

Kodaikanal Observatory.

BULLETIN No VIII

WIDENED LINES IN SUNSPOT SPECTRA

No 739 A (Gr 5775)

LAT + 7

LONG 104

CLASS—IVa IVb

Date—1908 January 9—19

W	l	gth	M	N	ml	f
			w	b	t	
			l			
4882 020			8		3	
4882 783					1	
4884 919			9		7	
487 071			7		5	
4885 204			6		4	
491 411			7		4	
4928 11			6		2	
4965 107			6		1	
001 165			8		2	
5009 829			7		7	
5013 479			7		3	
5016 840			8		4	
0230 2			8		0	
5025 716			7		1	
5018 761			5		1	
5045 58			7		5	
5066 174			9		6	
5077 532			8		1	
5085 688			7		1	
5087 239			6		2	
5130 543			0		1	
5134 697			6		2	
5136 270					3	
5147 6			9		6	
51 0 363			8		6	
5219 27			7		7	
225 695			8		0	
5300 578			8		1	
5300 920			8		1	
5369 041 ?			8		1	
5389 125 ?			8		1	
5426 471			9		7	
5430 572			8		0	
5480 207			7			
5490 005			7		2	
5 27 859			7		7	
5671 071			8		7	
567 047			8		7	

W	l	gth	M	N	ml	f
			w	b	t	
			d			
5709 797			8		2	
5707 204			8		8	
5727 978			7		8	
791 437					3	
5787 288)			
5743 045			9		0	
5866 075			7		1	
Ob			-S 9		1 G N	

No 745 A (Gr 5785)

LAT - 13

LONG 332

CLASS—I IIc III' IIIa

Date—1908 January 3—28

W	l	gth	M	N	ml	f
			w	b	t	
			d			
4963 833			3		1	
4861 919)		3	
4875 071			8		2	
188 04			(
4935 107			7		3	
5009 8)			8		(
5013 179			7		1	
5028 05			4		3	
5013 761			5		3	
5015 522			6		4	
083 0 6			5		2	
5066 174			7		(
5085 341						
5087 239			0			
5134 037					1	
5136 270			6		2	
5139 037						
5140 553					1	
5140 034					1	
5141 497			7		1	
5143 001					3	
5147 052			8		(
5149 013			7		1	
5150 303			7		(
5156 823			4		1	

W l tl	M wd g	N mb b t f
5180 419	4	1
703 200	4	1
5219 875	8	5
522 695	7	2
5238 742	6	3
5280 561		1
5300 929		1
5304 355	5	2
28 474	9	6
5400 5 2	8	0
547 01	5	1
490 367	7	6
5490 905	5	2
5627 8 9	6	5
56 1 071	7	6
5672 047	7	6
5 03 707		1
5707 204		1
572 873	7	4
5781 137	7	4
573 288	9	6
743 645	8	5
5860 6		1
5887 785	5	1
6039 953	6	2
6068 080	6	2
6199 398	7	1
6243 320	9	2
6 93 170	7	2
6303 024	8	2
6573 030	7	1
Ob	-SS	IGN

No 750 (Gr 5791)

LAT + 18

LONG 233

CLASS—V III_a I

Date—1906 January 9—February 4

W l gth	M wd g	N mb b t f
4864 919	8	4
4875 6 1	7	3
4885 2 4	7	1
4915 414	7	1
4928 511	7	4
4985 107	7	3
5001 185	8	3
5009 829	7	7
5018 479	8	
010 40	7	2
5020 208	6	1
50 3 052	8	4
5045 582	6	6
5058 056	5	4

W l th	M n wd ing	N mb b rv t f
5086 174	6	7
087 239	6	4
5130 548	8	1
5136 270	8	1
5148 901	6	3
5147 652	8	7
5150 868	7	5
52 9 87	7	7
5225 695	8	4
5238 742	6	3
5300 578	6	1
5300 929	8	1
5304 355	6	2
5407 587	8	1
407 088	8	1
5120 510	8	2
5420 618	8	1
5426 474	8	7
5460 572	7	7
5460 387	7	6
5627 850	7	0
5671 071	8	7
772 047	8	7
5703 797	8	3
5707 204	8	3
5727 873	7	3
5 31 437	7	3
5737 288	9	7
5 43 645	10	4
6039 953	6	1
6068 080	6	1
6243 3 0	9	1
6293 170	7	1
6303 024	8	1
6573 030	8	1
Ob	SS	dGN

No 755 (Gr 5798)

LAT + J

LONG 107

CLASS—IV_a IV_b IV_c I

Date—1906 February 6—12

W l gth	M d g	N mb b t f
4802 029	8	1
4862 783	7	1
868 838	7	1
4864 919	8	4
4868 1 1	7	1
4875 671	7	3
4885 264	7	2
4918 808	6	1
4925 511	7	2
4935 107	7	5

W lngth	M n w d g	N mb f b t
5084 244	4	1
5086 174	8	8
508 841	5	3
5086 688	4	1
5087 239	6	6
5088 381	4	1
719		
5092 058	6	1
5096 908	5	1
5106 628	5	2
5106 773	5	2
5111 802	4	1
5130 548	8	1
5134 037	4	2
5184 649	5	1
5136 270	4	2
5140 553	5	1
5142 901	6	4
147 652	7	8
5150 863	6	4
5156 8 8	4	1
5160 419	4	1
5168 074	4	1
178 970	4	1
5211 700	6	1
5219 876	7	8
5225 695	8	4
522 9 4	5	2
5238 74	7	4
5239 18	4	8
260 561	5	2
5288 88		1
5295 185	4	1
5300 1 2	4	1
5300 928	7	1
304 8	4	2
5331 141	4	1
539 175	5	1
5409 889	3	1
5420 510	8	1
5420 474	8	8
5422 3	4	1
5428 5 1	4	1
5498 507 P	4	1
5460 5 2	7	7
54 7 901	5	1
5490 86	7	6
5490 306	5	8
5504 117	5	1
5528 025	5	
5547 21	5	1
5620 24	4	1
5627 8 9	6	7
56 1 071		8
567 047	7	8
5 00 40	5	8
5703 87	6	6
5707 204	6	6

W l gth	M n w d g	Numb f b t n
5727 878	6	5
5731 48	6	5
787 288	8	8
5748 645	7	6
5887 785	5	2
5878 486	5	1
Ob	-SS	d G N

No 766 (Gr 5803)

LAT + 14

LONG d10

CLASS—IVa V IIc IIa IVb

Date—1906 February 23—27

W l gth	M n w d ng	N b f b t
4864 919	7	4
4875 871	7	3
4885 284	6	
4928 511	7	1
5001 115	8	3
019 829	6	4
5018 479	8	2
5016 340	8	2
50 8 052	8	3
5082 092	5	1
5048 781	4	1
5045 582	6	2
5066 174	8	4
508 688	4	1
087 39	5	1
5130 513	8	1
5136 270	9	1
143 001	4	1
5147 652	8	1
5150 888	1	3
5156 823	4	1
5219 875	8	8
5225 695	8	3
5239 712	8	1
54 6 474	9	4
5400 572	8	8
5490 367	7	3
5490 90	7	2
5627 859	7	3
5671 071	8	4
5672 047	8	4
5700 102	4	1
708 797	7	4
5707 204	7	4
5727 873	7	8
5 81 487	7	3
5737 288	9	1
749 645	10	8
5886 875	7	1
Ob	-SS	d G N

No 774 (Gr 5816)

LAT + 6

LONG 76

CLASS—IVa IVb

Date—1906 March 7—15

W l gth	M wid m g	N mb f b t n
4864 919	8	6
487 671	7	5
4885 284	6	2
4928 511	7	1
4965 107	5	4
5001 185	9	3
5009 829	7	7
5018 479	8	2
5016 840	8	2
5028 052	8	3
5082 032	4	1
5043 761	5	4
5045 582	6	5
5058 056	(4
5085 174	7	7
5085 608	6	1
5087 239	5	3
5106 828	778	2
184 697	6	2
5186 270	8	3
5188 890	4	1
5140 5 8	7	1
5118 901	6	4
5147 6 2	8	7
5150 963	7	4
5219 875	7	(
522 895	7	2
5238 7 12	7	4
5260 561	7	1
5804 35	6	1
5318 9 5	5	1
5380 748	4	1
5426 471	8	7
5470 572	7	6
5490 367	7	5
5490 905	7	1
56 7 85	7	7
5671 071	7	7
5672 047	7	7
5700 402	5	3
5 08 797	6	6
5707 204	6	6
5724 107	4	2
5727 878	7	4
5731 437	6	4
5737 288	8	7
5740 195	5	1
5743 64	8	7

Ob —88 dGN

No 775 (Gr 5817)

LAT + 0

LONG 106

CLASS—I IIIa IVb IIc

Date—1906 March 12

W l gth	M wd	N mb f b t n
4864 919	9	1
4875 671	7	1
49 8 11	6	1
4965 107	6	1
5001 185	9	1
5009 8 9	7	1
5043 761	7	1
5045 582	8	1
5086 174	9	1
5130 513		1
5134 697	6	1
5136 270	7	1
5148 01		1
5147 652	7	1
5150 368	8	1
19 875	(1
5225 695		1
5300 578		1
5426 474	9	1
5470 572	8	1
5490 367	7	1
5490 905	6	1
5627 859		1
5671 071	6	1
672 017	8	1
5737 88	9	1
5743 645	9	1

Ol —85

No 776 (Gr 5818)

LAT — 6

LONG 88

CLASS— I IIIa IVb IVa

Date—1906 March 14 and 16

W l gth	M l g	N mb f b t n
4864 919	b	2
4875 671		2
488 284		1
4928 511	6	1
5001 185	6	
5009 829	(2
5018 479	7	1
501 840		1
5028 052	b	1
5043 761	8	1
5045 582	6	2

2

W l gth	M n g	N mb t f
068 171	8	2
186 0	8	1
5147 652	8	2
5150 863	8	2
5219 875	7	2
52 5 195	8	2
5426 474	8	2
5460 57	8	1
5430 86	7	1
56 859	7	2
58 1 071	8	2
5672 047	8	2
5708 797	8	1
570 204	8	1
578 288	9	2
5743 645	9	2

Ob —SS

No 786 (Gr 5821)

LAT + 16

LONG 313

CLASS—IVc IIIb I V IVb

Date—1906 March 21

W l gth	M n g	N mb t f
4864 819		1
5001 165		1
5009 8 9		1
5028 052		1
5045 582		1
5066 174		1
5136 270		1
5147 6 2		1
5426 474		1
5460 572		1
5871 071		1
58 047		1
578 2 8		1
5 48 645		1

Ob —SS

No 788 (Gr 5826)

LAT + 14

LONG 276

CLASS—IVa IIc IVb

Date—1906 March 19—28

W l gth	M n g	N mb t f
4862 029	8	1
4864 919	8	5
4875 671	6	4
4885 264	6	3

W l gth.	M n mg	N mb b r v t f
4928 511	6	1
4965 107	5	7
5001 65	6	4
5009 829	7	8
5028 052	8	4
5043 61	5	5
015 582	6	9
5053 056	5	5
5066 174	7	9
5087 239	6	7
5136 270	9	3
5140 558	6	2
5148 901	6	5
514 652	7	9
5150 863	8	1
5219 875	8	8
522 695	7	3
5 8 742	7	5
5270 561	4	1
5282 576	5	
5300 578	8	1
5300 929	6	1
5304 355	8	1
5426 474	8	9
54 0 572	7	8
541 762	7	1
490 887	7	6
5490 672	6	1
5490 905	7	2
56 7 859	7	8
5671 071	7	9
5672 047		9
5700 402	6	3
5708 797	7	5
5 07 204	7	5
5727 878	7	7
5731 437	7	7
573 88	8	9
5743 645	8	8
866 675	7	1
976 708	6	1
6030 53	6	1
6243 320	8	1

Ob SS d G N

No 796 (Gr 5830)

LAT — 9

LONG 245

CLASS—IVa IIa IVb

Date—1906 March 0

W l gth	M n g	N mb b t f
4965 107	4	1
5009 829	4	1
5045 582	4	1

W l gth	M wd g	N mb f b t
5053 056	4	1
5086 1 4	4	1
5148 901	4	1
5147 65A	4	1
5219 875	7	1
5238 712	6	1
5428 174	7	1
5480 572	4	1
5490 387	4	1
5627 859	4	1
571 071	4	1
5872 047	4	1
5727 873	5	1
5731 437	5	1
5737 238	6	1

Ob —GN

No 797 (Gr 5834)

LAT — 17

LONG 215

CLASS—I IIIb IVb IIIa

Date—1906 March 29

W l gth	M n wd n g	N mb f b v t
4868 838	7	1
4861 919	9	1
4875 671	7	1
488 264	6	1
5001 165	J	1
5009 829	6	1
5029 052	8	1
5043 761	8	1
5045 582	7	1
5061 174	9	1
5136 70	7	1
5147 652	8	1
5219 875	6	1
5225 95	7	1
5300 578	8	1
5428 474	9	1
5480 572	7	1
5490 387	7	1
5627 859	7	1
5671 071	9	1
567 04	9	1
5700 402	8	1
5708 797	9	1
5707 204	9	1
5727 873	7	1
5731 437	7	1
5737 88	9	1
5748 646	9	1

Ob —SS

No 801 (Gr 5837)

LAT — 15

LONG 110

CLASS—I II IVe IVd IVb IVa

Date—1906 March 31—April 4

W l gth	M wd g	N mb f b t
4862 029	8	
4862 783	7	1
4863 838	7	1
4864 919	9	3
4868 451	6	1
4876 671	7	3
4885 264	7	2
4928 511	7	1
4965 107	6	1
5001 165	8	3
5009 829	6	4
5013 4 9	7	3
5016 40	8	3
5023 052	8	3
048 761	7	1
5045 582	7	3
5058 056	4	1
5066 174	8	4
5087 239	5	1
5116 944	5	1
5130 543	8	1
5131 697	8	1
5136 270	9	1
5138 690	8	1
140 53	4	1
5148 901	6	2
5147 652	7	4
5150 363	8	2
5 19 875	6	4
5225 69	6	3
5238 712	6	1
300 929	8	1
426 474	8	4
5480 572	8	4
5480 86	7	3
5490 386	6	2
5627 859	7	3
5671 071	8	4
5672 047	8	4
5700 402	8	1
5708 797	8	3
5707 204	8	3
5727 873	6	2
5731 437	6	2
5737 238	8	4
5748 646	8	9

Ob SS dGN

No 806 (Gr 5843)

LAT + 20

LONG 107

CLASS—IVa IVb I

Date—1906 April 6 7

W l gth	M w d g	N mb b t n	f
4882 029	8	1	
4884 91	9	1	
4875 671	7	1	
4928 511	6	1	
4985 107	4	1	
5001 16	9	1	
5009 829	7	2	
5019 479	8	1	
5016 340	9	1	
5028 052	9	1	
5045 582	7	2	
5053 056	6	1	
5068 174	8	2	
5085 868	5	1	
5087 239	6	1	
5180 548	8	1	
5188 270	9	1	
5140 558	5	1	
5148 901	6	1	
5147 652	6	2	
150 868	7	1	
5210 875	6	2	
5225 695	6	1	
5288 74	5	1	
5300 78	8	1	
5420 4 4	8	2	
5160 572	8	2	
54 0 387	7	2	
5490 905	6	2	
5588 0 5	5	1	
5627 F	6	2	
5671 071	8	2	
567 047	8	2	
5700 402	6	2	
5703 797	6	2	
5 07 04	6	2	
5727 8 8	6	2	
5731 487	6	2	
5737 288	8	2	
5743 64	8	2	
5888 675	7	1	
Ob	—S S	d G N	

No 813 (Gr 5849)

LAT + 23

LONG 44

CLASS—IVa IIc IVb V I

Date—1906 April 8—15

W l gth	M w d g	N mb b t n	f
4882 029	7	2	
4888 838	7	1	
4884 919	8	6	
4888 451	8	1	
4875 671	6	4	
4885 264	6	1	
4915 414	8	2	
4920 047	6	1	
4928 511	7	3	
4965 107	6	6	
5001 165	8	4	
5009 829	6	8	
5013 479	7	3	
5016 340	7	3	
5028 0 2	8	4	
502 027	8	2	
5043 71 1	6	7	
5045 582	7	3	
50 8 056	6	3	
5068 855	7	1	
068 174	7	3	
508 341	6	3	
5087 23J	6	6	
5180 548	8	4	
5134 697	8	2	
5 88 270	9	4	
5188 690	7	1	
5140 558	5	2	
143 901	6	6	
5147 652	7	3	
5150 3C8	6	6	
5158 823	9		
5161 1J4	8	2	
5164 172	8	2	
5219 875	6	3	
5221 928	6	2	
522 695	6	4	
5288 742	6	3	
5426 474	8	3	
5480 572	7	3	
5490 867	7	6	
5490 905	6	2	
5588 025	5	3	
5627 859	6	7	
5671 071	7	3	
5672 047	7	3	
5700 402	5	3	
5708 797	6	4	
5707 204	6	4	
5727 878	6	6	

W l gth	M n g	Numb f
wd	g	b t
5731 437	6	6
573 288	8	8
748 645	8	7
5788 198	5	2
5867 75	6	3
5867 785	4	2
Ob	-SS	dGN

No 820 (Gr 5855)

LAT + 16

LONG 270

CLASS—IIa V IIc

Date—1906 April 16—23

W l gth	M g	N mb f
wd	g	b t
4862 029	7	1
4863 833	7	1
4861 919	7	5
4875 071	7	2
4885 204	6	1
4915 107	5	1
001 185	8	4
5003 829	5	6
5013 479	6	3
5016 840	6	3
5023 052	8	4
5025 077	7	1
5043 761	6	2
5046 582	8	2
053 056	5	4
066 174	6	8
5087 239	5	4
5130 543	6	2
5134 637	6	1
5136 270	6	3
5138 690	6	1
140 58	5	1
5143 301	5	4
5147 052	6	8
5150 368	5	6
51 8 828	5	2
5160 419	5	1
5163 074	5	1
5219 875	6	5
5225 69	6	1
5238 742	6	2
5428 474	7	8
5438 802	5	1
5440 5 2	6	6
5440 367	6	3
5538 025	5	1
56 7 859	6	7
5671 071	6	8

W l gth	M g	N mb f
wd	g	b t
672 047	6	8
00 402		1
5708 797	8	3
707 204	8	3
5727 873	6	
5731 137	5	
737 288	7	8
5743 645	9	
866 6 5	6	1
Ob	-SS	IGN

No 832 (Gr 5859)

LAT + 12

LONG 173

CLASS—I III/ IVb IIc

Date—1906 April 27—May 2

W l gth	M g	N mb f
wd	g	b t
4864 919	6	4
4875 071	6	1
4885 204	6	2
4923 511	6	2
4935 107	5	3
001 16	4	1
5003 829	6	4
013 479	6	
014 840	6	3
023 052	7	
043 761	6	
5045 582	7	4
5053 056	4	
5066 174		6
508 341	1	1
5087 239	5	
5120 592		1
130 519		1
5136 70	8	1
138 090	7	1
5143 301	6	2
147 652		6
51 0 863	6	3
5217 875	6	9
5225 69	6	8
5300 9 9	7	2
5407 587	7	1
5107 688		
5420 10	7	3
130 618		
5438 474	7	6
5440 572	7	6
5440 367	6	4
5627 859	6	6
5671 071	7	6
5672 047	7	6

W l gth	M an g w d n g	Numb b t	f
5708 9	7	8	
5707 204	7	2	
57 7 873	4	2	
5731 437	4		
5737 288	7	6	
5743 645	9	4	
Ob	-S S nd G \		

No 841 (Gr 5865)

LAT + 6

LONG 15

CLASS—IVb IVa I

Date—1906 May 7 9 11

W l gth	M an g w l g	N mb b t	f
4882 0 9	6	1	
4881 919	8	8	
487 671	7	2	
4885 284	6	2	
4905 107	6	1	
5001 185	8	2	
5009 829	8	1	
5029 052	7	1	
048 61	7	1	
5045 82	7	3	
5053 056	7	1	
5080 174	8	3	
5065 841	5	1	
5087 239	7	1	
5129 386		1	
136 2 0		8	
5138 1 90	7	1	
5189 087	5	1	
5140 553	5	1	
149 01	5	1	
511 652	7	9	
5150 363	7	8	
5156 823		1	
5219 875	8	1	
5 8 74	6	1	
5426 4 4	9	3	
5480 573	8	3	
5430 67	7	3	
5538 025	5	1	
56 7 859	7	8	
56 1 071	8	9	
5572 047	8	3	
5 08 797	7	2	
5707 204	7	2	
572 878	6	2	
5 81 437	6	2	
5737 288	8	3	
5743 645	9	2	
Ol	-S S nd C N		

No 842 (Gr 5866)

LAT - 23

LONG 5

CLASS—IVb III IVa

Date—1906 May 6—13

W l gth	M n w d n g	N mb b t	f
486 02J	6	1	
4864 819	8	5	
48 5 671	7	3	
4865 284	6	3	
401 414	6	1	
4928 511	6	1	
4J(5 107	6	2	
5001 185	8	1	
00J 929	7	4	
5013 179	7	1	
016 840	7	1	
5023 0 2	7	3	
5018 781	6	2	
5015 92	7	5	
5053 056	7	1	
5080 174	8	5	
086 311	5	1	
097 239	6	2	
5129 386	5	1	
130 543		3	
5134 697	7	1	
5136 270	7	5	
5138 000	8	2	
5189 087	5	1	
5140 553	5	1	
5143 J01	6	3	
5147 652	7	5	
5150 363	6	3	
5156 823	5	1	
5219 875	7	2	
22 695	9	1	
298 1	6	1	
5426 1 1	9	5	
5460 5 2	8	5	
5490 367	7	4	
5130 905	6	1	
5 38 0 5		1	
607 859	7	4	
5671 071	8	5	
5672 047	8	5	
5703 97	7	3	
5707 04	7	3	
5727 873	6	2	
5 81 437	6	2	
5737 288	8	5	
5743 645	9	4	
5866 675	7	1	
Ob	-S S d G N		

No 844 (Gr 5867)

LAT + 13

LONG 855

CLASS—I IIa IIc IIb

Date—1906 May 15—17

W l gth	M an w d g	N mb b t f
4884 919	8	2
4875 671	6	2
4885 264	6	2
5001 165	8	2
5009 829	7	1
5028 052	8	2
5043 761	8	1
5045 582	8	2
5086 174	9	2
5148 270	8	2
5147 052	7	2
5150 863	7	2
5219 875	6	1
5225 865	6	1
5300 78	7	1
5428 474	8	2
5460 872	8	2
5490 307	6	2
5627 559	6	2
5671 071	8	2
5672 047	8	2
5700 402	7	1
5703 797	7	1
5707 204	7	1
5737 288	8	2
718 64	8	2

Ob -99

W l gth	M n w d g	N mb b t f
5001 165	7	5
5009 829	6	2
5013 179	7	1
5016 240		1
(3052	7	4
5048 61	0	2
5045 582	7	6
5086 174	9	6
5130 542	7	2
5134 097	6	1
5136 270	8	4
5138 090	7	1
5143 801	7	1
5147 052	8	4
5150 863	7	5
5219 875	6	2
5225 865	0	1
5300 578	7	
5300 99	7	1
5126 474	8	6
480 872	8	
190 267	7	1
5027 559	7	1
5671 071	8	6
672 047	8	6
5700 402	7	1
703 797	7	2
5707 204	7	2
727 873	6	3
5731 187	7	3
5737 288	9	0
5743 645)	6
5863 875	8	2

Ob -SE dKVS

No 846 (Gr 5869)

LAT + 12

LONG 305

CLASS—I IIIb IIIa IIc IIa

Date—1906 May 14—21

W l gth	M w d g	N b f b t n
4868 888	7	1
4884 919	8	6
4875 671	6	6
4885 264	6	4
4915 414	5	1
4928 511	5	1
4935 107	6	1

No 849 (Gr 5870)

LAT + 9

LONG 182

CLASS—IVa IIIa IVb

Date—1906 May 22—6

W l gth	M w d g	N mb f b t n
4862 049	7	
4861 919	8	4
4875 671	7	3
4885 264	6	3
491 414		1
4928 511	6	2
001 165	8	4
5009 829	6	2
5028 052	7	3

W l th	M n w d	N mb f b t
5025 749	7	1
5043 761	7	1
5045 582	7	5
5053 056	4	1
5066 174	8	5
5130 548	7	1
5136 270	8	4
5138 690	8	1
5143 901	5	1
514 652		5
5150 363	7	3
5219 8	8	1
5300 5 8	6	2
5426 471	8	5
5430 572	7	5
5490 867	7	4
5538 025	5	1
5627 859	8	3
56 1 071	7	5
5672 047	7	5
5700 402	7	1
5 03 97	7	1
5707 204	7	1
5727 873	5	1
731 437		1
5737 238	8	5
5743 645	9	4
Ob	-SS d GN	

W l gth	M w d mg	N mb f b t n
508 289	6	4
120 592	6	1
136 270	6	2
5138 690 P	5	1
140 53	5	1
5143 901	5	1
5147 652	6	6
5150 363	5	4
5219 875	6	5
5238 712	6	3
5426 474	7	6
5430 572	6	6
5490 867	6	0
5 90 905	5	1
5538 025	5	2
5627 859	6	6
5671 071	6	6
5672 047	7	6
5700 102 P	5	1
5708 797	6	2
5707 204	6	2
5727 873	6	1
5731 437	6	4
5737 238	7	6
5743 64	8	3
Ob	-SS I GN	

No 850 A (Gr 5871)

LAT + 11

LONG 132

CLASS—IIc IIIa IIa

Date—1906 May 24—June 2

W l gth	M w d n g	N mb f b t
4864 919	6	4
487 671	6	2
4885 264	6	4
4928 511	6	1
495 107	4	5
5001 185	8	1
5009 8 9	6	5
50 3 0 2	6	4
025 49	5	3
5043 81	7	1
045 82	6	6
5053 056	6	3
5066 174	6	5
5085 341	5	3

No 864 (Gr 5885)

LAT + 1

LONG 305

CLASS—IVa IVb

Date—1906 June 8 10 11 15

W l gth	M w d g	N mb f b t
4864 919	7	3
4875 671	6	1
4885 264	6	1
4928 511	6	1
4965 107	4	1
5001 185	8	1
5009 829	6	4
5013 479	7	1
5016 340		1
5023 052	6	3
5025 749	5	2
504 53	6	4
5066 174	6	4
5085 341	5	1
5087 239	5	3
5130 548	7	1

W l gth	M w d n g	N b	mb t	f
5134 897	7		1	
5136 270	6		1	
5138 890	0		2	
5143 901			2	
5147 652	6		3	
5150 368	(3	
5219 875	6		4	
5225 695	0		1	
5238 742	0		1	
5300 578	7		1	
5426 474	7		4	
5400 572	6		4	
5480 387			1	
5 38 025	6		1	
5627 859	6		3	
5671 071	6		4	
5672 017	6		4	
5700 402	6		1	
5703 79	6		1	
5707 204	6		1	
5 7 873	6		2	
5711 487	(2	
5787 288	7		4	
5748 645	8		2	

Ob -SS dGN

No 872 (Gr 5892)

LAT + 4

LONG 11

CLASS—I IVb IIIb IIc IIa

Date—1906 June 24

W l gth	M w d n g	N b	mb t	f
490 107	5		1	
5009 829	6		1	
5023 052	4		1	
5025 749	4		1	
5045 532	5		1	
5066 174	5		1	
5087 239	5		1	
5134 897			1	
5147 652	5		1	
5150 368	5		1	

W l gth	M d	N b	l b	t
5219 97	7		J	
5226 174			1	
1(0 2	6		1	
5480 36	5		1	
5 38 02			1	
5627 95	6		1	
5671 0 1	6		1	
567 047	6		1	
5703 797	5		1	
5707 204	5		1	
5727 873			1	
5731 437			1	
5787 288	6		1	

Ob v -GN

No 874 A (Gr 5893)

LAT + (

LONG 65

CLASS—I IIa IVb IVa

Date—1906 June 26

W l gth	M w d	N b	l b	t	f
5009 829				1	
5023 0 2	4			1	
504 71)	4			1	
5045 82				1	
5086 174	6			1	
5087 9				1	
514 652				1	
51 0 368				1	
5 19 875				1	
126 474				1	
54(0 5				1	
5538 02				1	
562 859				1	
5671 071				1	
5672 017	5			1	
5707 204	5			1	
5727 873	4			1	
5731 437	4			1	
5787 288	5			1	

Ob -GN

Catalogue of widened lines observed from July 1905 to June 1906

W l gth	O	V mb f p t wh h th l b w d	N mb f t m d	M m f b w d g	W l gth	O g	N b f p t wh l th l b w d	Numb f t m d	M n m f t w d g
4862 029	O	4	30	7	088 855		1	1	7
4862 788		13	1	7	5064 244	T	1	1	4
4868 883	F	14	14	7	5000 078	O	2	3	6
4864 919	V	3	185	8	5086 174	T	59	208	8
4868 451	T	5	5	7	5070 16		1	1	8
4869 652	Γ P		2	7	5077 62		1	1	8
4875 671	V	45	106	7	5085 841	T	8	15	5
4882 836	F	1	1	7	5085 668		5	5	5
4885 124		2		7	5087 289	T	39	90	6
4885 264	T	29	58	6	088 881	N	1	1	4
4886 859		1	1	7	719				
4919 808	T		4	6	509 058		1	1	6
4915 414	T	8	14	7	5096 908		1	1	5
4920 047		4	4	6	5106 023		2	4	5
4929 511	T	22	32	6	5106 773		2	4	5
4965 107	C	99	88	6	111 802 P		1	1	4
4975 580	T	1	1		5110 944		1	1	5
4976 508	V	1	1	6	120 592	T	3	3	5
4977 833	F	1	1	7	5122 299	O	1	1	6
5001 165	Γ	18	97	8	5122 968	O	16	28	7
5009 829	T O	59	183	7	5129 336	T P	4	2	5
5013 479	T O	32	61	7	130 543	N	16	28	7
5016 220		1	1	6	5134 697		30	55	6
5016 340	T	28	74	7	5134 849		2	2	6
5020 208	T	1	1	6	5136 270	F	43	101	7
50 3 052	Γ	45	114	8	5138 690		22	33	7
5025 027	T	2	3	8	5138 690		1	1	4
50 5 749	T	6	9	5	5139 037		3	3	5
5029 80	F	1	1	5	5140 094		2	2	7
5032 032		3	1	4	140 336			2	7
5043 781	T	41	79	6	5140 553		15	21	5
5045 54		1	1	5	5140 992		1	1	7
5045 532	T	55	177	7	5141 497		1	1	7
053 058	T	20	45	5	5143 901		43	94	6
5053 170		1	1	6	5147 652	1	59	214	7
5062 285	T	1	1	6	5149 013		5	6	6

Clg of w dens lns obs d f m J ly 1905 t Ju 1906—cont

W l gth	O g	N mb f p t h l l b w d	N mb f t m b d	M m f t w d g	W l gth	O g	N mb f p t n wh h t l l w b l	N mb f t m b	M t d g
5150 368		52	107	7	569 011				
51 0525		1	1	7	125				
5156 823	O—	18	27	5	530 1013	M	1	1	8
515 163		1	1	4	5399 675	M	2	3	5
5160 188		1	1	6	407 587				
5160 419	C—	6	6		088	Mn	2	2	8
5160 551		4	5	7	5409 339	F	1	1	3
5161 91	O—	1	2	5	5420 510				
163 074	O—	4	4	5	613	Mn	3	5	8
103 200	O—	1	1	4	5426 471		60	223	8
5164 007		2	2	6	5432 753	M	1	1	4
5164 172	O	1	2	8	5436 803	T	1	1	
5164 724	T P	1	1	6	5498 259		1	1	4
5178 070		1	1	4	5438 507		1	1	4
7201 200	T	1	1	5	5441 49	F P	1	1	6
5211 770	F	1	1	6	480 572		1	184	7
5219 8 5	T	59	184	7	7461 762		1	1	7
5221 028	O	1	2	6	5477 601	T	8	9	6
522 198	C I T	1	4	7	5482 078		11	19	6
325 6J5	T	41	94	7	400 807	T	4	18J	7
5225 974	C	1	2	5	5410 672		1	1	
5238 74	T	23	52	6	5490 905		24	44	6
5239 187	O	4	8	6	488 709	F	2	3	5
5200 571	O	6	8	6	5508 444		1	1	9
5 8 57C	T	2	3	6	5504 117	T	3	3	7
288 389		1	1	5	5537 928	M		5	6
95 185	F		2	4	5738 025	Mn	16	23	5
529 955	A(w)P	1	1	6	5747 215	T V	1	1	5
5800 1		1	1	4	5626 245		1	1	4
5800 578		12	18	7	5627 859	V	5)	194	7
5900 9 9	C	18	21	8	5671 071	V	60	221	8
5804 355	O	6	13	5	5672 047	S	60	221	8
5818 955	O F	1	1	5	5687 063		3	3	6
5880 48		1	1	4	5681 691	T	2	2	5
5831 641	O	1	1	4	5689 812	A P	1	1	7
5888 517		1	1	8	5698 746	V	1	1	5

Catalogue of fossils described in the field from July 1905 to June 1906—cont.

W l gth	O g	N mb f p t wh h th l b w d	N mb f t m d	M m t f w d g	W l gth	O g	N mb f p t wh h th l b w d	Numb f t b d	M m t f w d h
5700 402		15	24	6	6090 429	F	1	2	6
5708 797	V	52	121	7	6119 740	V	1	2	6
5707 204	V	51	120	7	6128 485	T	1	2	4
5712 898	O	1	1	6	6199 898	V	4	4	6
5716 871	T	9	14	6	6210 895		1	1	6
5724 107	A	1	2	4	6218 567		1	2	5
5727 878		52	141	7	6280 812	N	1	1	3
5731 487		5	141	7	6240 868	F	1	1	4
5737 288		60	221	8	6248 320		7	9	9
5740 195		8	8	6	6258 727	T	2	2	5
5743 64		54	180	8	6261 816	T	2	2	5
5766 550	T	1	1	6	6274 870		1	2	6
5774 2 0	T A	1	1	5	6280 98	[A (O) F]		2	6
5788 198	T Cr	1	2	5	888				
5806 6 5	T	25	40	6	6285 884	V	1	1	5
5807 785	O	11	14	5	6293 170	A (O)	3	5	7
58 3 486		1	1	5	6298 007	F	1	1	4
5900 260	A (w)	1	1	5	6306 024	A (O)	6	8	8
5903 748	A (w)	1	1	5	6327 820	N	1	1	1
5918 68	A (w)	1	1	6	6330 816	O	2	2	6
5918 3	T	1	2	7	6363 090	O F	1	1	4
5928 865	A (w)	1	2	6	6386 564	T	1	1	6
5968 055	T A P	1	1	7	6386 707	N	1	1	6
5978 708	T	4	5	6	6455 820	O	1	1	6
6039 953	V	8	11	6	6471 885	O	2		8
6069 080		4	0	6	6493 190	A (wv)	1	1	5
6064 853	T	1	1	5	6499 168	F	1	1	5
6081 665	V	2	3	6	6573 080	O P	4	4	8
6085 470	T F	2	2	5					

NOTES

1906

- January 2 730 C slightly reversed D₂ slightly dark (S S)
- 3 730 C slightly reversed near the east end of the group (S S)
- 4 Seeing poor C slightly reversed near 727 and between the spots in 790 (S S)
- 10 730 C reversed over the smaller spots (S S)
- 11 Seeing poor
- 12 Faculae to east of 729 C and F displaced to violet over whole group Over most of the area the displacement amounted to only 0.5 A but in one place it was as much as 1.5 A There were slight reversals at the same place D₂ was not visible (S S)
- 13 739 C slightly displaced to red near the eastern end of the group (S S)
- 14 741 C slightly displaced both ways and reversed to east of group 738 C reversed 740 C reversed inside the group and between it and the limb (S S)
- 15 740 C slightly displaced near the spot (S S)
- 21 748 and 745 C reversed (G N)
- 22 745 C brilliantly reversed between main spots and D dark (G N)
- 23 745 D₂ very dark and sharp over the small spot (between the two main spots) and a little to the east of it C slightly reversed on the small spot and in the sun showing D₂ dark 746 D₂ dark between the spots C quiet (G N)
- 24 745 C reversed on a small spot west of the sun spot D₂ dark in the same place 746 and 747 C quiet and no dark D 748 C knotted and broken in two places west of the main spot D₂ dark in both places (G N)
- 25 748 C slightly reversed (S S)
- 26 745 C faintly reversed and D₂ slightly dark 747 C quiet no dark D₂ 750 C reversed over the small spot between the main spots D₂ dark at the same place (G N)
- 27 Poor sky 745 C reversed over the small spots in the centre of the group 750 C strongly reversed over the whole group D₂ dark (S S)
- 28 750 C slightly reversed D₂ slightly dark (S S)
- 29 748 C displaced to red about 0.5 A in F (S S)
- 30 745 C slightly reversed D₂ slightly dark 750 C slightly displaced to red in big spot (S S)
- 31 748 C reversed to east of spot D₂ dark at the same place 750 C faintly reversed and D₂ slightly dark at the same place (G N)
- February 1 750 C slightly reversed and displaced to violet about middle of group D slightly dark 747 C slightly reversed to east of spot (S S)
- 3 750 C strongly reversed (S S)
- 4 750 dark C alone displaced to red about 2.0 A D₂ dark in same place (G N)
- 9 755 C reversed over almost the whole group — very brilliantly over the umbra of the principal spot and at the eastern end of the group D₂ dark over the east and west ends of group (S S)
- 10 755 C knotted and reversed all along the smaller spots D dark C quiet and no dark D₂ over main spot (G N)
- 14 764 C reversed both on east and west sides of spot very strongly at one point 762 C reversed near spot dark C slightly bulging both ways between spot and limb (S S)
- 15 764 C quiet no dark D 755 D₂ slightly dark to east of spot (G N)
- 16 Faculae round 755 very bright continuous spectrum (S S)
- 17 766 C displaced both ways and brilliantly reversed between spot and limb D₂ slightly dark at same place (S S)
- 18 764 C quiet no dark D₂ 66 C brilliantly reversed in several places and knotted between the spots of the group D₂ dark except at east of group H brilliantly reversed 767 C faintly reversed D₂ slightly dark (G N)

1906

- February 19 76C B C reversed H brilliantly reversed (SS)
 20 774 quiet 776 C knotted and faintly reversed D dark (GN)
- 21 76b C brilliantly reversed near the small dots between the spot D₂ very dark and sharp at same place but diffused and only slightly dark at other part of the group (GN)
 22 76d I displaced to red over a large area amount small a little to outer part of spot gradually increasing along a line passing nearly through the spot till it reaches a maximum of 1 A. so e distance to north west of spot 766 C displaced to violet about middle of group also slightly reversed (SS)
 24 766 C slightly reversed over whole group (SS)
 26 C cloudy 766 C slightly reversed to east of main spot (SS)
 27 766 C reversed between spot and limb (SS)
- March 2 770 C strongly reversed all round the spot 771 C reversed dark (slightly displaced to red and D₂ slightly dark to east of spot 772 C reversed dark C displaced (0.5 A. in Γ) to red of spot D₂ dark between spot and limb (SS)
 3 771 C knotted and reversed D₂ dark all along the group 772 D₂ dark midway between spot and limb C faintly reversed at the same place (GN)
 5 772 C reversed over a wide area—very strongly on the very small spots in the middle of the group and also some distance to the east of the group On the small spots dark C was slightly displaced to violet (SS)
 7 773 C reversed near spot 774 C reversed near spot dark C slightly displaced to red to the west of it (SS)
 8 774 C knotted and faintly reversed east of the spot D slightly dark in the same place (GN)
 9 774 C reversed over a wide area round the spot—very strongly close to spot on east and west side 775 C reversed and dark (slightly displaced both ways in middle of group 776 C reversed into a moderately bright streak about long some distance to east of the group where there was no visible spot but where the spectro heliogram shows very bright flocculi D₂ dark and sharp at the same place (SS)
 12 777 C slightly displaced to red to west of spot 778 C reversed over the companion spots (SS)
 13 771 and 776 quiet 775 C reversed D₂ dark in the same place (GN)
 14 774 C slightly displaced to red to east of spot 777 C reversed and dark to west of spots 776 C very brilliantly reversed on the spot 783 C reversed over the faculus near the spot (SS)
 15 774 777 78 C quiet 778 C reversed D₂ dark (GN)
 16 785 C reversed all round the spot 786 C reversed over a faculus near the spot (SS)
 18 787 C quiet D₂ slightly dark to east of group (GN)
 19 782 C reversed between spot and limb 783 C displaced slightly to violet about the centre of the group and slightly reversed at the same place 784 C reversed between spot and limb (SS)
 20 784 quiet 791 C faintly reversed on both sides of the spot D₂ dark in the same place (GN)
 21 785 C reversed over several places—very strongly on umbra of main spot and about the middle of the group D₂ dark in latter position 790 C faintly reversed at the middle of the group At a point where there was no spot I was displaced 1 A. to violet The spectro heliogram shows only small flocculi at this point (SS)
 22 786 D₂ dark east of spot C thin in the same place 88 C reversed and dark C slightly displaced to red to the west of the spot C brilliantly reversed west of the small spot leading the group D₂ very dark in the same place 79 D₂ dark but C quiet 796 D₂ dark C knotted (GN)
 27 797 C reversed about the middle of the group dark C slightly displaced to red about the same place D₂ dark over almost the whole group (SS)
 29 788 C reversed near spot—very strongly a little to east of it (SS)
 31 796 C reversed to the east of the spot 801 C reversed on the small companion spots (SS)

1906

- April
- 2 80° The hydrogen lines displaced (about 1 A in F) to violet over a large area and slightly to red about the same place 807 C strongly reversed and dark C slightly displaced to red near the west end of the group 807 C reversed to west of group (strongly close to it) and displaced to red (1 A in F) (S S)
- 4 801 hydr gen lines displaced on spot (about 0.5 A to red and 1 A to violet in F) also by about 1 A to red close to the spot C strongly reversed near latter position (S S)
- 6 811 C reversed and D dark about the east end of the group (S S)
- 7 813 C knotted and faintly reversed D₂ dark (G N)
- 8 813 8^h 29 C strongly reversed and D₂ dark near west end of group 9^h 48^m reversal of C very strong over the whole space between the spots nothing on the spots 9^h 3^m D D b b b₂ b₄ 316,90 (1e) 5018 6⁹⁰ (Fe) 1924 107 (1e) also reversed - b₂ strongly Reversals mostly to west of main spot and slightly on it Reversed part slightly inclined to the dark line 10^h 0^m D₂ dark over the whole group both on and outside the spots 10^h 15^m D and C bright over umbra of main spot 10^h 22^m dark F displaced over whole group to red by about 1 A 10^h 25^m D dark only to west of spot 10^h 40^m displacement of F confined to one point to west of spot amount as before (S S)
- 9 806 dark C slightly displaced to red at east extremity of spot no reversal of C and no dark D 818 C broken and reversed west of the south spot D₂ dark west of the group only 816 C broken and slightly reversed D₂ dark 918 quiet (G N)
- 10 813 hydrogen lines displaced to violet (1.5 A in F) D₂ slightly dark at west end of group (S S)
- 11 816 C reversed between the spots (S S)
- 12 818 quiet (G N)
- 14 819 C reversed and dark C slightly displaced to violet near west spot (S S)
- 17 818 C reversed 819 C reversed and dark C slightly displaced to red Faculae at position angle 50 C reversed (S S)
- 18 820 C faintly reversed west of main spot (G N)
- 19 819 C lightly reversed over whole facular region near spot 520 8^h 15^m C reversed near spots - strongly to a point near the centre of the group D₂ slightly dark at the latter position C slightly displaced to red near eastern large spot 9^h 10^m C displaced slightly to violet over wide area near the spots 9^h 18^m amount of displacement 1 A in F near east end of group (S S)
- 21 Seeing bad 820 C displaced slightly to violet near spot at 8^h 1^m The displacement soon disappeared (S S)
- 25 820 831 832 C on or near all the group (S S)
- 28 82 C reversed and dark C close to main spot C also reversed over the faculae to the east of the spot 834 (S S)
- 29 831 C reversed dark C slightly displaced to red near east end of group 832 C strongly reversed dark C displaced to red to east of main spot and close to it C reversed over whole group of faculae near east limb (S S)
- 30 831 C very faintly reversed between the two main spots D₂ dark in the same place 832 C broken and reversed east of the main spot D₂ dark and diffused over the same place (G N)
- May
- 1 832 C slightly displaced to red between the two big spots (S S)
- 2 832 C slightly reversed near spot C reversed over faculae at position angle 255 (S S)
- 4 832 C knotted and faintly reversed to east of spot D dark and diffused at same place (G N)
- 5 841 C reversed near the spot 842 C strongly reversed and D₂ dark to the west of the spot and close to it (S S)
- 6 842 C reversed and D₂ dark in the middle of the group (S S)
- 7 841 C quiet 842 C broken and reversed east of the spot and all along the group D dark 845 C knotted and slightly reversed D₂ slightly dark (G N)
- 8 841 C slightly displaced to red over a large area near the main spot 842 C reversed over the whole group dark C slightly displaced to violet at the east end (S S)

1906

- May
- 13 846 C brilliantly reversed and D₃ dark over almost the whole group dark F displaced 0.8 A to violet about the middle of the group 842 C displaced to red some distance to east of the spot (S S)
- 14 844 C strongly reversed and D₃ very dark over almost the whole group 846 C reversed and D₃ dark F displaced about 0.5 A to red (S S)
- 15 844 C reversed near spots 846 C reversed in the middle of the group (S S)
- 16 Both spots in group 846 observed for widened lines at the same setting (S S)
- 17 Both spots in group 844 observed for widened lines at the same setting 844 C reversed and broken 846 C strongly reversed on both umbrae more strongly on the western one (S S)
- 19 846 C reversed near spot dark F displaced 1 A to red at a point near the middle of the group 849 C reversed between spot and limb (S S)
- 20 846 C reversed near both the spots and dark C slightly displaced 849 C brightly reversed between the first two spots and also between the second spot and the limb Dark C slightly displaced in both places (K V S)
- 21 846 C reversed and dark C slightly displaced to violet between spot and limb 849 C reversed and D₃ slightly dark over whole group (S S)
- 22 Seeing poor 846 and 849 C slightly reversed near spots (S S)
- 23 Seeing poor 850 C reversed and D₃ dark between spot and limb (S S)
- 24 849 C brilliantly reversed at the east end of group dark F displaced 1 A to violet 850 C very brilliantly reversed and D dark over the whole group H also very strongly reversed Dark F displaced 1 A to red over a large area near the east end of the group (S S)
- 25 854 C slightly reversed and dark C slightly displaced to red near the spot 850 C reversed near the spots—strongly near the centre of the group dark C slightly displaced to red near the same place (S S)
- 26 849 C to n and dark C displaced about 1 A to red D₃ dark (G N)
- 27 849 C broken (G N)
- 28 849 C slightly reversed and D slightly dark near spots (S S)
- 29 849 C faintly reversed in several places 855 C faintly reversed and knotted (G N)
- June
- 2 850 A C brilliantly reversed just to east of the umbra of the spot knotted and reversed between the two parts of the group 850 D dark (G N)
- 3 851 C faintly reversed (K V S)
- 5 861 C faintly reversed (G N)
- 8 861 C broken and knotted and slightly displaced to violet at one point (G N)
- 10 866 C reversed over almost the whole group (S S)
- 11 864 C broken and knotted in places D faintly dark all along the group (G N)
- 20 851, C reversed (S S)
- 21 851 C slightly thinned between the two spots 869 C quiet (G N)
- 25 854 C strongly reversed east of main spot dark C displaced to violet on the spot and to the west of it (S S)
- 27 877 C brilliantly reversed and D dark close to the east spot of the group (S S)
- 30 860 C broken near the small dots east of the big spot 877 C knotted and broken between the spots of the group (G N)

C MICHIE SMITH

24th November 1906

Director Kodakūnal and Madras Observatories