2401	..	h m 0 21.3	° ′ +35 6	357.4	8.01	11.0 11.1	3	+0.22
2402	..	1 2.4	31 21	233.7	3.26	9.8 12.0	3	.035
2403	+31.284	32.0	31 18	277.3	6.62	9.5 11.0	3	.370
	+31.289	33.8	31 40	339.0	15.91	9.2 9.2	2	.522
2404	+30.318	55.1	31 12	324.1	10.38	8.9 14.5	4	.532
2405	+31.352	55.4	31 18	267.2	7.10	8.5 10.5	2	.057
2406	..	2 13.5	31 40	205.6	3.70	10.0 12.0	2	.934
2407	+32.443	22.1	32 24	278.3	5.83	9.6 9.6	2	.528
2408	+32.472	29.5	32 56	357.3	7.91	9.5 11.0	4	.761
2409	+32.476	32.4	32 42	72.2	10.14	9.5 14.0	2	.005 (1931)
2410	..	4 39.2	35 4	255±	6±	11.0 11.0	1	.052
2411	+32.2165	11 30.5	32 7	327.7	5.87	9.5 12.0	1	.328
2412	+33.2137	33.8	32 58	328.6	2.24	9.7 9.8	1	.328
2413	+33.2289	12 53.8	33 25	349.8	5.79	9.5 11.0	1	.364
2414	..	13 28.5	34 33	268.1	2.45	10.5 10.5	1	.364
2415	+34.2461	47.5	34 29	63.4	5.83	9.5 11.5	1	.402
2416	+34.2548	14 10.1	34 40	184.8	2.54	9.5 10.0	1	.364
2417	..	15 8.2	34 42	168.4	3.75	10.0 10.2	1	.402
2418	..	18 23.0	32 7	230.5	4.71	9.6 10.5	3	.681
2419	..	30.6	32 0	157.3	3.54	11.0 11.0	3	.628
2420	+31.3294	30.6	31 55	175.0	5.06	9.5 9.5	3	.628
2421	+30.3340	50.3	30 53	66.5	6.63	9.3 10.0	2	.782
2422	+31.3407	53.0	31 4	174.8	5.31	9.0 12.0	2	.698
2423	..	19 9.4	31 15	195.1	3.06	10.5 10.5	2	.652
2424	..	32.9	30 40	348.0	4.79	10.0 10.2	3	.818
2425	..	35.4	30 52	29.3	4.41	10.0 11.0	3	.775
2426	+31.3769	42.8	31 9	263.3	3.80	9.4 11.0	3	.756
2427	+31.3800	46.2	31 43	64.2	4.01	9.3 11.0	2	.723
2428	+31.3815	48.2	31 32	246.4	3.78	11.0 11.0	2	.801 BC
				92.2	87±	A=8.5	2	.801 AB

Espin No.	B.D.	1900.		P.	D.	Mags.	Nts.	Date 1930.	
		R.A.	Decl.						
		h	m	°	'	°	"		
2429	..	19	48.6	31	41	112.1	5.35	9.5 12.7	4 +.818
2430	+32.3668		56.8	32	15	270.9	5.57	9.5 12.0	2 .617
2431	+31.3970	20	5.7	32	0	185.9	6.00	9.5 12.0	2 .652
2432	..		13.0	31	46	114.9	5.31	10.0 10.0	2 .689
2433	+31.4076		21.1	31	39	270.0	7.27	8.5 10.0	3 .656
2434	+31.4074		21.1	31	21	286.1	4.76	10.0 10.2	2 .845
2435	+30.4044		24.2	31	4	255.6	3.75	9.3 10.0	2 .862
2436	+31.4120		28.0	31	16	316.0	5.40	9.3 10.5	3 .832
2437	+31.4227		45.0	31	26	46.1	7.25	9.3 13.0	3 .826
2438	+31.4284		53.6	31	38	311.3	6.95	9.5 12.5	2 .842
2439	..	21	2.6	31	58	155.5	4.31	11.0 11.0	4 .874
2440	+31.4356		5.6	31	19	202.4	5.00	9.5 10.5	2 .864
2441	..		24.7	30	31	96.6	4.35	10.0 10.0	2 .689
2442	..		25.1	30	23	255.6	5.40	10.0 11.0	3 .771
2443	+36.5141	23	54.6	37	14	149.5	7.33	10.5 11.0	3 .989 BC
						232±	75±	A=7.0	.989 AB
2444	..		58.1	36	41	256.4	6.78	10.0 10.3	3 .955

## Notes.

2405. Companion very faint on all nights, and observations unsatisfactory.  
 2424. Two *comites* 13 and 13½ mags. at P. 289° and 225°.  
 2430. Third star, 11 mag. at P. 42°, D. 11½".

*New Double Stars*

The observation of the B.D. stars between  $+65^\circ$  and  $+30^\circ$  being completed in certain parts of the sky, it seemed well to continue the work of Scheiner, *Katalog von Doppelsternen der Photographischen Himmelskarte aus der zone von  $+31^\circ$  bis  $+40^\circ$  Deklination* (Publikationen zu Potsdam, Nr. 59). This was made possible by the receipt of the charts made at Uccle under the direction of Professor Stroobant, which he has kindly sent to us. The following list contains many of these objects found on the charts, and measured with the 24-inch reflector.

Espin No.	B.D.	1900		P.	D.	Mags.	Nights	Date 1931	
		R.A.	Decl.						
		h m	° '						
2445	...	0 8.3	+37 28	78.1	8.28	10.0 10.2	3	.801	
2446	...	8.9	34 23	90.4	6.43	10.0 11.5	2	.447	
2447	+37.80	24.9	37 44	246.4	10.59	9.3 10.0	3	.886	
2448	...	57.6	39 8	57.9	3.81	10.0 11.0	2	.824	
2449	...	1 21.3	37 11	178.0	6.81	10.5 10.7	3	.912	
2450	...	27.9	37 50	258.7	10.41	10.0 10.5	2	.888	
2451	...	2 10.1	37 22	55.3	4.88	10.7 11.2	2	.935	
2452	...	21.0	37 50	200.8	7.01	11.0 11.0	2	.935	
2453	...	28.9	37 55	73.8	7.78	11.0 11.5	2	.935	
2454	...	43.6	37 59	177.4	7.74	9.5 10.0	3	.937	
2455	...	47.1	37 41	202.8	7.49	9.8 11.0	2	.949	
2456*	+32.567	3 1.8	32 28	104.7	1.95	9.5 11.0	2	.514	
2457	...	5.9	37 45	26.1	3.93	10.0 12.0	2	.935	
2458	...	25.3	37 42	39.5	3.76	10.0 10.1	3	.936	
2459*	+35.759	46.4	35 14	213.6	4.66	9.2 10.0	1	.958	
2460*	+35.765	47.3	35 22	123.8	2.96	9.5 9.5	1	.958	
2461	...	57.8	37 30	45.6	7.89	10.0 10.2	2	.925	
2462*	...	4 6.3	37 36	176.9	4.12	11.0 11.5	2	.949	
2463	+35.862	17.3	35 21	153.6	4.49	9.5 12.0	2	.935	
2464	+34.898	32.7	34 15	289.4	7.37	9.5 13.5	1	.0684	
2465	+36.953	46.1	36 16	74.9	5.24	9.5 12.0	1	.9583	
2466	+34.1000	5 13.1	34 15	305.2	6.87	9.3 12.0	1	.068	
2467	...	6 22.6	34 39	267.4	4.66	10.5 10.5	1	.068	
2468	+34.1452	40.5	34 57	103.0	5.91	9.3 12.0	1	.068	
2469	+34.1537	7 2.6	34 23	310 ± 220 ±	7 ± 9 ±	9.5 13.0 11.0	1 1	.068 .068	AB AC
2470	...	12 2.2	33 26	136.0	4.16	9.5 11.0	1	.356	
2471	+33.2300	13 1.8	33 12	32.1	8.37	9.2 14.0	3	.370	
2472	+33.2330	16.7	33 15	86.7	7.01	9.2 13.5	2	.349	
2473	...	36.4	32 41	132.7	6.25	11.0 11.0	2	.378	
2474	+34.2470	50.9	33 57	339.2	2.62	9.7 10.7	2	.339	
2475	+32.2533	14 53.7	31 54	220.2	2.16	10.0 10.0	1	.381	
2476	...	15 9.4	33 6	215.7	2.79	10.5 11.5	1	.381	
2477	...	17 52.6	36 37	0.4	3.86	11.5 12.0	2	.590	
2478	...	56.1	38 3	245.7	5.21	10.5 11.0	2	.645	
2479	+36.3000	59.0	36 43	235.3	8.74	9.5 11.5	2	.590	
2480	...	18 6.7	37 12	351.4	5.08	10.5 11.0	3	.687	
2481*	...	30.0	37 22	155.1	3.46	10.5 11.0	4	.663	
2482	...	41.1	37 27	155.8	6.60	10.0 10.5	3	.646	



Espin No.	B.D.	1900		P.	D.	Mags.	Nights	Date 1931	
		R.A.	Decl.						
		h m	° '						
2483	...	18 41.4	36 45	277.8	5.04	10.5 11.0	2	.699	
2484	...	42.9	37 39	328.5	5.30	11.0 11.2	3	.704	
2485	...	51.6	36 37	164.4	5.99	11.0 11.5	3	.779	
2486	...	52.4	36 59	280.9	6.58	10.5 11.6	2	.782	
2487	...	19 12.1	37 37	266.0	4.83	10.0 10.2	2	.717	
2488	...	13.7	37 39	255.8	4.03	11.0 11.7	2	.717	
2489*	U Lyræ	16.6	37 42	181.6	9.37	Var. 13.0	3	.783	
2490	+37.3421	17.3	37 28	12.0	6.76	10.0 10.2	3	.804	BC
				40.3	18.72	A=9.2	3	.804	AB
2491	...	17.7	37 9	357.1	4.91	10.7 10.8	3	.735	
2492	...	20.5	37 47	155.3	7.04	10.0 10.5	3	.748	
2493	...	23.8	37 15	307.9	7.01	9.7 10.8	3	.639	
2494	+36.3620	32.3	36 59	97.2	5.29	9.5 12.0	3	.793	
2495	...	33.9	37 57	147.3	5.89	10.5 11.0	3	.779	
2496	...	34.8	38 0	12.9	4.91	9.7 13.0	2	.694	
2497	...	35.2	37 28	247.3	5.51	9.5 11.0	2	.691	
2498	...	42.7	37 11	171.9	5.39	10.6 11.7	3	.769	
2499	...	45.4	37 16	148.2	6.06	10.0 11.5	2	.793	
2500	...	51.9	37 30	312.9	5.14	10.5 11.2	4	.772	
2501	...	59.4	37 25	124.6	2.96	10.5 11.0	4	.795	
2502	...	20 13.9	37 47	325.1	4.85	10.5 11.0	3	.694	
2503	...	14.7	36 40	94.6	3.43	10.5 10.7	4	.655	
2504	...	15.5	38 3	104.6	7.62	10.5 11.0	2	.835	
2505	+37.3889	16.0	37 24	253.0	6.49	9.0 12.5	3	.804	
2506	...	18.8	36 37	149.2	5.62	10.5 10.7	2	.694	
2507	...	24.3	37 53	84.8	7.72	10.5 11.0	2	.773	
2508	...	25.1	37 52	322.2	6.35	9.7 12.0	3	.743	
2509	...	25.9	37 13	242.6	3.13	10.0 10.5	5	.678	
2510	...	32.0	36 14	333.4	6.35	11.1 11.2	2	.876	
2511	...	32.4	37 51	257.5	5.63	11.0 11.2	5	.802	
2512	...	37.4	37 40	331.8	6.84	10.0 12.0	3	.676	
2513	...	41.1	36 29	280.5	6.76	11.0 11.5	3	.865	
2514	...	42.2	36 31	120.9	5.39	10.0 11.0	4	.873	
2515	+36.4228	42.4	36 24	168.6	6.60	9.3 12.5	3	.899	
2516	...	48.6	37 36	216.8	6.00	9.7 10.8	3	.722	
2517	...	21 18.1	37 8	113.9	4.62	10.5 11.0	3	.800	
2518	...	18.2	39 45	247.1	2.67	10.0 11.5	3	.728	
2519	...	19.3	37 35	93.0	5.78	10.5 10.8	2	.725	
2520	...	23.2	37 26	241.9	5.74	10.0 11.5	3	.781	
2521	+36.4660	38.8	37 6	196.7	7.51	9.0 12.0	2	.876	
2522	...	39.5	37 55	94.1	4.21	9.5 13.0	3	.909	
2523	...	51.5	36 40	28.4	3.91	11.0 11.0	2	.769	
2524	...	51.7	37 24	279.7	5.28	11.0 11.0	3	.763	
2525	...	52.2	36 56	106.6	7.26	9.5 11.0	2	.919	
2526	...	53.1	37 3	257.6	5.04	11.0 11.1	2	.927	BC
				87.3	16.66	A=9.8	2	.927	AB
2527	...	54.6	37 16	323.8	7.73	10.5 10.7	3	.808	
2528	...	58.9	37 35	85.8	4.43	10.5 11.5	2	.769	
2529	...	59.3	37 56	270.6	4.60	11.0 11.0	2	.694	
2530	...	22 11.3	37 41	311.0	6.34	10.1 10.6	3	.670	
2531	...	16.7	37 14	238.4	3.13	11.0 11.0	2	.657	
2532	...	30.4	36 31	292.6	6.08	9.7 10.2	2	.739	

Espin No.	B.D.	1900		P.	D.	Mags.	Nights	Date 1931
		R.A.	Decl.					
		h m	° '					
2533	...	22 34.0	37 23	314.6	7.45	11.0 12.0	2	.950
2534	...	46.7	36 42	67.2	5.82	10.0 10.1	3	.650
2535	+37.4750	58.0	37 26	201.5	6.03	9.5 11.2	3	.774
2536	+37.4776	23 5.6	37 40	246.5	5.90	9.0 12.0	2	.950
2537*	...	11.6	37 7	54.7	5.58	11.0 11.2	1	.958
2538	...	12.4	37 23	38.1	4.39	10.0 12.0	4	.718
2539	...	14.6	37 53	47.0	6.00	11.0 11.5	3	.853
2540	...	16.6	36 55	314.1	6.04	10.0 10.0	2	.706
2541	...	46.6	38 11	271.3	6.72	10.5 11.0	2	.871
2542*	...	54.4	38 9	274.2	2.79	10.5 11.5	5	.847
2543*	...	54.9	39 31	251.6	4.83	11.0 12.0	5	.312

*Notes on stars marked \**

2456. M. 1931.994. P.  $103^{\circ}8$ .
2459. M. 1931.994. P.  $219^{\circ}6$ , D.  $4''21$ .
2460. M. 1931.994. P.  $130^{\circ}9$ , D.  $3''12$ .
2462. M. 1931.994. P.  $179^{\circ}8$ . Mags. 10.0, 10.2.
2477. SP  $\beta$  Lyræ.
2481. N. star of two.
2489. U Lyræ.—The star was noted on October 2 as 0.2 mag. above B.D. +37°3430, mag. 8.4 in B.D., and was found to be a fine example of Type N (IV Type) in spectroscope.
2503. 3' S. of 36 Cygni.
2506. 1' N. of B.D. +36°4035.
2509. 3' N. of Weisse 35.
2513. S. star of a pair.
2517. 9.6 sec. P.B.D. +36°4531, 9.0 mag.
2521. A comes at P.  $93^{\circ}$ .
2537. M. 1931.994. P.  $55^{\circ}9$ .
2542. N. star of pair.
2543. A 13 mag., P.  $68^{\circ}5$ , D.  $20'' \pm$ .

Espin No.	B.D.	1900				P.A.	Dist.	Mags.		Nights	Date 1932 +
		R.A.		Decl.							
		h	m	°	'						
2544*	...	0	8.9	+39	23	90.4	6.43	10.0	11.5	2	.446
2545	+36.73		25.1	37	10	246.9	10.92	9.5	10.0	2	.018
2546	...		29.6	37	29	185.4	6.12	10.8	11.0	2	.018
2547*	...	1	7.9	30	25	57.2	4.89	11.0	12.0	2	.457
2548	...		21.3	37	9	167.7	6.81	11.5	12.0	2	.041
2549	...		29.2	36	36	202.1	5.68	11.0	11.1	2	.067
2550	...		42.8	36	46	107.2	3.34	11.0	11.0	2	.069
2551*	...	2	19.1	36	40	22.6	4.81	11.0	11.7	3	.086
2552	...		43.5	36	39	249.7	4.02	10.7	10.9	2	.077
2553	...		43.5	36	56	168.9	6.63	10.5	12.0	2	.067
2554	+37.650		48.0	37	29	159.5	6.71	9.3	11.0	3	.068
2555	...		48.1	36	18	179.4	6.18	10.2	10.3	2	.093
2556	...	3	6.4	36	54	202.0	7.24	10.0	10.1	2	.073
2557	...		10.7	36	26	62.6	3.08	10.7	11.0	3	.122
2558	+35.673		15.6	35	17	257.3	6.48	9.0	13.0	2	.067
2559	+35.709		25.6	35	14	277.9	4.35	9.5	10.7	2	.075
2560	...		37.7	36	51	316.3	7.90	10.5	12.0	2	.106
2561	+36.814		58.4	36	28	57.5	6.48	8.5	12.0	2	.139
2562*	+37.944	4	29.0	37	48	43.2	6.25	11.0	11.4	2	.100
2563	+36.1185	5	28.4	36	50	138.8	3.62	10.0	12.5	1	.183
2564	...	6	19.4	38	5	262.6	5.08	10.0	11.5	1	.071
2565	...	9	10.7	36	5	285.6	10.04	10.5	11.0	1	.279
2566	...	10	13.3	36	50	37.6	4.58	11.0	11.1	1	.279
2567*	...	17	46.2	37	58	196.6	6.16	11.0	11.0	1	.583
2568	...		48.4	37	57	36.6	9.27	9.7	10.0	2	.576
2569*	+39.3341	18	7.4	39	2	273.7	9.30	9.5	10.0	2	.572

BC

Espin No.	B.D.	1900				P.A.	Dist.	Mags.	Nights	Date 1932 +
		R.A.		Decl.						
2570*	...	<sup>h</sup> 18	<sup>m</sup> 15.6	<sup>°</sup> +39	<sup>'</sup> 15	<sup>°</sup> 313.6	<sup>"</sup> 6.79	10.5 10.5	1	.583
2571*	...		32.9	38	53	71.8	6.03	10.5 10.7	2	.577
2572	...		44.6	38	51	66.6	6.59	10.0 11.5	2	.577
2573*	...		54.4	38	44	22.0	5.29	11.0 11.5	2	.577
2574*	...	19	25.0	38	25	96.7	5.50	11.0 11.5	1	.583
2575*	...		42.3	39	21	188.3	3.91	10.6 10.6	1	.564

*Notes on stars marked \**

Nos. 2544 and 2547. Measured in 1931.

2551. Comes to B.D. +36.478 at P. 315°.5.

2562. AB; 354°.7; 30".2: 1932.071.

2567. M. 1932.68. P. 193°.4, D. 5.85, 3nts. Comes 10.7, P. 260°.7, 25" ±.

2569. M. 1932.68. P. 275°.2, D. 9".28, 2 nts.

2570. M. 1932.69. P. 312°.2, D. 6".00, 2 nts.

2571. M. 1932.64. P. 72°.6, D. 6".04, 1 nt.

2573. M. 1932.68. P. 20°.6, D. 4".31. Mags. 11.0, 12.4, 2 nts.

2574. M. 1932.64. P. 95°.3, D. 4".79, 1 nt.

2575. M. 1932.64. P. 189°.2, D. 3".29. Mags. 9.5, 9.6, 1 nt.