KG
11366
201

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Ida E. Woods.
Book 25.
Objects looked up for outsiders
as for others of H.C.O.

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1922phae.proj..120dw

Bk 25. Index. 4p.3

p.178 B. Asphid, Wolf's Asteroid 1901 HA

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77 Balanovsky Nova in Spiral Neb. M, 87, NGC 4486.

84 Miss Wilson Additional Seq. stars
86 Dr. Shapley's Milky Way Regin Vars.
96 Miss Wilson Additional Sequence stars
98 Mlle Odette – Asteroid Bernardina
100 Reinmuth Nova
102 Parkhurst's Susp. Var. 083844.
108 Miss Wilson . Additional Sequence Stars
110 Dr. Shapley, M 33
111 Miss Wilson Magns.
112 Dr. Shapley – Van Maanen's Nova or Var.
120 Miss Wilson Magns.
122 " " "
124 Dr. Shapley – H. Spencer Jones – Suspected Var.
135 N. Waterfield, suspected Var.
137 R Cor Bor.
138 Duncan's Var., M 33 Letter of Hubble.
142 Filippoff, Comet.
144 Baade, Asteroid
146 Asplind, Ardenina
149 E. Hertzsprung, Minima of Var. St. 11 0 3/4 60
164 F. Schlesinger, Susp. Var. 1955 12

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Bb. 25. Index.

1-25 Anderson's Nova

26 – Additions stars for 6 K S Seq.

28-36 Sola Var.

38 W W Cygni – for Mr. Suter

39 NGC 251 Reminuth Var.

40 Prof. B's. Susp. Var., near NGC 6656.

42 Susp. Nova Var. of Mr. Yalden.

44 Sola Var.

48 – 26° 16896 (Shapley-Leyton)

52 W W Cyg to compare with Mr. Suter's Obs.

62 Wolf's Nova Aquilae No. 4.

68 Dr. Yamamoto Sequence for R R Puppis

70 M A Gill's Var. 200960 Magn. Sequence

72 Reminuth Obs. HB 799

73 Miss Howarth's chart of Andromeda Neb. Region

74 Miss Cannon. Confirm 2 new Vars. of A.J.C.

75 Miss Wilson W X Cygni Extra stars in sequence for Magns.

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Harvard College Observatory

Ida E. Woods. Book No. 25.

Objects looked up for others at H.C.O.
or for outsiders.

Continued from Book 10.

References given to letters received,
when possible.

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1922phae.proj.1203w

Continued from
Bk. 10, p. 220.

Anderson's Nova.
+35° 4505 is normal

Ac Plates at 21h +30° Cont.

Ac	20145	May 17, 1918
	20270	
	20288	
	20464	
	20526	
	20543	
	20660	November 8, 1918
	20764	November 30, 1918
Slides 4625	~~20913~~	~~January 7, 1919~~
	21628	
	21800	
	21832	September 26, 1919
	22243	January 13, 1920
	22546	
	22664	
	22714	
	22773	
	22845	
	22900	September 22, 1920
	23074	November 17, 1920
	23241	January 8, 1921
	23303	
	23517	
	23674	
	23719	
	2384[illegible]	
	[illegible]	

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1922phae.proj.1203w

$21^h + 30°$

AC 24047
24105
24123
24355 November 5, 1921

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1922phae.proj.1203w

Diff — 4002 – 4041 ?

Anderson's Nova
+35° 4505 is normal

Ac Plates at 22^h +30°

ac ~~24~~136	December 23, 1898
335	May 26, 1899
434	
509	November 9, 1899
668	January 8, 1900
852	May 7, 1900
914	
1106	December 29, 1900
2171	January 9, 1902
2593	
2631	
2679	
2748	
~~Slide 183 2806~~	
2853	
2859	October 6, 1902
3020	
3041	
~~3105~~ 3077	
3105	December 27, 1902
3678	May 24, 1903
3780	
3801	
3816	
3847	
3869	
4002	
4041	

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1922phae.proj.1203w

Anderson's Nova

$22^h +30°$

ac 4048
4096
4117
4145
4211
4236
4267
4313
4387
4404
4423
4438 December 26, 1903
– 4503 January 7, 1904
4950
4987
4999
5039
5078
5090
5095
5100
5167
5191
5194
5225
5279
5338
5399

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Fainter?

Plates $22^h +30°$

ac	5421		9057	Dec. 11, 1907
	5446		9557	June 17, 1908
	5509		9617	
	5519		9653	
	5594		9682	
	5615	November 27, 1904	9756	
	5829	January 14, 1905	9771	
	6406		9821	
	6434		slide 9756 9836	
	6455		9867	
	6547		10002	Fainter? Dec. 7, 1908
	6581		10541	May 31, 1909
	6629		10605	T'
	6708		10669	
6743	6757		10690	
	6789		10700	
	6894	October 26, 1905	10850	
	7682	July 25, 1906	10880	
	7691		10911	
slide 2976	7852		10919	
	7889		10983	
	7918		11178	T' Dec. 20, 1909
	8004		11283	Jan. 11, 1910
	8051	November 24, 1906	11756	
	8224 8258	July 21, 1907	11799	
	8659		11841	
	8674	August 10, 1907	11906	
	9034		11972	

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1922phae.proj.1203w

15459 A little brighter?
Anderson's Nova
Plates at $22^h + 30°$

17984 is 7 a little br. NB images
18925 " " 01

ac
11987
~~9057~~
~~11997~~
~~9554~~
12075
12084 Nov. 1, 1910
12460 July 21, 1911
12493
12539
12562
12593
12712
12797 Dec. 20, 1911
12835 January 10, 1912
13228
13334
13371
13392
13417
13455
13548 Dec. 4, 1912
14274 Aug. 20, 1913
14300
14317
14395
14410
14430
14481
14510
14547

ac
14619 Dec. 5, 1913
15304 June 25, 1914
15347
15376
15459
15462
15467
15483
15541
15554
15570
15598
15615
15726
15763
15781
15880 Dec. 17, 1914
16532 June 18, 1915
16643
16660 Sl. 4082 ✓
16841
16861 October 18, 1915
17085 Dec. 10, 1915
17167 Dec. 30, 1915
17489 April 5, 1916
17699
17834
17984

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1922phae.proj.1203W

Plates at $22^h +30°$

ac 18035
18076
18271
— 18374 Dec. 30, 1916
18925 June 27, 1917
19029
19223
19243
— 19565 Dec. 9, 1917
20040 April 1, 1918
20227 June 23, 1918
~~20040~~
20369
20391
20490
20554
20575
20889 Dec. 30, 1918
— 21451 May 18, 1919
21712
21871
— 21943 October 24, 1919
22682 June 19, 1920
22948
22992 Oct. 17, 1920
23116
23135
23175 Dec. 24, 1920
— 23654 April 25, 1921
23766 June 5, 1921
23790
23816
23910
23948
23995 Aug. 22, 1921
24174
24229
24274
24336
24423
24502
24531 Dec. 29, 1921
24815 July 25, 1922
24828 C' Nothing Be. Cat. not made
24843 C' same
24858 C' same
24930 C'
24967 C'
25001 C'
25023 C' Dec. 9, 1922

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1922phae.proj.1203w

Plates taken for Nova, in 1923 or plates covering region.

aX 119 June 10, 1923 Normal
121 June 11, 1923

Bb. 10 107
). 217 108

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1922phae.proj.1203W

1783 see Sl. 7 & 1864

June 21, 1923

Anderson's Nova – +35° 4505 is normal.
Exam. of plates at 21h +45°

ac	316	May 6, 1899	2946	October 29, 1902
	302	April 22, 1899	2974	
	354		3018	
	397		3058	
	474		3100	
	577	Dec. 9, 1899	3104	Dec. 27, 1902
	825	April 19, 1900	4060	October 13, 1903
	830		4077	
	886		4090	
	1064		4111	
Sl. 176	1399	April 11, 1901	4126	
	1577		4158	
	1583		4186	
	1619		4257	
	1635		3159	Jan. 12, 1903
	1684		3519	
	1732		3539	
	1783		3584	1903
	1850	is 7 fainter?	3815	1903
	1864	" " "	3838	
	1966		3942	
	1984		3980	
	2030	December 22, 1901	4032	
	2578	May 27, 1902	4040	1903
	2640		Map of Sky	
	2664			
	2740		Plates were out of order in box.	
	2852			
	2865			
	2883			

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1922phae.proj.1203w

Gord fl. 4257
7614

$21^h +45^\circ$

Ae 4329 Dec. 8, 1903
4354 Dec. 13, 1903
4888 May 4, 1904
4951
5014
5025
5043
5051
5059
5077
5146
5173
5213
5242
5270
5294
5346
5385
5400
5420
5475
5494
5546
5650
5733 Dec. 16, 1904
6282 April 8, 1905
6385
6417
6440

6477 June 30, 1905
6499
6507
6600
6620
6667
6738
6798
6806 1905
6939
6961
6968
6979
7094
7126 December 27, 1905
7194 January 24, 1906
7202
7211
7225
7235
7429
7614
7654
7710
7740
7743
7744
7745
7750

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1922phae.proj.1203W

8890, ?
Comet ?
Seen by Dr. S.

Br. ? 10533 Fr. 17696 ? 17796
Perhaps 3 change
Anderson's Nova
ac Pl. 21h +45°

ac	7775	Sept. 3, 1906	9733	Sept. 8, 1908
	7779		9766	
	7810		9814	
	7921		9848	
	7928		9858	
	7971		9886	
	7983		9929	
	8013		9957	
Sl. 2997	8028		9979	
	8035	Nov. 22, 1906	10010	
	8499	May 13, 1907	10050	Dec. 14, 1908
	8549		10130	Jan. 1, 1909
	8595		10283	
	8673		10533	
	8687		10595	
	8724		10601	
	8790		10647	
	8806		10737	
	8849		10768	
	8890		10814	
	8899		10821	
	8906		10829	
	8921		10879	
	8937		10896	
	8957		10946	
	9021	Nov. 27, 1907	10956	
	9525	June 7, 1908	10977	
	9625		11002	
	9700		11011	

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1922phae.proj.12037

19022 defect on star N. of 8 and foll. gives it the appearance of being brighter.

21 +45

ac

11037		18021	
11045		18308	
11083		18373	Dec. 30, 1916
11097		18775	April 13, 1917
11134		18914	
11157		18947	
11162		19022	
11189	Dec. 21, 1909	19043	
11501	March 18, 1910	19222	
11728		19555	
11730		19630	Dec. 31, 1917
11774		19823	February 13, 1918
11788		20039	
11845		20047	
11874		20224	
11947		20390	
12092		20562	
12148		20588	October 10, 1918
12225	Dec. 22, 1910	21365	April 21, 1919
16174	Feb. 27, 1915	21569	
16401		21759	
16813		21809	extreme edge but no bd. star in position
16848			
17098			
17115	Dec. 15, 1915	21896	
17350	Feb. 26, 1916	22069	
17673		22119	Dec. 15, 1919
17796		22430	Feb. 20, 1920
17994		22690	

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1922phae.proj.12037

Anderson's Nova

To continue after June 20.

Get ac 1667 21 +30 Sequence

√ all +30° plates even

¼ Eq. +45 and ~~8~~ & aV.

~~Also aI~~

Is 7 a little fr.

17984

18925

22682 poor plates — might affect est. if change

Nova ft? 10002 22 +30

fr 15459 22 +30

aI 22047 mbd. 22 +30

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aX Plates

dpl.
dpl.11 aX 121 June 11, 1923

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Saturday, June 23, 1923.

Anderson's Nova

Continued exam. of AC Plates $22^h + 45^\circ$
Star $+35^\circ$ 4505 is normal

AC	2510	April 28, 1902	20264	July 12, 1918
	2511	April 28, "	20276	
	4202	Nov. 12, 1903	20303	
	6989	Nov. 14, 1905	20319	
	7906	Oct. 12, 1906	20466	
	16253	March 12, 1915	20507	
	16441	May 9, 1915	20546	
	16612		20629	
	16722		20668	
	16962		20735	
	17472	March 31, 1916	20901	
	17559		21429	May 6, 1919
	17884		21452	
	17911		21621	
	17953		21785	
	18127		21810	
	18138	Nov. 8, 1916	21975	
	18397	Jan. 6, 1917	22009	
	18839		22027	Nov. 24, 1919
	18949		22221	Sl. 4686 Jan. 10, 1920
	19076		22251	
	19137		22763	
	19188		22776	
	19216		22847	
	19271	October 13, 1917	22892	
	19653	Jan. 10, 1918	23044	
	20132		23053	Nov. 12, 1920

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AC 23322 Jan. 24, 1921
23567
23733
24091
24152
24372 Nov. 10, 1921

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A Plates of region. Star is normal on these.

a770 August 10, 1894
1684 Sept. 13, 1895
1709 Sept. 20, 1895
1718 Sept. 23, 1895
2006 August 17, 1896
4660 Sept. 4, 1900
8008 August 17, 1906

Infor. desired

1. Interval 18 to 1923 June
2. Tot number (approx)
3. Kind of plate. AI, AX, AC, A, I,
4.

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1922phae.proj.1203V

not imel in comet dpl.

Obj. marked on 1667 frm 23648 and 21500

Special exam. of plates of 1899 for possible object found on ac 354 close to Nova.

* —— Object is probably defect.

Follows and Smith of +35° 4505

ac 354 June 27

316 May 6
335 May 26
391 Aug. 14
434 Sept. 14
I 22869 May 11
22923 May 24
23648 Sept. 23
23582 Sept. 20
a 4660 Sept. 4 Eq 10h

ac 25144 } object
B 21500 }

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Obj. I 21500 + ac 1667

Anderson's Nova

June 23. I Plates examined.

I	1848	Sept. 24,	1890
	4050	Aug. 19,	1891
	4265	Sept. 19,	1891
	4555	Oct. 17,	1891
	6818	Sept. 1,	1892
	6835	" 2,	"
	6983	" 11,	"
	7036	" 15,	"
	7070	" 17,	"
	7145	" 21,	"
	7173	" 26,	"
	7190	" 27,	"
	7238	Oct. 1,	"
	7253	" 2,	"
	7276	" 6,	"
	8829	July 19,	1893
	8855	" 20,	"
	8909	" 23,	"
	8940	" 24,	"
	9318	Aug. 29,	"
	9979	Nov. 22,	"
	11382	Aug. 21,	1894
	11543	Oct. 6,	"
	11967	Nov. 22,	"
	12068	Dec. 13,	"
	13173	Aug. 2,	1895
	13207	Aug. 8,	"
	13374	Sept. 2,	"

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Fh. 6835?
25544

Mkd 23648

I 15820 Aug. 29, 1896
16141 Oct. 9, 1896
16147 Oct. 9, "
16351 Oct. 27, "
18853 Sept. 15, 1897
18887 Sept. 17, 1897
18965 " 21, "
21270 " 28, 1898
21271 " 28, " — Oct. 25
21500
21561 Oct. 31, "
22869 May 11, 1899
23582 22923 May 24, " — Sept. 20, 1899
23643 Sept. 23, 1899
23943 Oct. 26, "
25144 April 13 1900
25544 25554 July 14, 1900 — July 12, 1900
25860 Sept. 24, "
26111 Nov. 16, "
26157 Nov. 28, "
27648 Sept. 30, 1901
27671 Oct. 3, "

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1922phae.proj.1203W

Anderson's Nova.

Some Ast plates to be examd. Selected merely because an increase of about 15 plates is wanted in total and plates of 1919 - 1920 are taken.

Ast	18594	1919
	18666	
	18673	
Defect *	19015	
Close to position		
	19108	
	19147	
	19172	
	21735	1922
	21870	
	21887	
	21893	
	21940	
	21965	
	21999	
	22030	
	22095	

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1922phae.proj.1203w

Summary

Andromeda Nova. Count of plates exam.

Bk. 10, p. 219		15	
	220	28	I 1890 to 1901 every year.
25	H	27	ac +30° 1898 to 1923
	5	4	(except 1901)
	6	28	ac +45° 1899 to 1923
	7	28	(except 1911, 1912, 1913,
	8	57	1914)
	9	56	AI, a few late plates.
	10	49	A, all
	11	4	B, early, (these are none)
	12	54	
	13	58	
	14	58	
	15	56	
	16	23	
	18	54	
	19	6	
	20	7	
	21	dpl. of others	
	22	28	
	23	24	
	24	16	
		680	
10 p. 218		21	
		701	

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1922phae.proj.1203W

Tuesday, July 3, 1923.

Additional Stars, 6 K S

Dark, raining.

ac 11723 given me by Dr. Shapley to measure stars as marked.
To interpolate more stars in a sequence of 6 K S -

Images are very faint and slightly elongated. Used Scale R as this is most comparable and goes to 12th division.

		Scale R	Scale 2	Mean by HS	Mag
Film up.	1	10.9	10.9	10.9	1.4
	2	12.3	12.3	12.3	
N.	2d	11.2	11.2		
S	2a	11.1	11.2	11.15 –	8.1
	2b	10.9	11.0	10.95 –	7.9
	2c	11.7	11.7	11.7 –	~~8.1~~ 8.9 ✓
	2d	11.8	11.8	11.8	
	2e	11.7	11.7	11.7	
which ?	2a — f	11.9	11.7	11.8	9.1

2a
2b
2c
2e
2
1
2d

sketch – glass up, N. up.

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1922phae.proj.1203w

Saturday, July 7, 1923.

6Ks Meas. of Prismatic Companions of Stars, MC 3577

			Red by HS (Stars already marked)	
1	11.1	11.0	11.05	(2.0)
2a	11.3	11.4	11.35	8.1
2b	11.5	11.5	11.5	8.2
2c	11.8	11.8	11.8	8.16
2	13.0		13.0	
2f	12.5	12.5	12.5	9.3

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1922phae.proj.1203w

Cont. from Bk. 10, p. 209 Meas. Aug. 7, 1923

Comas Solá Variable

Meas. with glass mm. scale

For Positions on Bk. 10, p. 195

a 8775 Large images – centers measured

a pl. film up.

1	4.35	15.22	+4.30	+15.22	+4.32	03	-02
2	21.15	8 27	-21.08	+8.25	-21.12	03	04
3	1.48	5.62	-1.48	-5.60	-1.48	00	00
6	20.25	9.15	-20.25	+9.18	-20.25	00	00
8	13.62	6.38	-13.60	-6.40	-13.61		
9	10.60	~~+11.74~~ 14.98	-10.58	~~+11.77~~ 14.96	-10.59		
10	16.60	11.78 4	-16.68	+11.75	-16.64		
11	9.10	9.28	-9.10	+9.28	-9.10		
Var.	17.68	4.30	-17.65	+4.40	-17.66		
12	12.95	5.98	-12.95	+5.98	-12.95		

Orient by B 8639

7 = -8 3942 15 10 43.3 -8 7.1

-8 3941 15 10 43.1 -8 48.1

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1922phae.proj.1203V

+15.22	00 00
+ 8.26	01 01
- 5.61	01 01
+ 9.16	01 02
- 6.39	01 01
+14.97	01 01
+11.74	00 01
+ 9.28	00 00
+ 4.35	05 05
+ 5.98	00 00

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1922phae.proj.1203W

Position of Star 6

			x-St.6	y-St.6
			mm	mm
1	+4.32	+15.22	+24.57	+6.06
2	−21.12	+8.26	−0.87	−0.90
3	−1.48	−5.61	+18.77	−14.74
6	−20.25	+9.16		

	x × 60″	y × 60″		
	1474.20	368.60	= 6′	3.6
	52.20	54.00	=	
	1126.20	88 +1126.20	= 14	46.2

1	15	11	32.16	−7	54	38.1	sec δ = 1.0096
		1	39.22		6	3.6	1474.20
	15	13	11.38	−8	00	41.7	15)1488.352320
							99.223

2	15	13	13.52	−8	1	53.5	1.0099
			3.51		0	54.0	52.20
	15	13	10.01	−8	0	59.5	15)52.716780
							3.514

3	15	11	54.48	−8	15	27.2	1.0105
		1	15.87		14	46.2	1126.20
	15	13	10.35	−8	0	41.0	15)1138.025100
							75.87

							δ	α
	15	13	11.38	−8	00	41.7	+0.80	+5.7
	15	13	10.01	−8	0	59.5	−0.57	−12.1
	15	13	10.35	−8	0	41.0	−0.23	+6.4
		X	174			222		
Star 6								
Mean 1900	15	13	10.58	−8	0	47.4		

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1922phae.proj.12037

Position of Star 8

			x-St. 8	y-St. 8
1	+4.32	+15.22	+~~9.29~~ 17.93	+~~8.83~~ 22.61
2	−21.12	+ 8.26	− 7.51	+14.65
3	− 1.48	− 5.61	+12.13	+ 0.78
8	−13.61	− 6.39		

x × 60	y × 60	
1075.80	~~2796.60~~ 1356.60	= 22′ 36.60
45060	879.00	= 14 39.00
727.80	46.80	

15 11 32.16 −7 54 38.1
1 12.41 22′ 36.6
15 12 44.57 −8 16 14.7

1.0096
1075.80
15)1086.127680
72.41

15 13 13.52 −8 1 53.5
30.34 14 39.0
15 12 43.18 −8 16 32.5

1.0099
450.60
15)455.060940
30.34

15 11 54.48 −8 15 27.2
49.03 0 46.8
15 12 43.51 −8 16 14.0

1.0105
727.80
15)735.441900
49.03

15 12 44.57	−8 16 14.7	+0.82	+5.7
15 12 43.18	−8 16 32.5	−0.57	−12.1
15 12 43.51	−8 16 14.0	−0.24	+6.4
	226		+21.2
Star 8 Mean 1900	15 12 43.75	−8 16 20.4		

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1922phae.proj.1203W

Position of Star 9

	Mean x	Mean y	x - St. 9	y - St. 9.
1	+4.32	+15.22	+14.91	+0.25
2	-21.12	+8.26	-10.53	-6.71
3	-1.48	-5.61	+9.11	-20.58
9	-10.59	+14.97		

x × 60"	y × 60"
894.60	15.00
631.80	402.60 = 6' 42".60
546.60	1234.80 = 20 34.80

15 11 32.16 −7 54 38.1
1' 0.21 15.0
15 12 32.37 −7 54 53.1

sec δ = 1.0096
894.60
15)903.18.8160
60.21

15 13 13.52 −8 1 53.5
42.54 6 42.6
15 12 30.98 −7 55 10.9

1.0099
631.80
15)638.05.4820
42.54

15 11 54.48 −8 15 27.2
36.82 20 34.8
15 12 31.30 −7 54 52.4

1.0105
546.60
15)552.33.9300
36.82

					s	"
15 12	32.37	−7	54	53.1	+0.82	+5.7
15 12	30.98	−7	55	10.9	−0.57	−12.1
15 12	31.30	−7	54	52.4	−0.25	+6.4
	4.65			1764		

Star 9
Mean 1900
15 12 31.55 −7 54 58.8

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1922phae.proj.12033

Position of Star 10

1	+ 20.96	+ 3.48
2	− 4.48	− 3.48
3	+ 15.16	− 17.35
10	−16.64	+ 11.74

x × 60"	y × 60"	
1257.60	205.80	= 3' 25.80
268.80	205.80	= 3. 25.80
909.60	1041.00	= 17 21.00

15 11 32.16 − 7 54 38.1
84.64 3 25.8
15 12 56.80 −7 58 3.9

recd = 1.0096
1257.60
15) 1269.672960
84.64

15 13 13.52 − 8 1 53.5
18.09 3 25.8
15 12 55.43 −7 58 27.7

1.0099
268.80
15) 271.461120
18.09

15 11 54.48 − 8 15 27.2
61.28 17 21.0
15 12 55.76 −7 58 06.2

1.0105
909.60
15) 919.150800
61.28

15 12 56.80	−7 58 3.9		+0.80	+8.7
15 12 55.43	−7 58 27.7		−0.57	−15.1
15 12 55.76	−7 58 6.2		−0.24	+6.4
	299	37.8		

Star 10
Mean 1900 15 12 56.00 −7 58 12.6

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1922phae.proj.1203N

Position of Star 11

	Mean x	Mean y	x - St. 11	y - St. 11
1	+4.32	+15.22	+13.42	+5.94
2	-21.12	+8.26	-12.02	-1.02
3	-1.48	-5.61	+7.62	-14.89
11	-9.10	+9.28		

x × 60"	y × 60"	
805.20	356.40	= 5 56.40
721.20	61.20	= 1 1.20
457.20	893.40	= 14 53.40

15 11 32.16 −7 54 38.1 sec δ = 1.0096
54.19 5 56.4
15 12 26.35 −8 0 34.5

805.20
15) 812.929920
54.19

15 13 13.52 −8 1 53.5
48.56 1 1.2
15 12 24.96 −8 0 52.3

1.0099
721.20
15) 728.339880
48.56

15 11 54.48 −8 15 27.2
30.80 14 53.4
15 12 25.28 −8 0 33.8

1.0105
457.20
15) 462.000600
30.80

15	12	26.35	−8	0	34.5	+0.82 +57
15	12	24.96	−8	0	52.3	−0.57 −12.1
15	12	25.28	−8	0	33.8	−0.25 +6.4
		16.59			120.6	

Star 11
Mean 1900 15 12 25.53 −8 0 40.2

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1922phae.proj.12033

Position of Star 12

			x - St. 12	y - St. 12
1	+4.32	+15.22	+ 17.27	+ 9.24
2	-21.12	+ 8.26	- 8.17	+ 2.28
3	— 1.48	- 5.61	+ 11.47	- 11.59
12	-12.95	+ 5.98		

x x 60"	y x 60"	
1036.20	554.40	= 9' 14.40
490.20	136.80	= 2 16.80
688.20	695.40	= 11 35.40

15 11 32.16 -7 54 38.1
1 9.74 9 14.4
15 12 41.90 -8 3 52.5

sec. δ = 1.0096
1036.20
15)1046.147520
69.74

15 13 13.52 -8 1 53.5
33.00 2 16.8
15 12 40.52 -8 4 10.3

1.0099
490.20
15)495.052980
33.00

15 11 54.48 -8 15 27.2
46.36 11 35.4
15 12 40.84 -8 3 51.8

1.0105
688.20
15)695.426100
46.36

	15	12	41.90	-8 3 52.5	+ 0.81 + 5.7
	15	12	40.52	-8 4 10.3	- 0.57 - 12.1
	15	12	40.84	-8 3 51.8	-0.25 + 6.4
			3.26		174.6
Star 12 Mean 1900	15	12	41.09	-8 3 58.2	

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1922phae.proj.1203W

Leonas Solá Variable.

	Mean x	Mean y	x-Var.	y-Var.
1	+4.32	+15.22	+21.98	+10.87
2	−21.12	+8.26	− 3.46	+ 3.91
3	− 1.48	− 5.61	+16.18	− 9.96
Var	−17.66	+4.35		

x × 60″	y × 60″
1318.80	652.20 = 10′ 52″.20
207.60	234.60 = 3 54.60
970.80	597.60 = 9 57.60

1) 15 11 32.16 −7 54 38.1 — sec δ = 1.0096

1 28.76 10 52.2

15 13 0.92 −8 5 30.3 — 1318.80 ; 15) 1331.460480 ; 88.76

2) 15 13 13.52 −8 1 53.5 — sec δ = 1.0099

13.98 3 54.6

15 12 59.54 −8 5 48.1 — 207.60 ; 15) 209.655240 ; 13.98

3) 15 11 54.48 −8 15 27.2 — 1.0106

1 5.40 9 57.6

15 12 59.88 −8 5 29.6 — 970.80 ; 15) 980.993400 ; 65.40

15	13	0.92	−8	5	30.3	+0.81 +5.7
15	12	59.54	−8	5	48.1	−0.57 −12.1
15	12	59.88	−8	5	29.6	−0.23 +6.4
		180.34			108.0	

Var.

Mean 1900 15 13 0.11 −8 5 36.0

1.3 1875 & 1900 −6

(about 1925) 15 14.3 −8 12

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Sola Vol., see f. 44

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Friday, September 21, 1923.

For Mr. Sutey (Request of Dr. Shapley

WW Cygni. Cepraski's Var.

+41 3595 B0 0.6 +41 18 9.3 – 12.5

(1855) 19 59 3.4 +41 10.7 9.5

I 22981

28910

31101 (Marked for Addn. of print)

See +41° 3596 95 N.S. on plates.

A missing DM Star?

Three very ft. stars near por.

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Thursday, October 4, 1923.

NGC 251 For Dr. Shapley.

To look up A plates showing S. 1923 Piscium
A. N. Str. 5249, p. 283.
Star variable in NGC 251. K. Reinmuth.

Look up long exp. I & B pl.
" " MC. None.
A plates
C " None

Near DM star
+18° 106 0h40m29.s5 +18°40'.8 8.5 (1855)

just off edge of MC 15583 & 19038

A 1218 I 24106
6069 29230
6084 b
3896

→ Nebula not seen.

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Wednesday, October 16, 1923.

Prof. Bailey's suspected Var. near NGC 6656
See his letter of Dec. 8, 1922.
and letter of Feb. 5, 1923.

I looked up star No. 11, Bk. 10, p. 130,
and found no variation.
His letter of Feb. 5 gives plates for range.
These

MC 17823
17841
17842
~~17864~~
17865
17913
17964

17819 di) show as much change as
17864 ft) any
very slight if any

Mr. B's letters refer to these A plates which
have not been recd from Peru:

A11979 12063
12019 12064
12061 12065
12062 66

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Thursday, October 25, 1923,

for L. Campbell.

Susp. Nova of Mr. Yalden, letter of October 24

near BD +1° 84/21 $17^h 13^m 48^s.8$ +19° 35'.4 7.2 (1855)

Mhd. Star in region

I 12673

15487

17076

MF 4004 1919

a 5548

No recent I plate

" " MC "

ac plates show all bright stars near and would show a bright Nova

ac 25312 July 16, 1923 25357 ($18^h 0^m$)

25325 August 8 Aug. 30, 1923

25364 Sept. 4

25280 June 16

25244 May 7

25229 April 12

25278 June 11

nothing recent except bright stars of chart

Conclusion:

If a bright Nova has appeared it was not bright on Sept. 4.

We have no Lath plates covering region.

Take plate of region.

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1922phae.proj.1203V

Saturday, November 3, 1923.

Yalden Susp. Nova continued.

Plates were taken on or after Oct. 25.

I 42351
52
42863

were examined on Oct. 31 (absence of D.E.W.) By Mr. Campbell.
Suspected nova not seen.
No more plates to be taken
(note of M. A. Gill)

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1922phae.proj.1203w

Cont. from
Bk. 10, f. 205
Bk. 25, f. 28

Thursday, December 6, 1923.

Comas Solá Variable.

Letter to Dr. S. from S. Belyavsky, Simeis, Russia (Nov. 12, 1923)
giving computation of Period
J.D. 2419173.377 + 0.d269624 · E
Computed phases
I plotted values as given in HB —
with this value of P.

Corrected this P to 0.2696243
after trying some others
0.2696245 was promising

Plotted Phases reduced from formula:
2413325.755 + 0.2696243 · E
One point is on descending curve and
not accordant. Corr. all ~~maxima~~ Phases
by −.008. (Maxima +.008)

Formula = Max. = 2413325.763 + 0.d2696243 · E.

Observations were corrected in Ledger
for equation of light. See sheet for
limits of dates.
Maxima were computed.
Phases reduced.

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1922phae.proj.12037

Light Curve: Arranged Obs. in order of Phases
Means of four observations, Phases & Magn,
on descending branch. Means used to
hundredths, Magn.
Ascending branch, single Obs.
Light curve plotted.

not more than 0.00001

a plate 60.m exposure, coming just
at max., ~~is~~ omitted.
All magns. in colons are omitted.

See results, H. B. earlier works 791 796

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Saturday, December 8, 1923.

For Dr. Shapley — (Dr. Luyten?) Motion?

CDM. $-26^\circ 16878$

$23^h 55^m 26.3$ $-26^\circ 29'.1$ 8.6 (1875)

Identified star on B16759

Plate of long exp., showing faint stars, B34312 60m

A slight change may be indicated by 19890, 28413

In same portion of plate, comparable images, but slight diff., in comparison with other stars of similar magn., seems to be photographic. Also seems a trifle br. on B22188.

N.B. Very large image on B14461

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1922phae.proj..1203V

Plates scanned:

B 4398 October 10, 1889
5724
10570
14461
~~17011~~
16759
17011
17843
19890
20795
22188
23152
25801
26171
26593
28333
28413
28591
30185
30629
32837
34225
34312
34578
36632
39528
40959
41834
43965 July 14, 1913

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1922phae.proj.1263V

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1922phae.proj.1203W

Corr Magn?

Yes

Saturday, December 8, 1923.

Request of Dr. Shapley
To measure all minima Observations
WW Cygni $20^h\ 0.6^m$ $+41°\ 18'$ (1900) (Print of region)

Plates selected by Mr. Rufus Suter. (His phase
His comparison Stars marked on
AC 15338

Age Study
Corr. Magn?
Mr. Suter
used Corr.
Magns.

A = 10.0
B = 10.0
E = 10.3
F = 10.7
D = 11.2
C = 11.7

H 11.9
K 12.3
L 12.8

M 13.3
N 13.7 ? or 13.9

added by IEW See p. 54.

p. 55

Magns. mkd. on I 30708, on edge
N.B. ft. neb.? obj. near Var.
Also on 42819 Diff. fos.

Mr. Suter's Comp. Seq. = B8 = $20^h 00^m$ $+45°$
See print.

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1922phae.proj.12037

Plates recorded in order but not exam. in order.

42786 good pl.

{Ft. est. cut,
{Dec. 15, after obtaining ft. Comp. stars.

I 30708 10.6?
Extreme edge, much elongated.?

30709 11.0?

~~304~~ Extreme edge, only faint

30923 12.6 remeas. 12.5 or 12.6

(Phase = 0 to ∧ ±300)

Near edge

~~Min, no magn. got later.~~

~~about 12.2?~~

42785 11.3

42787 13.6 or 13.7

42786 11.6

42788 12.5

~~12.2 after, need ft. magns.~~

42789 11.5

42790 11.3

42791 10.8

42814 11.1

42815 12.0

~~nearly 12.5?, need ft. magns.~~

42816 ~~Min~~ 13.6

42817 ~~Min~~ 12.8

42818 11.6

42819 11.0

42820 10.3

42821 10.2

42856 12.8

Min

42857 11.5

42858 10.9

42859 10.3

42860 10.1

42864 10.1

42856 is fainter Min than 42815

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1922phae.proj.1203W

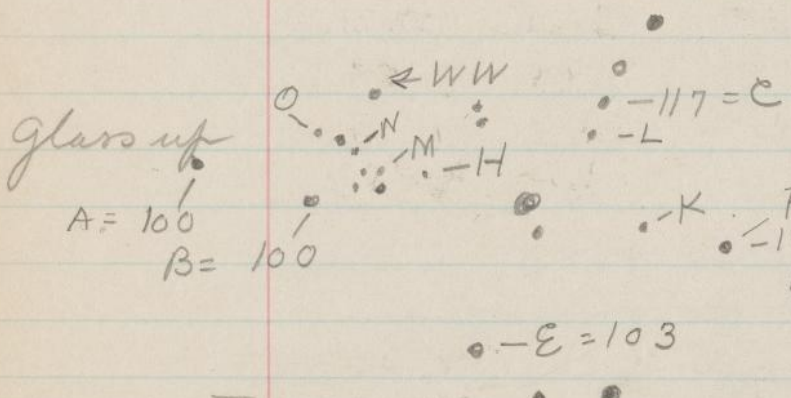
54

Tuesday, December 11, 1923.

WW Cygni Needed fainter stars than Mr. Suter gave in addtl. H K L marked on BD+42815. Seq.

I 42815 film up.

Scale M	Sc. 1	Sc 2	2nd est.	Mean Res.	
Suter 10.7	5.9 = 6.1	6.1		6.10 00 00	
11.2	6.6 = 6.8	6.7		6.75 05 05	
11.7	F	7.2		7.20 . a	
H		7.5	7.4 = 7.45	7.45 . a	11.8
K		7.8	7.8 = 7.80	7.80 . a	12.2
L		8.4	8.3 = 8.35	8.35 . a	12.6



I 42815

Estimates made by Grades

11.7		= 11.7
H	.3	= 12.0
K	.4	= 12.4
L	.4	= 12.8

The neuld = M = 13.4

On 42815 I tried to connect this with Seq. 7 B8, by est. the grades about limits of plate. B8 is on extreme edge so

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1922phae.proj.1203W

Mean of 2nd Est. } Combined in Mean.
1st Est.

I 42788

Scale M	Sc. 1	Sc. 2		Mean	Read fr. Curve
10.7	5.2 = 5.4	5.3		5.35	
11.2	5.6 = 5.8	5.7	Mean	5.75	
11.7	6.2 = 6.4	6.3	6.2 = 6.25	6.32	
H	6.5 = 6.7	6.6	6.7 = 6.65	6.68	12.0
K		7.2	7.1 = 7.15	7.15	12.4
L		7.8	7.7 = 7.75	7.75	12.9

Are these Corr.?

Based on Magns already used by Mr. Seares

	f.54	f.54	f.55	Mean in tenths			
H	11.8	12.0	12.0	11.9	01	01	01
K	12.2	12.4	12.4	12.3	01	01	01
L	12.6	12.8	12.9	12.8	02	00	01

December 15 1923 Found faulty Comp. Stars needed on I 42816

Added M N O see f.54

meas. all faulty stars and 3 additional

Scale M	I 42816	Sc. 2			Read fr. Curve
10.7		5.9			
11.2		6.4			
11.7		6.7			
H = 11.9		7.1			
K = 12.3		7.7			
L = 12.8		8.2			
M		8.7	8.7 = 8.70	13.3	Use
N		9.1	9.1 = 9.10	13.7 ?	On 42787 N is probably at least .6 fainter than M
O		9.5	9.5 = 9.50	~~14.1~~ ?	reject O

If these magns are used more, remeas. on I 42817 and take means.

On better plates, 42787 for example, it seems actually brighter than N

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1922phae.proj.1203W

December 15- & Monday, December 17, 1923.

Est. of ac. Plates.

ac

2030	11.6	Seen
3815	<11.2	Plate scratched near Star 11.7
4951	<11.4	d = at least .2
		Var. possibly trace
5270	11.54	Seen
6282	<11.3	d=.1 V N.S.
6477	<11.2	V N.S.
6968	<12.3	V N.S.
7739	10.5, probably.	Poor
8603	Too poor	V. ft. seen
8897	<11.7	possibly Trace V seen
10917	10.3	
11911	10.5	
12111	<11.9	11.7=.2 V.N.S.
12418	<11.7	V N S
12428	10.0	
12492	10.2	
12494	11.1	
14083	abmt 11.8	
14135	10.5	
14144	10.4	
14176	10.8	
14239	11.0	
14455	11.1	
14541	10.3	
15415	10.0	
Mars? 15338		
16130	abmt 12.0	V Seen, limit of plate
16234	10.5	

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1922phae.proj.1203w

ac	17587	11.3	
	18389	10.8	
	18957	10.1	
	18976	10.0	
	19075	10.2	
	19542	11.1	
	20496	11.5	
	21445	<11.2	V. IV S.
	22211	<10.5	V N. S. 10.3 = about .2

January 7, 1924

Remeas. ac 16130 see plot.

12.0 or 12.1

See ledger giving my magns. and Mr. Suter's phases. Also, plot of my estimates.

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1922phae.proj.1203W

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Monday, December 19, 1923

Cont. from Bk. 16, f. 47

Wolf's Nova Aquilae, No. 2. 191301

Miss Cannon requested me to look up late plates. Report that Nova Aq., No 4, has been brighter during past 2 year.
See B [illegible] 1923, 5, 41
No 19

Material;
Chart of regim, Bk. 10, p. 25.
Magns. Bk. 45 (Miss Leland), p. 144.
→ N.B. These magns. are uncorrected for 1922. Were adopted and used in 1921.
Ledger.
Announcement of Results, H.B. 753
Seq. mkd on MC 15238

No MC plates fol. Ledger

Conclusion: No estimate on [illegible] plates after 1921

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Vy mbd 14949 ft. stars 15793

Am 14949 remeas. for connection with earlier work.
Plate of 1919 11.4
Am Plates 19^h 00

Am 15611 <11.5 6 barely seen
June 13, 1921
Am Plates at $20^h 0^\circ$

Nova N.S. Est. given where faint stars show

Am 15751 May 4 1922 <10.6 3 barely seen
15793 May 18, " <12.7 12 " "
possibly a hazy trace of Nova —
15869 May 23, 1922 <11.4 7 possibly 8 seen
15828 May 31 "
15874 June 19 "
15901 June 28 " <11.9 9 seen
15911 June 29 "
15942 July 13 "
15981 July 22 "
15984 July 25 "
16021 Aug. 11 "
16057 Sept. 7 "
16065 Sept. 9 "
16073 Sept. 16 "
16108 Oct 11 "
16239 Apr. 26, 1923
16290 June 4 "
16372 Aug. 17 <13.1 14 seen
16409 Sept. 7 <12.6 11 barely seen.

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Nova Aquilae No. 4

Nova N.S. Ac Plates $19^h\ 0^\circ$

Ac 23666 Poor
24073 Sept. 4, 1921
24101 Sept. 15, 1921
24131 " 23, "
24383 Poor.
23857 Poor

Ac Plates at $20^h\ 0^\circ$

Ac 23605 Poor.
23786 Poor.
23947 Poor
23992 Poor
24170 Oct. 1, 1921 < 11.2 5 seen.
24317 Oct. 27, 1921
24335 Poor
24441 Dec. 7, 1921
24781 May 29, 1922 < 11.9 9 seen
25287 Cl. W

Several plates Cl. C^r not exam. — too many images. Nova apparently N.S

25304 Cl. W.
25319 Cl. W
25333 Pair Excellent pl. 2 images N & S.
Nova N.S. Aug. 13, 1923.
25367 Sept. 6, 1923 N.S.

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Nova Aquilae No. 4

Nova N.S. Ac Plates $19^h +15^\circ$
on all plates

Ac 24959 Poor.
25256 May 17, 1923 < 11.5 6 seen.
25308 Poor.
25318 "
25331 "
25332 Aug. 13. < 11.5 6 seen
25345 N.S.
25391 Poor.

23745 June 1, 1921
many plates ex. which barely show stars 1, 2, 3.
No record made.
24698 Mar. 23, 1922 < 11.5 6 barely seen
24925 Oct. 19, " < 11.5 6 Seen.

Ac Plates $20^h +15^\circ$
23675 May 10, 1921

Am Plates
$20^h +15^\circ$
Am 15626 ft. stars not seen.

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Nova Aquilae, No. 4.

AX Plates $20^h\ 0^\circ$

Nova N.S. on all these pl.

AX 124 June 16, 1923 N.S.
130 June 20, " <11.9 9 exp
179 Aug. 8, "
190 " 15, "
243 Oct. 2, " <11.9 9 exp
296 Nov. 3, " <11.9 9 exp
19 - 15
AX 242 Oct 2 "

Plates AX at $18^h\ 0^\circ.0$ region on extreme edge. not exam.

AX $19^h\ +15^\circ$
110 May 14, 1923.
123 June 16, "
134 July 4, "
167 Aug. 1, "
205 " 30, " <11.9 9 exp.
213 "

MC 19934
19952 at 19.4 -2.5
19959
region off edge

No B Plates after 1918
No MF " as far as records were found (~~Aug. 1922~~) Sept, 1923.

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1922phae.proj.1203W

Tuesday, December 11, 1923.

Nova Aquilae, No. 4.

I Plates exam.

I 41306 May 23, 1922, N.S. < 14.1
extreme edge but faint stars show.
16 & 17 secs

41307 May 23, 1922 N.S < 12.7
extreme edge. 11 & 12 secs

41472 Aug. 15, 1922 N.S. < 12.1
9 & 10 secs

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Monday, January 14, 1924.

Miss Cannon asked me to verify seq. of R R Puppis for Dr. Yamamoto.
Comp. Seq. Carte 8.0 -40°
As marked on B 50212
This seq. marked by Dr. Y on AM 14576 with magns.
Magns. Bk. 35, p. 134.
Y's seq. selected on plates, was plotted on paper.
He marked Seq. in letters on B 50212, on edge.

Using also AM 10597, 25, for verification

Estimates on AM 14576 using Comp. Seq.

a	9.4
b	9.5
c	9.5
d	9.8
d^{11}	10.0
d^3	10.3
e	10.5
f	10.5
g	10.6
h	10.8
k	11.1
l	11.2
m	11.3
n	11.4

on B 15660
Method: using early est. as given on AM 14576 and grading or confirming by B plate

a	9.4
~~b~~	9.6
d	
d^3	10.3
e	10.5
f	10.6
~~g~~	~~10.6~~
h	~~10.8~~ Corr. to 11.0
l	11.1
m	11.2
n	11.5

d seems to be a B pl.
K seems to be.

reject others
letter consecutively
* marked magns. B 12338

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1922phae.proj..1203w

W Puppis 44:138

W Puppis is closer than 8.0 -40 Deg. Seq.
Magns. Bk. 44, p. 138
only 1 meas.
These magn. seem fainter than accepted magns. (for faint stars) but only 1 meas is given

Conclusion:
Miss C. and B 12338 and Dr. Y's mean estimates.
Use means of Y & W
* Corr. Magns. for 1922 Scale cat.

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1922phae.proj.1203w

Monday, March 3, 1924.

M.A.Gill's Variable Star 20h 9.3-6018 Magn. Ft. Comp. Stars A

B 31879

Sequence		Scale M		Mean.	*Magn. (Corr. 1922)	Magn.-Mean.
Paronis	f	3.7 = 3.9	—	3.90	10.17	6.27
as marked on	g	4.4 = 4.6	4.5	4.55	10.50	5.95
B14501	h	4.6 = 4.8	4.7	4.75	10.82	6.07
	k	4.9 = 5.1	5.0	5.05	11.15	6.10
	l	5.5 = 5.7	5.6	5.65	11.38	5.73
	m	6.8 = 7.0	7.0	7.00	11.86	4.86
Sc. M. Corr. = +0.2	m		7.7	7.70	12.24	4.54

	Est.					Read fr. Curve	Magn.
marked	12.3	o	~~8.3~~	8.3	8.30	~~8.4~~	~~4.48~~ 4.78	12.78
"	13.8	f	—	8.8	8.80		4.30	13.10
"	11.2	—	5.3 = 5.5	5.5	5.50		5.65	11.15

*Magns., see Ledger Comp. Star Sheet, + Corr. for 1922

Interm. Seq.

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1922 International Corr. is included

Difficult, extreme corner,

A 1979

	Scale P		Mean	Magn.	Diff.
h	3.4 = 3.1		3.10	10.82	7.72
k	3.6 = 3.3		3.30	11.15	7.85
l	3.8 = 3.5		3.50	11.38	7.88
m	5.8 = 5.5	56	5.56	11.86	6.31
n	6.6 = 6.3	64	6.35	12.24	5.89

Sc. P. Corr. = -0.3

				Read, fr. Curve	Magn.
o	~~7.3 = 7.0~~	7.3	7.30	5.42 (extrap)	12.72
p	~~8.2~~	8.2	8.20	5.06 (")	13.26
11.2	3.7 = 3.4	~~3.40~~	3.40	7.74	11.14

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1922phae.proj.1203w

Monday, March 17, 1924

For Dr. Shapley.

Looked up Reinmuth Object See H.B. - 799

"Copenhagen - Reinmuth - March 3

March 3	9^h	42^m	18^s	$+22°$	$9'$
		22			4 35
March 14	9	20.3		+26	44

Daily Motion 2^m West
prec. $\frac{11^d}{22^m}$
$25'$ North
$\frac{11^d}{275'} = 4° 35'$
Magn. 13.

I 43252 March 14, 1924 taken for Obj. Exp. 15^m
compared with I 24640 (1900)

AI 23174 March 13, 1924 taken for Obj. Exp. 61^m
compared with AI 7354 (1908)

Limits marked on I 24640 = 9 42 to 9 20
+22 to +27

Regions of Obj. would be near North Margin,
if correctly computed.

→ No Object found

(Dr. S. confirmed reduction)

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1922phae.proj..12037

Saturday, March 29, 1924.

For Dr. Shapley.

Andromeda Nebula Region.

Examined on AC Plates by Miss Howarth

Suspected Objects to be confirmed by D.E.W.

See Record Bk. of Miss Howarth, p. 75.

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1922phae.proj.1203W

Saturday, April 12, 1924

For Miss Cannon.

To confirm 2 vars, regions Milky Way

18h 45m -8°

See print marked by Miss C. (MC5497)

Var. No. 10 Confirmed

marked on MC 19744

MC 19744	Ft	Min ←
19793	Ft	
19826	Brighter	
19857	Bright	
19860	"	
19866	"	Max. ←
19897	"	
20001	Faint	

⊙ defect

Var. No. 13

19744	nearly = 1
19793	" as faint as 3 (2-3) Min.
19826	a little br. than 1 Max.
19857	fainter than 1
19860	nearly = 1
19866	" = 1
19897	brighter than 1
20001	brighter than 2

A genuine variation, not very large range. perhaps 1½ magn.?

Min. not confirmed.

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1922phae.proj.12037

Monday, April 14, 1924.

For Miss Cannon.

Extra stars in sequence ~~X~~ WI Cygni.

For magns. for meas. of D.D. regions.

Sequence marked by Miss Wilson on I 30954 and magns. on AC 15509

Want magns. between 8.9 and 9.7
and 10.4 and 11.5

Magns. see Bk. 9a, f. 170

Stars 1, 2, 3 marked on AC 14428.
Selection confirmed on other AC plates by Miss C.

Stars 4, 5 marked on I 30954.

~~Est~~ a (8.9) as given in seq.
b 9.8 est
f (10.0) as given in seq.
1 9.5 est.

AC 14428

Scale N

	Sc B	Sc C	Mean	Magn	Diff	Plotted. Read from Curve	
a	6.9 = 6.5	6.4	6.45	8.89	2.44	~~2.25~~	
b	7.8 = 7.4	7.5	7.45	9.71	2.26		
1	7.6 = 7.2	7.1	7.15			2.25	9.40
2	—	7.3	7.3			2.22	9.52
3	—	7.7	7.7			2.06	9.76
f	8.1 = 7.7	8.0	7.85	9.96	2.11		

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1922phae.proj.1203N

p. 75 Cont.

I 25881 Scale Measures

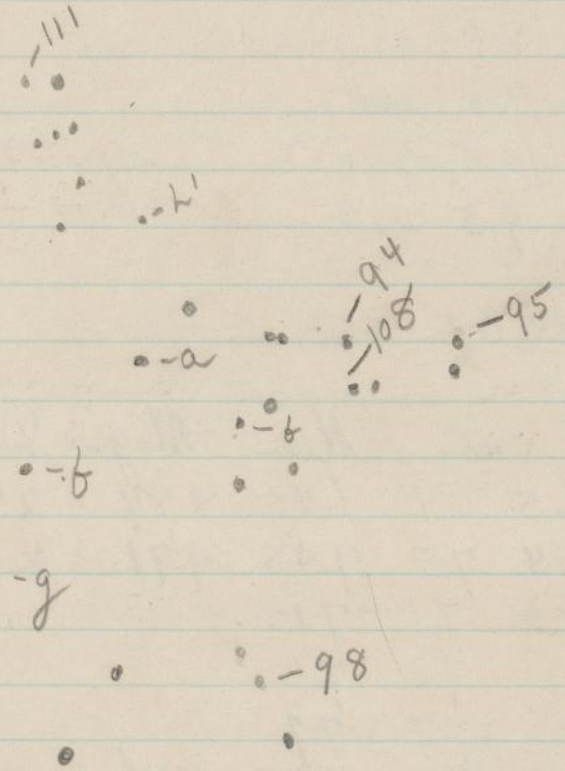
	Sc M	Sc. 2 (no correction)	Diff	Read. from Curve	
Star 10.4	4.6	10 39	5.7 3	5.7.9	
11.5	5.5	11.46	5.96		
New star H	4.8			5.85	10 65
" " 5	5.2			5.90	11.10

Curve not saved.

Estimates

	AC 14428	AC ?	AC 15501	AC 27334	Mean Measures (above)	
g	10 4	10 4	10.4	10.4		
4	10 9	10 8	10 7	10.7	10.65	10.75
5	11.2	11.1	11.1	11.1	11.10	11.10
h'	11.5	11.5	11.5	11.5		

Magns. marked on AC 6615



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1922phae.proj.1203N

H.B. 803

Monday, April 21, 1924.

For Dr. Shapley

In Gazette Astronomique, No. 122-123, p. 19

Nova in Spiral Nebula M 87, N.G.C. 4486.

11.5 Magn.

24 Feb. 1919 to 12.2 Mar. 22, (1919?) N.S. Mar. 25, 1920.

(1922 Balanowsky)

12h 25.8m +12° 57' N.A 60-8

N.G.C. 4486 =	12h	23m	44s	76	50.1	Dec. +13° 9'.9 (1860)
= BD +13° 2546 =	12	23	29.7	+13	10.6	neb. (1855)

Marked on I 30524

Plates from Dec. 1918 to May 1920

I 39545, 39546 } at 12h.0. (do not cover region)

Dec. 1918 to Sept. 1919

Few AM & AC plates show even the brighter stars near neb.

AM	14656	12.0	+15	Too poor	
	14681	12.0	0	May 4	Neb. barely seen
	14718	12.0	0	May 23	" " "
	14727	12.0	0	May 28	" " "
*	14780	12.0	+15	Faintest stars Nova N.S. seen of any ample.	June 21

AC 1918 to Jan 30 1919 find 20 000

*	21012	12.0	+15	Shows stars north of cluster. Nova N.S.	date Jan 26. N B
	21046	12.0	0	Feb. 1	Stars N of Cl. barely seen
*	21105	12.0	0	" 9	Stars N. of Cl. seen. X
	21168	12.0	0	L'	
	21223	12.0	+15	March 2	Too poor
	21260	12.0	+15	March 10	Too poor
*	21304	12	+15	March 25	Shows Nova N.S. Stars N of Cl.
*	21309	12	+15	March 26	April 9 Too poor
	21352	12	0	April 27	Too poor
	21392	12	0		Shows stars N. of Cl. Nova N.S.
	21397	12	0	Feb. 15, 1920	

21423 May 6, 1919 Excellent plate shows ft. stars. Nova N.S.

22044 Nov. 30 barely shows stars near Cl.

other AC plates of required dates not looked up. Image is very small on AC plates. Neb. X

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Nova Sem MC 15773 March 3, 1919, 30m Eff.
Shows star of ? mag. in this position.

Not P.C. of bright star (Compared with MC 7822 10m Eff.) for Superposing
(Extreme S fol corner)
no other MC plates.

See bright Difect on AC 21309 March 26, 1919
Nearly Coincident (N) with +13°2428 11 27 37.3 +13 8.1
Magn 9.1

Not a Planet.
Assume Defect.

a Plates, long exp. Eff.
a 6720 May 10, 1904 227m
6793 July 2, " 60
For other a plates, see p. 81.
No MF plates

B 5903 May 15, 1890 Cl. Sem Nova N S
18931 April 23, 1897
Get early B pl's. None.

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1922phae.proj.12037

Note 1 magn diff 10-11

Tuesday, April 22, 1924

Balanowsky's Nova.

Magn. of Nova on MC 15773, f. 78.

80K MC 1660, Seq. plate. Magns. Bk. 19, f. 41.
Selected stars near Nova of approx. same magn.
Begin 1660 = 12 11 +15.2, overlapping 15773.
→ Exp. 1660 = 60m
Selected stars on 1660 = selected stars. ?
Compared with seq. = 11-12 or slightly abont 13.0 Uncorr
To correct for exp? No.

	Uncorr.
10	11.88
11	12.84
12	13.42

9 = 11.78

Also, same comp. on MC 7822 10m exp. of 80K

Comparing 15773 & MC 15606, see Bk. 21, Cover.
Nova = 8 = 12.55 Corr.

Compared with MC 4824 12h 20m +10° & 10m exp.
Star selected on 15773 equal to Nova
This star mkd on 4824 and compared
with seq. mkd on 4824
(Compared directly, therefore no allowance for exp need be made)
Are these Satis. values?
(2 read. No means)
(On card 8)
Nova = bet 4 & 5 = 11.7 ? Uncorr
Magns

4	11.06
5	11.94

4894 has this seq. mkd also

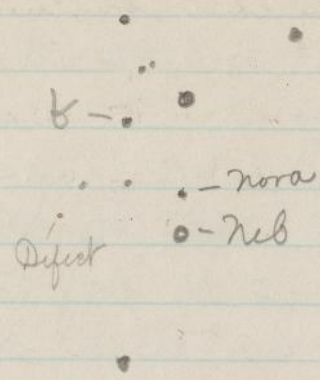
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1922phae.proj.1203W

a

Wednesday, April 23

from MC 15773



On MC 15773 Nova about = star a ~~a trifle~~
On AC 21423 (12 +15) a is a little fainter
than 10 of Seq. of 80 K

Seq. 80 K, see MC 1660

	Uncorr.	Corr.
nova =	12.0	= 12.24

Two regions noted on a 9477

adopt 12.4 corr.

		weight
12.24	24 − 3	−2
12.55	24 0	+2
11.9	12 −7	−3
13.2	½ 1 +6	+3
12.56		
.38 V		

Var of SS Virginis noted +1° 2694 12h 17m 50.1
+1° 35.2 8.1
on a C Plates

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1922phae.proj.1263w

A plates, short exp., examined for Nova.

A 4245 1900 Star b seen. No trace of Nova

~~6367 1903 Neb. on extreme f.l. edge of plate. No exam. Satisfactory Nova~~

This Neb. as exam. just included 4486

9476 1909 Neb. on extreme N. edge of plate. Nova evidently N.S. or just off edge of film. (Space seems to be sufficient to show it N. of Neb. if it were present.)

9477 1909 Neb. marked. Star b seen. No trace of Nova.

No late A plates

Spectrum A plates

A 1368 1895 shows Neb. & star b

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Regim of Neb. exam. on I Plates.

These I plates show Neb. and most of them show stars as faint as α, p. 80; many show stars fainter.
Faint stars seen on I 3532, 5778, 5929

** N.B. object on I 17950 Is this a star?
North of Neb., faint, but apparently not
Found May 9 → in position of Nova.
Another Nova?

I 17991 following day but poor plate
18088 May but does not show ft. stars.
B 18931, April 23, extreme edge. Cl. Seen.
Exam. by A. S. & Miss Cannon.

17950
"Does not looks like other stars." Prof. K. May 12
May 17. Exam. by Prof. King with microscope —
Probably defect.

Neb. = 12 25.8 +12 57

Br. Star = 12 25.8 +13 2 = +13° 2545 12h 29.3 +13°
(1900 from N.A. 95) 16'9 8.3

Same R.A.
Dec. +13 2
+12 57
Diff. 5'

Meas. Nora Belawsky
0.98 mm N x 98.2" = 96.236" 136.2" N
Susp. Obj. on I 17950
0.32 mm N x 163" = 52.16" N
Est. by Miss Cannon 1.8 & 1.0 N

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1922phae.proj.12637

These plates exam. May 9, 1924.

I 1292 June 16, 1890
1350 June 28, 1890
3071 Feb. 13, 1891
3532 May 1, "
5778 March 4, 1892
5929 Mar. 23, "
6112 April 19, "
10827 March 16, 1894
12693 April 17, 1895
17950 April 20, 1897
17991 April 21, 1897 May 17, 1897
18088 20586 April 1, 1898
~~18088~~ 20748 April 26, "
22227 January 25, 1899
24619 February 18, 1900
25017 April 3, "
25055 April 6, "
30354 April 21, 1903
30524 May 20, "
33971 April 1, 1906
40215 January 3, 1921
40216 Jan. 3, 1921
40343 March 3, 1921
41004 March 3, 1922
MF 2422 March 3, 1918

Nebulae area suspected but no Wolf-Rayet Object.

May 9 & 10.
These plates were re-examined after finding object on 17950. On early exam. I had looked only for nova in position as given for object of 1919 & specially I then made exam. of all the immediate region of Neb. No object bright enough to be seen on I plates. I 40216, very ft. object Fol. & N. of

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Wednesday April 23, 1924.

For Miss Wilson.

$20^h +30^\circ$

Additional stars in sequence of 8 Ks (NGC 4195)

Magns. as marked by Miss Wilson on AC 20375 and 15509.

Compared with another seq. already marked on plate.

Wanted: one or more stars brighter than 9.4

" " " " between 9.4 & 10.2

(Magns. used as marked, not verified from original by D.E.W.)

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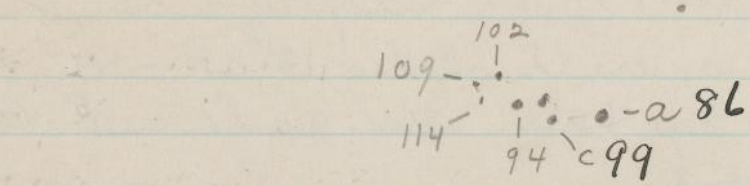
1922phae.proj.12637

Thursday, April 24, 1924

ac 15509 glare up

Sequence cont.

Called Sequence 2



	Estimates ac 15509	ac 20375	Sc. Readings below	Mean	Use (Inspection of plates)
a	8.5	8.6	8.44 59	8.56	8.56
b	9.1	9.1	9.26	9.15	9.2
c	9.9	9.9	9.90	9.90	9.9
a'	8.2	8.1	8.44	8.25	8.2

15509 images poor shape

ac 20375	Scale Mags. Sc. 13 · Sc. C.	Mean	Sc. N Magn.	Diff.	Read. from Curve	Magn.
a'	5.9 = 5.5 5.7	5.60			2.84	8.44
a	6.2 = 5.8 5.9	5.85			2.74	8.59
b	7.5 = 7.1 6.9	7.00			2.26	9.26
c	8.2 = 7.8 8.0	7.90			2.00	9.90
9.4 (Magns given 2 Seq)	7.9 = 7.5 7.7	7.60	9.40	1.80		
10.2 (Magns given 2 Seq)	8.6 = 8.2 8.2	8.20	10.20	2.00		
10.9 (Same Seq. as p. 76)	— 9.4	9.40	10.90	1.50		
8.9 (Same Seq. as p. 76)	6.3 = 5.9 5.9	5.90	8.90	3.00		

Curve not saved. May be replotted if needed.

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1922phae.proj.1203W

Friday, April 25, 1924, and
Saturday, April 26, 1924.

Milky Way Region

Examination of Dr. Shapley's New Suspected Variables, on A plates $18^h 55^m - 13°$; marked on 12231.
Most of his vars. were confirmed by Miss Leland.
A list of hers that were to be confirmed over again was given to me to confirm.
List of A plates ~~taken~~ was exam. — p. 88.
All A plates were not exam. for each var. if confirmed by a few.
Entire range may, therefore, not be given by my Max. & Min. but variation is confirmed by these plates.

			Confirmed by Miss Leland.	To be verified.
Br. not confirmed good range	No. 14	Br	12231 12153?	Medium 12093? Ft. 12098, 12196 12487
Verified S & W good range	V 22		*12196 12160 *12484 *12231	12376 12424? 12145?
good range	V 33		12093 *12098	12231 et al.
good range	V 36		12093 12098	12231 et al.
good range	V 44		12231 12196	12098 12093
	V 48		12196 12160	12231 12098
	V 57		12424 et al.	12153 12376 12160
	V 59		12231 *12484	*12196 12098 12093
small range	? 70	right star?	large image? 12484 12145? 2845 4086	others

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1922phae.proj.12031

Susp. Vars. Ld Uncertain.

No. 19 Not confirmed by D.E.W.

below 25 ↗

32 Where is star?

31

34 Not confirmed

40 " "

41 " " Ft. ? 12376

Large image 43 Br. 12424? Ft. ? 12231

45 Not confirmed

47 " "

50 " "

53 " "

54 " "

69 Seen on 2825, 12093, 12 Seen Ft. 12145
Var. N.S, but ft. stars seen,
4086, 4091, 12196*

25 Not confirmed

55 Faint on only 1 pl. 12231

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1922phae.proj.1203w

a plates examined for Milky Way Regions.

a 2845
4086
4091
7905
9828
12093
12098
12145
12153
12160
12196
12199
12376
12424
12472
12484
12487

12231, with Vars. marked, compared with others.

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1922phae.proj.1203N

Corr. Hooker. Magns revised

Thursday, May 1, 1924.

Magns. unsatisfactory
1) Large distance from comp. Sequences.
2) Many are distorted images.

Magnitudes of Vars. in Milky Way Regions.
Variations probed, p. 86. Using plates there noted, Magns. are obtained from 2 sequences already mkd. on 12231!

22 15.2 on 12231 — 15.6? on 12376
15.0 " 12196 — 15.6 or 7 on 12424

33 Abmt 14.2? on 12098 — Trace - probably fainter than 16.2-.4 on 12231. Image of Var. is elongated. 16.2 of Sequence seems brighter
Var. elongated.

36 15.6 on 12098 — Trace — much fainter than 16.2 on 12231 [16.4?

44 15.3 on 12231 — Trace? on 12098
16.2 = abmt .2
Var. < 16.4

48 15.0? 12196 in extreme corner — out of focus. — 16.0?. 12231 ~~Small image~~.

57 15.0 or 15.1 on 12424 — 15.5 on 12153
15.8 on 12160 p. 92

59 abmt 15.0 on 12484 — out of focus — near edge — abmt 16.2 on 12196

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1922phae.proj.1203w

Saturday, May 3, 1924.

Estimate of Range

Var. 14.

15.4 on 12231 abnt 16.2 on 12098

abnt 15.6 on 12153 16.2 or 3 on 12487

Est. Monday, June 2, 1924

Var. 4 14.2 on 12093 15.4 on 12098

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1922phae.proj.1203V

Thursday, May 8, 1924. and later dates

To est. magns. of Max & Min.

Plates Nos. for Max & Min. given me by Miss Ld.

Vars. 3, 4, 13, 14, 15, 16, 21, 22, 24, 26, 33, 36, 38, 44, 48, 49, 52, 52a, 55?, 56, 57, 58, 59, 62, 63, 65, 68, 72, 73, 74, 75, 76, 77

				[16.4 on 12160 Assumed N.S.	
Var.	3	15.5 on	12231	~~15.8 on 12093~~	
				16.1 " 12093	
"	13	13.5	12098	15.1 on 12231	
				(15.1 " " Ld.)	
See p. 90 "	14		12231	12098	
"	15	15.2 on	12098	[16.4 on 12231	
		Var. assumed NS		16.2 = at least, 2	
	21	14.7 on	12098	on 12231	
				16.1 on 12231	
	22	See p. 89			
	33	" " "			
	36	" " "			
	38	15.2	12098	abmt 15.4	12231
		14.7	7905		
	44	See p. 89			
See p. 89	48		12196		12231
Var.?	49	15.3?	12098	15.8? on 12231	12199 could not find 12199
	52	~~about 15.3~~	12231	abmt 15.7 on 5712	
				~~[16.4 on 12098~~	
some star?	52a	13.8 or brighter on 12231		15.5 on 12098 n.6	
				[16.4 on 12098	

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1922phae.proj.1203N

Min of 76 ? Is 74 Var ? Lookref.

Var	55	15.4	12098	15.9 or 16.0 a	12231
	56	15.3	12231	16.3 on	12098
	57	See p. 89 for greater range ~~15.3~~ 15.4	~~12231~~ 4086	15.8 a	~~12160~~
Near edge right star ?	58	15.4 ?	12098	15.8 ? a	12231
		Confirmed ? Miss Ld " range about .5 " June 2.			
See p. 89	59		~~12098~~		~~4091~~
	62	about 15.4 · 15.3 or .4	4091 a 12231	about 15.4 if br. star	10450 See
	63		4091		9828
		"This is lost star" Miss Ld.			
Looks like star	65	15.7	4091	16.2 or .3	12231
Small range Faint perhaps not confirmed		Plates for range	about 15.8 on 12160	15.5 or .6 on 12376	
~~Slight chart~~ See →	68	13.8 on	4091 →	14.1	12231 →
Probable ? Should be about .4 — definite change	72	15.3 ?	4091	15.4 ?	12231 12145
-	73	14.5 on	12098	about 16.4	12231
"Surely varies about .3 or .4 Miss Ld."	74	Reexamined 15.4 on 15.2 a	12098 12231	15.5	4091
	75	15.4	12098	apparently no trace faint star below	4091 Rem. [16.4
	76	15.2	4091	15.5	12231
	77	15.4	4091	16.0	12231

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1922phae.proj.1203N

Var. 69 abmt 16.1 on 12098 probably .4 or .5 fainter than 16.2 on 12231 = 16.7

70 15.2 or 3 on 12098 16.5 on 12231

est. 62 by S

14 S p. 8

→ 68 " " 68 14.4 on 12098

8.4, 8.5

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1922phae.proj.1203w

Tuesday, June 3, 1924

Examination of Plates for range of 52 & 58

52 58

52	15.6 or a	12098	15.2? — *
	Min	7905	—
	Min	9828	—
Plates mkd	Too poor	10701	—
✓ indicate	Min	12093	abnt Min
exam. but	Ft. stars poor	12145	~~abnt Min~~ ✓
no definite	Min	12153	✓
estimate. Est.	15.7	12160	Max
would be within	Min	12196	✓
extreme range	Min	12199	✓
as given by	"	12376	✓
other plates.	* — 15.7	12424	Poor
	15.4?	12472	15.4?
	Min	12484	15.7
	15.7?	12487	Max
		4086	15.7
		2845	Poor.
	* ← 15.2 or 3	12231	abnt 15.7 — *

extreme range verified (~~variation not confirmed~~) as not more than .4 or .5

extreme range verified as abnt .5

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1922phae.proj.1203w

Wednesday, May 7, 1924

Estimates of Magns. for Miss Wilson

Seq. As marked by Miss W. on Ac pl. To fill two intervals with a selected star and determine magn.

See Seq. of Y Cygni

MC 5767

I 25197

Seq. 2
See p. 85
of this Bk.

Comparison of Sequences 2 & 3 on Ac 15507

all magns. of Seq. 2, which were compared, seem larger images than of Sequence 3, out of focus?

Magns. are nearly equal

9.1 – 9.1

9.4 – 9.4

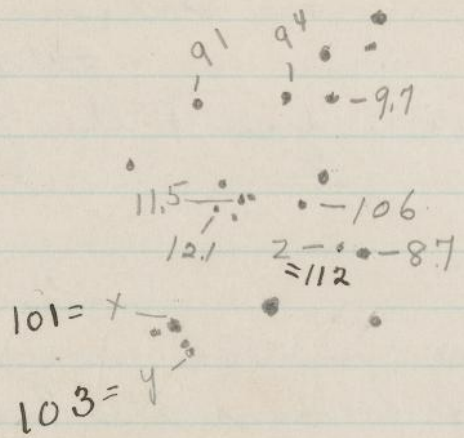
9.9 – 9.7

11.4 – 11.5

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1922phae.proj.1203w

Segment called No. 3.



Compared with Seg. 2

x	10.1
y	10.3
z	11.3 ?

	Est. 1	Est. 2	Sc. Read.	Mean
x	10.1	10.1	10.0	10.1
y	10.3	10.3	10.1 or 0	10.2
z	11.3 ?	11.1	11.1	11.2

Use 10.1^{x} 10.3^{y} 11.2^{z}
by inspection of plate.

Compared with Seg. 3 as already ruled with Magnus

x	10.1
y	10.3
z	11.1

Ac 15507 Scale N

	Sc. B	Sc. C	Mean	Diff.	Read. fr. Curve.	
9.1	6.8 = 6.4	6.2	6.30	2.80		
9.4	7.1 = 6.7	6.5	6.60	2.80		
9.7	7.8 = 7.3	7.2	7.25	2.45		
x	7.8 = 7.4	7.4	7.40		2.55	9.95
y	~~8.2~~ 7.9 = 7.5	7.6	7.55		2.50	10.05
10.6	8.4 = 8.3	8.3	8.30	2.30		
z	~~9.2~~ = 8.8	8.8	8.80		2.30	11.10
11.5	—	9.2	9.20	2.30		

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1922phae.proj.1203W

May 8, 1924.

Asteroid - Bernardina - Mlle. Odette, Jasse
Astronome à l'Observatoire,
Marseille, France.

Letter from Mlle. Jasse.

See plotted positions for Bernadina, 1924,
from Marseille, Eph. 844

MC 20776 $12^h 26^m$ $+10.0^\circ$ June 5, 1924
This plate covers $12^h 4^m$ to $12^h 32^m$
$+8^\circ$ to $+13^\circ$

Asteroid N.S. on exam. for ask. trail.

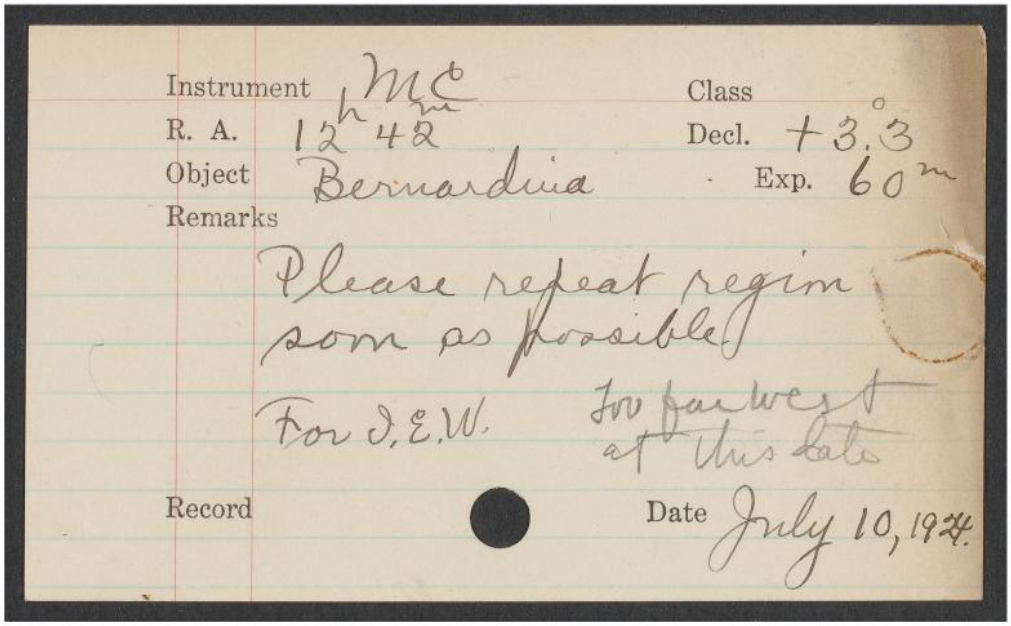
* * Compare again when a new plate is taken.
At present, no plate to superpose.
If any suspected image is found, See I 2874
Eff. 31m, will determine object.

July 10 MC 20809 July 5, 1924 12 42 +3.3
This plate covers $12^h 31^m$ to $12^h 58^m$
$+1.2^\circ$ to $+6.5^\circ$
Compared with 16758 which, only partially covers plate

* → Do again with additional plate.

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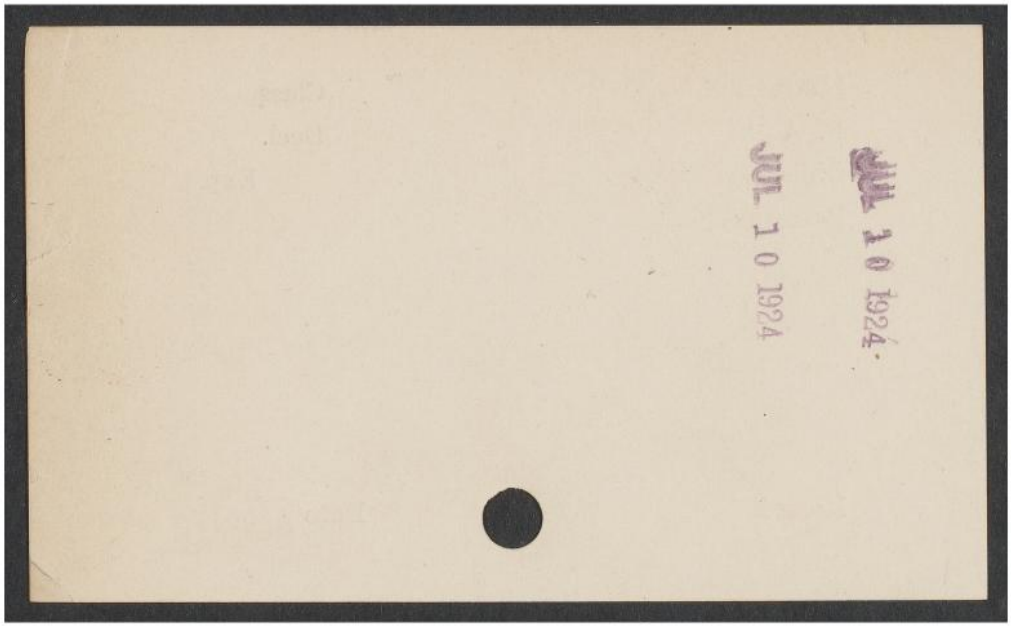
1922phae.proj.1203W



Instrument Mc
Class
R. A. 12h 42m
Decl. +3.3°
Object Bernardina
Exp. 60m
Remarks
Please repeat regim
som as possible
For J.E.W.
too far west
at this date
Record
Date July 10, 1924.

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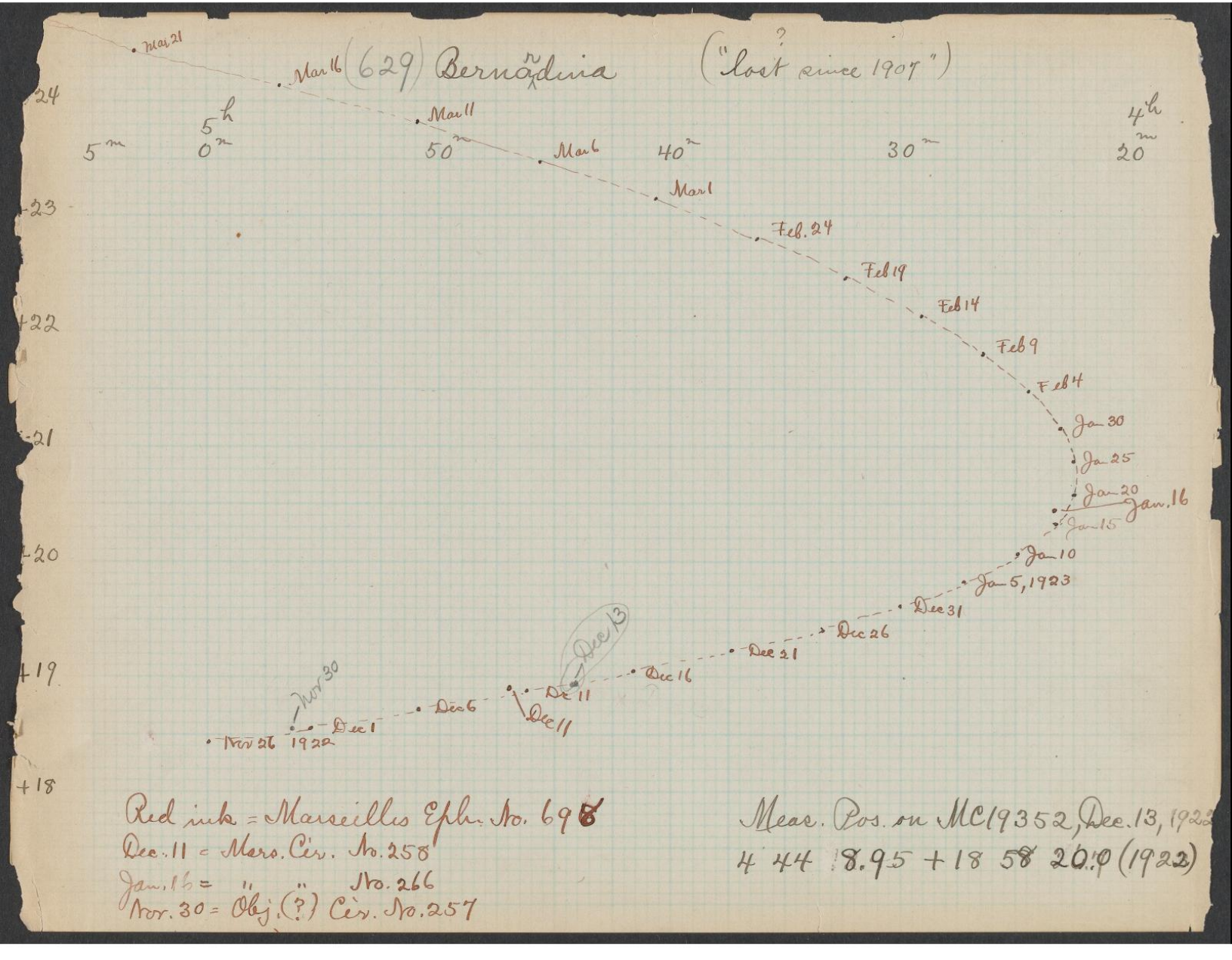
Bernardina (1924)

Eph. Marseille 844

MC 20776 June 5, 1924
MD 20776 " "
MC
MD 20809 July 5, 1924

for Mlle. Jasse.

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Red ink = Marseillis Eph. No. 698
Dec. 11 = Mens. Circ. No. 258
Jan. 16 = " " No. 266
Nov. 30 = Obj. (?) Circ. No. 257

Meas. Pos. on MC 19352, Dec. 13, 1922
4 44 18.95 +18 58 20.0 (1922)

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H.B.804

Saturday, May 10, 1924.

For Dr. Shapley

Nova 100. 1901 Cancri in Spiralnebel N.G.C. 2535. K. Reinmuth

* (Jan. 1901) Astron. Nach. N. 5283, 3, p. 47.

N.P.D

N.G.C. 2535 8 2 48 64 23.0 (1860)
= +25° 37.0

On a 8654, Exp. 60m, I marked DM stars near:

	(1855)		Magn.
+25° 1868	8h 2m 23.8	+25° 28.0	9.2
+25 1869	8 2 37.0	+25 33.7	9.3
+25 1870	8 2 40.4	+25 31.2	9.2
+25 1871	8 3 8.1	+25 26.7	9.0
+25 1872	8 3 22.3	+25 37.0	8.7

N.G.C. 2535
2536 8 2 51 64 24.6 eF vF (1860)

Apparently too faint for even long exp. A plates. Later, found on several I plates. a 8666 Neb, would be R.a. about = +25 1869
Dec. " = +25 1872

See I 34436, Exp. 70m Showing both Neb. very faint.
34436 = Dec. 12, 1906

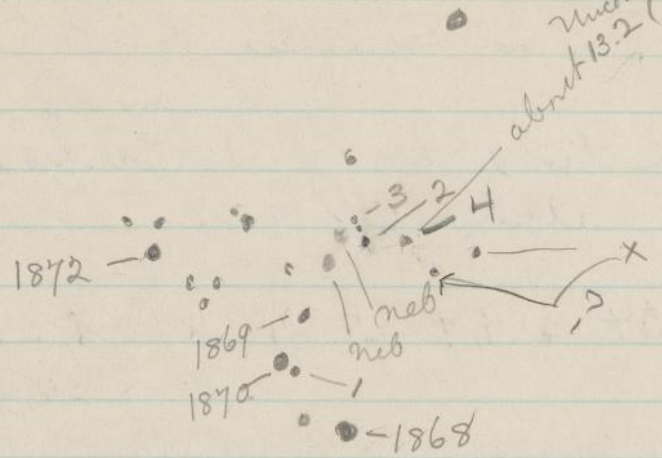
a 8666 May 1, 1908, 60m Exp. Th. stars. Again Neb Seen

→ Extra of Ac Plates, p. 106.

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1922phae.proj.1203N

Th stars seen on plates of long enough exp. to show neb.
from I 34436



N.B. Date I 27609 Sept. 26, 1901 Star 1 barely shows — near fol. edge
10m exp.

26264 Dec. 18, 1900 Star 2 barely shows
16m exp

(Plates not in order of date.)

* 24639 Feb. 20, 1900 85m Exp. eff. true corner of pl. Neb. 2mm larger. Note shape of other images.

26661 Feb. 19, 1901 65m Exp. Cl. S

31487 Feb. 20, 1904 16m Star 3 seen. Neb. N.S.

29927 Jan. 31, 1903 36 Th stars seen. Neb. seen.

* 24049 Nov. 13, 1899 15 " " " " "

28506 Feb. 15, 1902 14 " " barely seen. Neb. seen

24934 Mar. 23 1900 11 " " " " Neb. N.S.

10372 Jan. 2 1894 15 " " barely " " "

22032 Dec. 24, 1898 11 " " scen " seen.

20060 Jan 17, 1898 29 " " " " "

34453 Poor

34579 March 11, 190? 44 " " " " "

35270 April 21, 1908 30 " " " " "

M F 2211 Feb. 11, 1916 10 2? barely seen Neb. N.S.

I 28506 " 15, 1902 3 seen

Star 3 seen 24934 March 23/1900

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1922phae.proj.1203w

Parkhurst Susf. Var.
102-105

May 10, 1924. & May 13, 1924

For Dr. Shapley & L. Campbell.

Letter of Dr. J. A. Parkhurst to L.C.,
April 29, 1924.

BD + 44° 1784 8h 38m 26s +44° 0.'7 (1900)
8 35 24,4 +44 11.3 (1855)

* Dr. Parkhurst suspects this of variation.

From J.A.P. letter:

Magn. DM. 7.5
Ha45, 7.22
Polaris 17, 7.13
Parkhurst
Photo-vis. 7.13 March 4, 1916
7.22 April 8, "
7.36 Nov. 29, 1921

Not in Var. Cat.

Marked 1784 & 1785 on I 10379
aC 24699 1922
aX 82 1923

Comparison Seq. = 28 K on MC 2653
shows these two stars just south of
28K.
Magns., if needed, in Bk. 7, p. 31

*2" 1924, at least as faint as 8.0, April 7, 9, 22".

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Parkhurst's Irreg. Var. Plates exam.
I Cr 379 Jan. 2 1894

MC 2653 Feb. 8, 1913

AC	635	Dec. 29 1899
	642	Jan. 1, 1900
	647	Jan. 2, "
	3141	Jan. 1, 1903
	3195	Jan. 19, "
	4793	April 3, 1904
	4821	April 12, 1904
	6104	March 2, 1905
	11462	Mar. 11, 1910
	13575	Dec. 14, 1912
	14638	Dec. 9, 1913
	14708	Dec. 27, 1913
	15139	April 30, 1914
	17076	Dec. 4, 1915
	18566	Feb. 16, 1917
	19313	Oct. 20, "
	19844	Feb. 18, 1918
	20808	Dec. 9, 1918

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1922phae.proj_1203W

h.103 cont.

Parkhurst

ac	21377	April 23 1919
	22938	October 3, 1920
	23467	Feb. 18, 1921
	24221	October 9, 1921
	24549	Dec. 30, 1921
	24672	Mar. 8, 1922
	24673	Mar. 8, "
	24699	Mar. 24, "
aX	82	April 2, 1923
	309	Nov. 10, 1923
	395	Jan. 3, 1924
	407	Jan. 11, 1924
	447	Jan. 27, 1924
aY	50	April 26, 1924

H.D. No.	Cat	Spectra	Magn. Ptg	Ptg
74361	F5	1784	7.22	7.64
74463	K0	1785	8.0	9.0

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1922phae.proj.1203N

No change noted.
Certainly not as faint as fol. star in 1924 on photos.
See date of AY 50, April 26, near Parkhurst's date of Apr. 22, p. 102.

Compared suspected star with others near on all these plates. Is brighter than most stars near. Selected a br. & ft. and looked over plates again.
Also compared 1785 with nearby stars.
No evidence of variation

Reported to Dr. S. & L.C.
* L.C. will observe with Photom.

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1922phae.proj.1203W

Reminults Nova. Cont. fr. f. 101.

Comp. Seq. 52K on AC 2258, Magn. Bk 7, p. 55

* An especially good AC Pl. of regin = AC 19618
Stars 11 & 12 mkd.
Estimate of Stars marked diagram p. 101 = 13.2 Uncorr.

			Limit of pl. Uncorr.
	AC 1103	Dec. 28, 1900	13.3
Excellent * Pl. for faint stars	1083	Dec. 22, "	13.3
	1146	Jan. 13, 1901	? Not good pl.
	1162	Jan. 19, " Cl. C	
7 +30	1201	~~Feb. 2~~ "	
9 +30	1210	Feb. 6, " 2 2	
9 +15	1236	" 10, "	Faint stars barely seen.
9+30	1255	" 17	Limit about 12.5
9 +15	1264	" 19	Ft. stars seen only as
	1339	After 16, "	blurs.
			Poor:
	1359	Mar. 19 "	Poor.
	1333	Mar. 12	Ft. stars N.S.
	1340	Mar. 16	" " "
	1371	Mar. 23	" " "
	2294	Feb. 7 1902	Faintest stars N.S.
9+30	1809	Sept. 30, 1901	" " "
	2005	Nov. 22, 1901	" " "
	2080	Dec. 15, 1901	" " "
8 +30	2253	Jan. 27, 1902	Limit nearly 13.0
	2166	Jan. 5 "	" " "

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1922phae.proj.1203N

	Am 748	April 6, 1901	Poor.
	~~772 May 9, "~~		
9 +15	AC 1909	Oct. 25, 1901	Poor
	1913	" 26, "	Poor
	1048	Dec 11 1900	Fr stars N.S.
	1150	Jan. 16, 1901	" " " "
	1236	Feb. 10, "	Lim. about 13.0
	442	April 17, 1900	Poor
8 +30	22157	Dec. 28, 1919	Faintest stars N.S.
9 +30	AC 1446	May 7, 1901	Faint stars N.S.
9 +20	Am 442	April 17, 1900	" " "
	Late plates		
8 +30	AC 25176	Mar. 5, 1923	Faint stars barely seen
	25224	April 10, "	Faintest " " "

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1922phae.proj.1203w

Friday, May 16, 1924.

For Miss Wilson: Magnitudes in Seq.

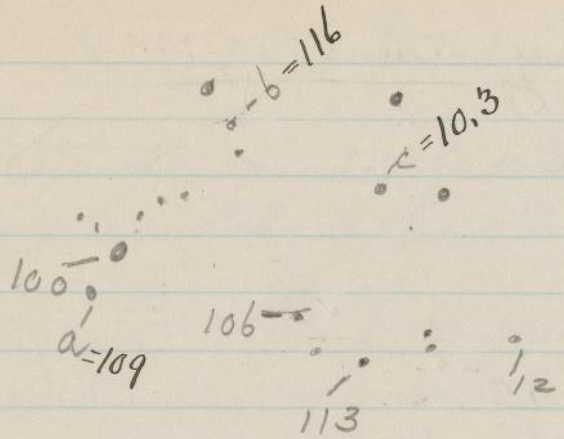
Comp. Seq. Carte du Ciel 20 +31.5 MC 5811

GrAC 15509 add stars between 10.6 & 11.3
and 11.3 & 12
also added c, between 10.0 & 10.6

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1922phae.proj.12033

from MC 5811



	est MC	est on AC	by Scale Meas.	Mean
a	11.0	10.8	10.9	10.9
b	11.6	11.6	11.6	11.6
C	10.2	10.3	10.4	10.3

Meas. on MC 5811 as AC plate was not clear.

Scale N	Sc	A	B	C	Mean	Diff.	Read. from Curve	Magn.
10.0	2.1=1.9				1.90	8.10		
10.6	3.1=2.9	3.1=2.7			2.80	7.80		
11.3	3.9=3.7	4.1=3.7			3.70	7.60		
12.0		5.6=5.2	5.2		5.20	6.80		
(Star 10) 12.5		6.4=6.0	5.7		5.85	6.65		
a	3.5=3.3	3.7=3.3			3.30		7.60	10.90
b	4.6=4.4	4.9=4.5	4.2		4.37		7.24	11.61
c added later	c	2.9=2.7			2.70		7.75	10.45

Curve not used

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1922phae.proj.1203w

Reported to Dr. S.

Tuesday, May 20, 1924.

For Dr. Shapley.
Magns. in Messier 33.

MC 20130 marked with Comparison
Sequence of 45 K
Magns. on back of cover.
* Corrected Magns. used
Sequence of Neb., A. Van Maanen, Mt. Wilson
Contrib. No. 260, p. 4, Plate XV, not
marked on plate.
Estimated by seq. on plate.

a	13.4	s	15.2
b	13.5	t	15.3
c	abnt 15.4	u	abnt 15.4
d	14.4	v	15.3 or .4
e	14.8	w	13.7
f	abnt 15.5	x	14.0
g	15.4	covered by fig. 9 – difficult, Nebulous?	
h	15.4		
i	—		
j	abnt 15.4	Several of these stars seem	
k	14.8	surrounded by nebulous	
l	15.5	background.	
m	15.3		
n	abnt 16		
o	13.7		
p	abnt 15.3		
q	15.0		
r	N.S.?		

lower n used as marked for r

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1922phae.proj.1203w

Wednesday, May 21, 1924

Estimates made for Miss Wilson on AC 155-09 recorded in her books, p. 128.

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1922phae.proj.1203w

Reported to H.S.

Monday, May 26, 1924.

For Dr. Shapley.

Letter of A. Van Maanen, May 19, 1924.

Not in Van. Cat. | Suspected Nova, seen by him on two plates only,
" April 22 & Apr. 23, 1922.
A triple fainter than BD -7° 4373, 9.8
1.7 East, 1.1 North of it."

Van M's accompanying chart of region has star 1 marked
ao -7° 4373

* -7° 4373 16h 48m 5.7 -7° 52.5 9.8 (1855)
Marked A 3784
" B 26229 Sept. 19, 1900 trace of 6 seen.

approx. Limit of pl.
14.5 I 41286 May 22, 1922 trace of 6. Nova N.S.
14.4 6 41299 " 23, " 6 ~~5 = perhaps 3~~ No ~~N.S.~~ ?
→ H.S. Suspected trace of Nova on this plate.
14.3 41328 May 28, 1922 5 = .1 n - N.S.

A 1490 57m poorer plate than A 3784

* No MC pl. from October 1921 to Sept. 1922,
No MF " " April 1922 to Aug. 1922
No B " " " " " " "
MC 14818 16 40 -10 shows ft. stars.

N.B. Position of Clarinda 13.7, for May, 1922,
If this faint object could be asteroid, this
position would not be far off.

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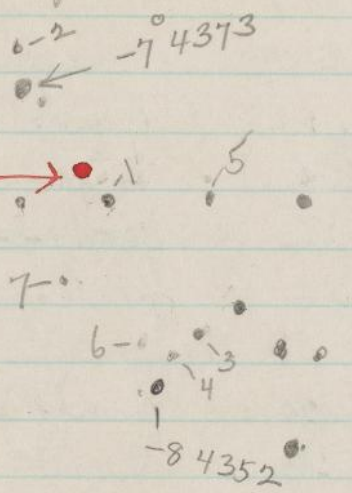
1922phae.proj.1203w

Region Plotted from a 3784 Eqs. (75-15) = 60m

V

Identified by a Dmr.

Star 1 is marked on Van Maanen's chart as −7 4373



For limiting magns. of plates Magns 1 to 7, decreasing

For fainter stars see B 28238 which shows a star in Van Maanen's position

Comparison Seq. = Carte $17^h\,0^m - 2^\circ,5$

On MC 8406, Magns. Bk. 35, f. 22.

Magns. see f. 117

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1922phae.proj.1203N

Exam. of AM Plates, 1922 Eqf.

16 0	AM 15717	April 27	1 perhaps barely seen	60
17 -15?	15718	April 27	1 perhaps barely seen	60
16 0	15728	May 1	1 not seen	60
Is object seen ?	15765	May 6	2 3 seen, About 13.5 = Nova	
Confirmed by Dr. S.			~~perhaps 4 seen~~	
NS 17 -15	15766	May 6	perhaps 4 seen.	65
	another obj. or defect present, foll.?			
16 0	15800	May 20	1 not seen.	65
17 -15	15807	May 23	1 = .1	60
16 0	15811	May 24	1 = at least .2	60
16 0	15836	June 2	1 seen	56
16 0	15847	June 12	3 "	60
17 0	15848	June 12	3 "	60
	Is object seen?			
17 -15	15849	June 12	Is obj. seen, changed pos.? Prec. same ?	60
16 0	15858	June 14	1 not seen	60
17 -15	15872	June 19	1 " "	62
16 0	15876	June 20	1 barely seen	60
16 0	15925	July 3	2 perhaps seen	60
17 -15	15926	July 3	3 seen	60
16 0	15974	July 20	1 NS.	98
17 -15	15980	July 22	1 barely seen	90
	~~15986~~	iden?	~~2 seen~~	
17 -15	15987	July 26	2 seen	90
17 -15	16016	Aug. 9	3 seen	60
17 0	15621	June 27, 1921	1 NS	65

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Obj. on 24765?

Exam. of ac Plates

ac 24616 Jan. 26, 1922 Cl. C Ft. stars No. S.

ac 24721 April 18, 1922 Cl. C Eq. 114m Ft. stars No. S.
No bright object in this pos.

24735 April 27, Cl. C Eq. 218m Defective in this region

24742 April 30, Cl. C' Eq. 82
Seen by Dr. S. Object suspected — diff. pos.?

24765 May 22 Eq. 120 no ft. stars seen

24780 May 29 194 Cl C'
Probably 3 seen

24782 May 31 Poor for ft. stars

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1922phae.proj.1203w

May 27, 1924.

17h 0m - 2.5°

Estimates of Magns., p. 113

On AC 19964 Seq. f. 113 and Comp. Seq.,
Carte 17h - 2.5°, are marked.
also, other stars for pragn.

AC 19964 Magns. of New Seq. from Comp. Seq.

c	about 9.2 Uncorr.
d	10.0
e	10.2
f	11.0
g	11.2
1	12.3

Extreme Corner of plate. Somewhat out of focus.

MC 14818 Scale P

	Set 1	Set 2	Mean	Meas. by Scale Magn. above	Diff.	Curve Read.	
b	5.4 = 5.1	5.2	5.15	~~9.2~~			
c	5.9 = 5.6	5.7	5.65	9.2	3.55		
d	6.1 = 5.8	5.9	5.85	10.0	4.15		
e	6.4 = 6.1	6.1	6.10	10.2	4.10		
f	6.9 = 6.6	6.8	6.70	11.0	4.30	4.30	11.00
1		7.7	7.70	~~12.3~~ 11.2	3.50	4.70	12.40
2		8.2	8.2			4.76	12.96
3		8.4	8.4			4.76	13.16
4		8.8	8.8			4.87	13.67
5		9.1	9.1			4.91	14.01

P Set Corr. -0.3

g omitted because nearly = f.

(Curve not preserved)

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1922phae.proj..1203w

reject.

Est. By Grades MC 14818

		Estimates	Sc. Reading Results p.116	Mean	1922 Scale Corr. Magns.
1	5	11.40 from p.116	11.4	11.4	11.6
2	4	11.90	11.9	11.9	12.1
3	5	12.30	12.1	12.2	12.4
4	2	12.80	12.5	12.6	12.8 or 9
5	4	13.00	12.8	12.9	13.1 or 2
6		13.40 v		13.4	13.7
7					

20

6 & 7, if needed for magns. later, may be meas. on A 3784. As they are not needed for limits, p. 114, etc., I am not measuring them.

Limit of A 3784 probably equals more than 1 magn. fainter than Stab 5 ~~or 14.0 2 Corr. Approx.~~ 15.0 2 Corr. Approx.

(5 - 6 = .7 rough estimate
6 - 7 = .3
7 = abmt. 2 brighter than limit of plate)

Copied from above

Est. by grades MC 14818

		Estimates	p.116 results	Mean	1922 Corr.	Scale Magns.
1		12.40 from p.116	12.40	12.40	0.24	12.64
2	5	12.90 adding grades	12.96	12.93	025	13.18
3	4	13 30	13.16	13.23	026	13.51
4	5	13.80	13.67	13.74	026	14.00
5	2	14.00	14.01	14.00	025	14.25
6	4	14.40 v	..	14.40	025	14.65
7			..			

20

.. see below

B 28238 showing fainter stars & Nova

4	
6	6 = 14.65 Corr.
7	7 = 14.95

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Wednesday, May 28, 1924.

Van Maanen
Nova or Variable?

Examination of B plates. Limit of plate, 6 & 7, refer to faint stars, diagram f. 113

B 13737	June 12, 1895	7 seen	Nova apparently NS
13982	July 8, "	" "	" "
16440	June 19, 1896	6 "	" "
19479	June 9, 1897	7 "	" " "
21966	Sept. 16, 1898	6 barely "	" " "
23054	June 16, 1899	6 seen	" " "
25077	April 10, 1900	edge, poor	
* Slide 1132 2600 7	Sept 5, 1900	Nova seen brighter than 7?	
27118	April 10, 1901	7 seen	No trace of Nova
29652	May 14, 1902	trace of 7?	Nova trace?
31428	April 16, 1903	6 seen	Nova NS
* HS 147 34520	July 30, 1904	Nova trifle brighter than 7	
36787	Aug. 22, 1905	6 seen	
40481	June 26, 1909	7 barely seen	Nova NS
47739	July 1, 1916	6 seen	

new dates:

B 26007	Sept. 5, 1900	see above	
26229	Sept 19, 1900	" f. 112	

NS 15.8 Is a trace of Nova seen on A 3784? July 29, [illegible]

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1922phae.proj.1203w

N B B 28238, 60m Eff., is best plate of region. Shows very ft. stars. Shows Nova ft.
Probably three are ft. stars of region — not second exposure.
Star - 8°4352 was already marked on this and one or two other B plates.

Additional plates

B 6105 May 29, 1891. Not good plate: 3 faintest stars seen
6077 May 28, 1891 5, possibly 6, seen
B 20473 Sept. 21, 1897 6 seen at least. Defects in glass. 7 not certain.

Seen 28238 August 17, 1901
excellent plate (see note above)
7 seen Nova N. S.
30032 June 13, 1902 7 seen Nova N. S.
33386 April 16, 1904 6 barely seen

For range see 28238 ft
34520 Or

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1922phae.proj.1203W

Tuesday, June 3, 1924.

Magnitudes for Miss Wilson

Sequence of 39 K, as marked on MC 4211,
was marked by Miss Wilson on AC 15220,
$20^h + 45°$.

To add one brighter star V
" " star between 9.8 & 10.6 2 added V
" " " " 10.6 & 11.3 1 added V
Also star added between 9.2 & 9.8
S

Scale Meas. MC 4211

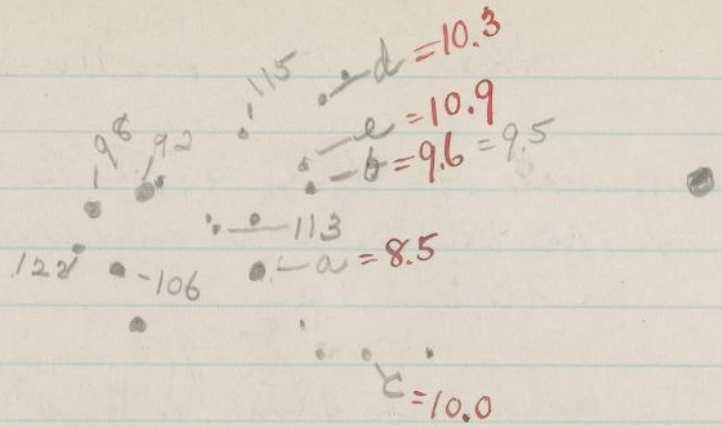
	Sc. 1	Sc. 2	Mean	Diff.	Read fr. Scale.	Magn.
	Sc. N.					
9.2	1.9 = 1.7	Br.	1.70	4.50		
9.8	3.1 = 2.9	Br.	2.90	6.90		
10.6	3.6 = 3.4	3.7 = 3.3	3.35	7.25		
11.3	4.9 = 4.7	5.0 = 4.6	4.65	6.65		
a	1.1 = 0.9	Br	0.90		7.75	8.65
b	2.5 = 2.3	Br.	2.30		7.32	9.62
c	2.9 = 2.7	Br.	2.70		7.20	9.90
d	3.4 = 3.2	3.7 = 3.3	3.25		7.02	10.27
e	4.1 = 3.9	4.4 = 4.0	3.95		6.80	10.75

(Plot not preserved)

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1922phae.proj.12037

NB



Stars a, b, c, d, e were selected on MC4211 for required intervals.

	Estimates MC 4211	AC 15220		f. 120 Magn. by Sc. Meas.	Mean	
a	8.6	8.4	Comp. with marked nearby seq.	8.6	8.5	
b	9.6	9.5		9.6	~~9.6~~	Use 9.5
c	10.0	10.1		9.9	10.0	
d	10.3	10.3		10.3	10.3	
e	10.9	10.9		10.8	10.9	

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1922phae.proj.1203W

June 3, 1924.

Magnitudes for Miss Wilson

Sequence of NGC 6910, as marked on MC 8813, was marked by Miss Wilson on ac 15220.

To add one star between 9.4 and 10.2 ✓
" " two stars " 10.6 and 11.5 ✓

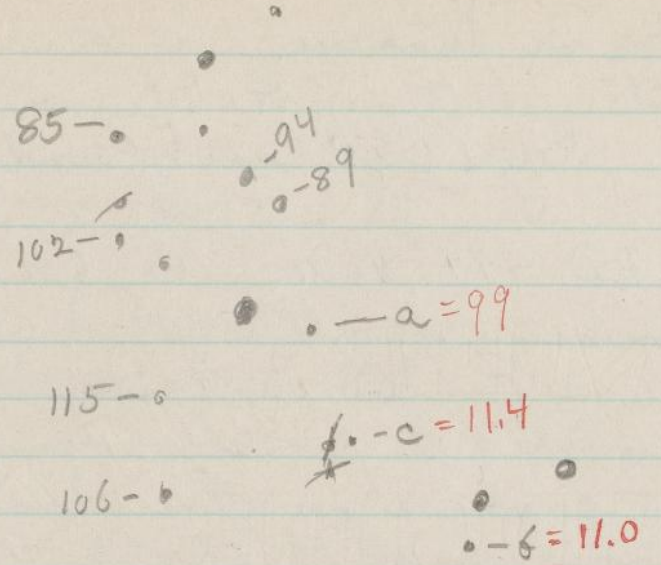
Scale Meas. MC8813

Sc. N	Star	Sc 1	Sc 2	Mean	Diff.	Read. from Curve	Magn.
9.4	4	2.8 = 2.6	3.0 = 2.6	2.60	6.80		
10.2	5	3.9 = 3.7	4.2 = 3.8	3.75	6.45		
10.6	6	4.3 = 4.1	4.6 = 4.2	4.15	6.45		
11.5	7	Ft.	5.9 = 5.5	5.50	6.00		
	a	3.4 = 3.2	3.7 = 3.3	3.25		6.62	9.87
	b	—	~~5.2 = 5.0~~ 4.8	4.80		6.20	11.00
	c	—	5.8 = ~~5.6~~ 5.4	5.40		6.02	11.42

(Plot not preserved)

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1922phae.proj.1203V



Castinalis

	MC8813	AC15220	Magn. Meas. by St.	Mean
a	9.9	9.9	9.9	9.9
b	11.0	11.1	11.0	11.0
c	11.3	11.4	11.4	11.4

1.122

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1922phae.proj.1203W

June 3, 1924.

For Dr. Shapley

* See letter of H. Spencer Jones, H.M. Astronomer, Royal Obs'y, Cape of Good Hope, April 30, 1924.

C.P.D. -44° 4600 $10^h\ 6^m.4$ -44° 25'.1 (1900)
missing on plate of April 5, 1924 normal
" April 2, " , about 9.2,
on April 5 probably fainter than 15^m.
No evidence on other plates.
Under visual observation.

Cat. stars of region marked on B 12870 & 12871 *
This star marked on 12871
Magn.
CPD -44° 4600 $10^h\ 5^m\ 3^s.3$ -44° 17'.8 9.2 (1875)
CDM -44 6253 10 5 4.2 -44 17.6 9.3 (1875)

No late MF plates
* After all plates of 1924 will be rec'd in next shipment, covering this region.
Spectrum N.S. on B 4987 & 4948
Not in D. Cat.
* Classified by Miss C. as F8 on B 39914 as marked by IEW on B 25055 and idm. checked by A. D. Walker. (North. Prec.)
* This star is near NGC 3201 on B plates but is off edge of X & A (8x10) plates used by I.E.W. for special study of 3201.

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1922phae.proj.1203w

ft. stars on B 21214 25440
a 3000 Eff 61m 24710

always a little fainter than -44° 4567 marked on B 12870

			Eff.
a	2343	May 28, 1897	10m
	2352	" 29 "	10
	3000	May 10, 1898	61
	11155	April 17, 1915	60

If Magns. are wanted, Segunda Carte du Ciel, 10° 0 -40, on B 46465, Magns. Bk. 35, f. 136.

** See New Var.? (Suspected) found in this exam. Bk. 19, f. 206
CAM -45° 5840 10 7 8.0 -45 33.7 9.0 (1875)

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1922phae.proj.1203W

Apparently Always normal.

MF 3329 Apr. 24, 1919
3330 Apr. 24, "
3387 Apr. 27, 1919
3388 " 27 "
5204 Apr. 13, 1920
5205 " 13, "
8065 July 18, 1923
8066 " 20, "

Cyans of Am Plates:

$10^h - 45°$ am 6121 May 13, 1909
10387 April 6, 1915
10407 " 13, 1915
10416 " 15, "
10422 " 17, "
10449 " 20, "
10466 " 22, "
10719 June 21, "
11488 Dec. 11 "
11603 April 4, 1916
11909 June 7, "
11950 June 11, "
12016 " 19, "
12624 October 18, "
12673 " 23, "
12957 April 10, 1917
13265 June 13, "
13290 June 17, "
13297 " 18, "
13314 " 20, " / 20

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1922phae.proj.1203V

ave	13801	April 2, 1918
	13817	" 4, "
	13831	" 9, "
	13853	" 13, "
	13862	" 17, "
	14073	June 14, "
	14079	" 15, "
	14605	April 5, 1919
	14742	June 1, "
	15094	April 10, 1920
	15233	June 7, 1920
	15247	" 10, "
	16591	Jan. 28, 1924

13

X 1 Spar. later are plates when rec'd

16540
16567
16591
16627
etc

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$11^h - 45°$ and

430 April 9, 1900
441 April 17, "
750 Apr. 6, 1901
837 June 7, "
1169 April 1, 1902
1223 " 30, "
1341 June 12, "
1370 " 17, "
1750, Dec. 6, 1902
1771, Dec. 23, 1902
1814 Feb. 3, 1903
1850 April 3, "
1858 April 6, "
1987 June 2, "
1996 June 3, "
2056 June 22, "
2077 " 29, "
2403 Dec. 10, 1903
2428 " 24, "
2493 Mar. 26, 1904
2502 April 4, 1904
2516 " 9, "
2562 " 20, "
2605 May 4, "
2667 May 23, "
2699 June 3, "
2742 June 12, "
2821 July 7, "
3271 Dec 6, "
3320 Jan. 12, 1905

30

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1922phae.proj.12037

Am	3353	Feb. 25, 1905	am	6202	June 9, 1909
	3439	April 5, "		6210	June 10, "
	3469	" 23, "		6860	April 4, 1910
	3528	May 12, "		6901	Apr. 30, "
	3556	" 25, "		6992	June 5, "
	3573	June 2 "		10525	May 2, 1915
	3628	June 13, "		10590	May 22, "
	3718	July 12, "		10759	July 9, "
	4015	Dec. 5, "		11517	March 1, 1916
	4076	Jan. 30, 1906		11538	March 7, "
	4098	Feb. 3, "		11655	May 1, "
	4133	Mar. 17 "		11694	" 10, "
	4185	April 28, "		11725	" 11, "
	4225	May 12, "		12102	July 1, "
	4287	June 11, "		12134	July 4, "
	4352	June 29, "		12204	July 17, "
	4720	Dec. 12 "		12791	Nov. 19, "
	4765	April 16, 1907		12888	Mar. 23, 1917
br. not zonbd not	~~4829~~	~~May 13, "~~		12896	Mar. 24, "
	4848	May 22, "		12918	" 28, "
	5309	Feb. 20, 1908		13108	May 9, 1917
	5381	April 9, "		13397	July 14, "
	5400	April 23, "		13407	July 16, "
	5432	May 6, "		13794	March 18, 1918
	5539	June 7, "		13944	May 3, "
	5932	Dec 21, "		13961	May 8, "
	5949	Feb. 1, 1909		14134	July 7 "
	5975	March 19, "		14157	July 14, "
	6066	April 25, "		14589	March 22, 1919
	6083	May 7, "		14641	April 25, "

59

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am

14671 May 2, 1919
14717 May 23, 1919
14724 May 26, "
15161 May 9, 1920
15185 " 14, "
15201 " 23, "
15578 May 10, 1921
15699 April 21, 1922
15725 May 1, 1922
15762 May 6, "
15855 June 14, "
15906 " 29, "
16186 March 24, 1923
16205 April 17, "
16207 " 18, "
16265 May 26, "
16274 June 1, "
16332 July 15, "
16540 Jan. 7, 1924
16567 Jan. 13, "
16627 Feb. 8, " /21
16591 Jan. 28, " /22

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1922phae.proj.12637

B Plates exam. for Jones Var.

7853 June 8, 1892
9225 April 29, 1893
9226 April 29, "
10659 Nov. 17, 1893
11150 May 17, 1894
12870 March 15, 1895
12871 Mar. 15, "
13194 May 9, "
13682 June 7, "
15583 April 11, 1896
15713 May 6, "
15798 May 12, "
16504 June 27, "
18117 Nov. 28, "
18747 April 6, 1897
21004 March 2, 1898
21049 Mar. 18, "
21214 April 13, "
22413 April 3, 1899
22648 " 28, "
22670 May 2, "
22806 May 10, "
24704 Feb. 21, 1900
24710 Feb. 21, "
24945 April 5, "
24946 " 5, "
25055 " 10, "
25440 May 24, "
26682 Nov. 19, "

29

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1922phae.proj.1203W

Jones Van

B 26904 Jan. 19, 1901
26982 March 16, 1901
27018 Mar. 29, "
27135 April 11, "
27220 " 20, "
27298 May 10, "
28880 Nov. 30, "
28929 Dec. 6, "
29159 March 18, 1902
29328 April 12, "
29331 April 12, "
29873 May 28, "
31225 January 3, 1903
31255 Jan. 15, "
31279 Jan. 16, "
31449 April 17, "
31495 April 18, "
32968 December 24, "
33093 Feb. 23, 1904
33258 April 8, "
33309 April 12, "
33354 Apr. 14, "
33363 Apr. 15, "
33783 May 21, "
35320 Nov. 30, " Slide 2390
35383 Dec. 9, "
35495 Jan. 13, 1905
35665 March 29, "
36007 May 12, "
38498 March 26, 1906

/30

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1922phae.proj.12037

Jones Var.

B 38562 April 5, 1908
38588 April 8, "
39018 May 27, "
41269 May 16, 1910
43062 May 3, 1912
46465 April 8, 1915/6

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1922phae.proj.1203w

Friday July 18, 1924

Letter from Prof. Frost.
Object found by Miss Mary R. Calvert
on plates of 1905
(Pos. 1900.0) $6^h 23^m 22^s + 22° 22' 4''$
Close to a faint star that is
constant on list of plates enclosed.
Obj. = April 4, 1905

No I plates of region from March 1 to Oct 1
In looking up a plates,
a 7233 was taken March 28, 1905,
6.4 +22.6 Eff. 120m for Neptune
Almanac Pos., April 2, 1905. =
$6^h 23^m 35^s.70 + 22° 21' 43''.7$
No magnitude is given, but positions
might agree.
Object is 8th Mag.

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1922phae.proj.12037

Monday, August 11, 1924.

near R Lyncis 065355

Letter fr W. Waterfield, Nakusp, B.C., to Mr. L.C.
Suspects star u = 13.8 of being Variable.
See letter for estimates.

(D.E.W.) Found faint stars of Seq. marked on I 24389, Eff 78
u is fainter than 2 stars north, u barely seen.

MC 5143 Eff. 10m Excellent plate, shows all these faint stars. Sequence marked.
MC 5072 Eff. 10m Seq. marked. Note on plate cover, "Des. of u changed to u'. Mr. Wendell's star u, given in Vol. 37, not meas., and not marked, See plt. chart."
MC 2975 Eff. 10m u Barely seen, if seen.
5108 Eff. 10, u " " " "
4264 Eff 20 Star ft. This is plate used for enlargement for print.
2827 Eff. 10m u N.S. Sequence marked.

A 206 Eff. 45m Region on extreme N. edge. Faint stars N.S.
A 524. Eff. 60m Region on extreme N. edge One of stars N of u is seen. Other stars and u probably N.S.

Conclusion: u is seen on very few plates. Too faint for all but long exposure plates. W30 rejected from phot. Sequence and u' substituted. 2s about at limit of good MC plate used for enlargement.

* Uncertainty about marking u. See Miss L's note on MC5072 above. L.C. is writing to Mr. Waterfield to send idem. on chart. Aug. 13.

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1922phae.proj.1203w

Friday, August 29, 1924.

u, Sequence R Lyncis, cont.

Letter from Mr. Waterfield.
Plot of L.C., sent to Mr. W., Herpesfield, is returned with star x marked as the suspected star.

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Friday, October 10, 1924.

R Cor. Bor.
Est. on I 44117 for L. Campbell.

From prints of R Cor. Bor., visual magns. were marked on plate. These were looked up in H.A. 96 for photog. magn.
Var. est. 8.8
1922 Corr. = +0.12
8.92 Corr. Magn.

I 44117 = October 6, 1924, Ecf. 15^m
$20^h 27^m$ to $20^h 42^m$ = G.M.T. .657 .855 .512

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Reported

Thursday, October 23, 1924.

Duncan's Variable
No. 2 in Messier 33.

Edwin Hubble — letter to Dr. S.
including a print with vars. mkd.
and Plot of Var. 2.

"No. 2, a wild affair" Hubble
Var. 2 was est. as 17.0 to 1911
Has since increased to 14.2, 1924.7.

2 2 W.
M 33 = N.G.C. 598 = 1 ^{h} 28.2 + 30° 9' (1900) from
H.A. 60, No. 8.

No X plate
" C "
MC 2282 = 45 K (Seq. pl.) 1 26 +30
2317 (Bk. 3, p. 103 list)
a 6594
a 13049 July 30, 1924 Eff. 180^m Magn. abnt 14.5
(compared with Duncan's 15.0)

Ent. May 7, 1925.
Mr. Hubble at Cambridge.
a 13082 Sept. 5, 1924, Eff. 240^m

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1922phae.proj.12037

Duncan's Var. Cont. Friday, October 24, 1924

Reg. 45K MC 2282, Seq. pl., can not be found.
20130, fund marked – black ink seq. evidently
= 45K, green ink = neb. Regions. Separate pl. marked
Using magns. backs of cover 20130, 1922 scale

On A 13049
Duncan's star (Duncan =15.0) = 15.4, 1922 scale (or fainter)
Var. = abnt 15.2

magns.
14.6
15.2
15.5
marked on a pl.

Estimates Var. on all MC plates, using these magns.

MC	1286	Sept. 26, 1911	Exp. 60m	Var N.S.	Limit 15.5
	2282				
	2317				
15.2-15.5 marked on	13490	Sept. 14, 1917	20	Just off S edge	
17053	17053	Dec. 28, 1920	20	Var N.S.	Lim. 15.3
	18942	Aug. 28, 1922	30	abnt 15.3	15.4
	19065	Sept. 26, 1922	30	15.4	15.7
	19079	Sept. 28, 1922	30	15.5	15.6
	19080	Sept. 28, 1922	30	15.4	15.5
1.5	20106	Oct. 5, 1923	47	15.1	15.7
	19348	Dec. 13, 1922	39	just off N edge	
	20130	Oct. 8, 1923	34	15.3	15.6

						Star
I	21943	Dec. 13, 1898	30	N.S.	15	barely seen = 14.6
	24152	Nov. 29, 1899	60	N.S.	15	" " = 14.6
	24160	Dec. 2, 1899	60	N.S.	16 = at least 1,	dim 15.3
	29596	Dec. 1 1902	31	N.S	15	14.6
	29727	Dec. 27, 1902	26	N.S.	16	barely seen 15.2

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Duncan Variable in M 33

Report.

1922 plates show Var. 15.1 to 15.5
Magns. compared with 45 K, 1922 scale.

Plates earlier than 1922, limits 14.6 to 15.3, do not show Var.

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Reported to Dr. S. Oct. 25.

Saturday, October 25, 1924.

Comet Suspected by Filippoff, of Algiers.

See letter to Dr. Shapley, October 9, 1924.

Date of Comet:- Pos.:-

September 22, 1924. 18h 59m +30.°0

Available plates Sept. 1 to Oct. 25

Mc Plates None

		1924.				
					Eff.	
I	H 3956	Sept. 11	18.7	+30	15m	Not received at B. Obs. "Perhaps superposed on some other region." Prof. King.
	43959	Sept. 11	18h.7	+35°	10m	Object marked proves to be Ring Neb. - Lyra. Entire corner exam. No object.
*			Limit of plate = nearly 13.0 Corr. Magn.			
	43960	Sept. 11	18.3	+35°	10	Does not quite cover reg.
AC	25622	Sept. 6	19.0	+15	60	
	25639	Sept. 26	19.0	+15	60	
		These two plates superposed and exam around 19h.0 +30°. No object seen.				
		Limit of AC 25622 = St. 8 = 11.6 Corr. Magn.				
		" " 25639 " "				
AI	23575	Sept 28	20.0	+30	120m	No obj.
		Limit of plate = St. 4 = 10.1 Corr.				
	23610	Oct. 10	20	+30		Poor
	23621	Oct. 14	19	+30	79m	
		Limit of plate = stan 4 = 10.1				

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AY 244	Sept. 10			2.2
255	Sept 24	20 +30	261	

Limit of pl. probably about = St. 1 = ~~9.4~~ (10)

258	Sept 25	19 +15	120
264	Sept. 27	18+30	205
276	Oct. 3	18+30	60
277	Oct. 3	20+30	128

Method of finding limits of plates:
Region 63 K, in MC 5764, Magns. Bk 7, f. 66
Faintest star of sequence seen on each plate = limit of pl.

For iden. see I 27322.

Plate I 43959 does not cover 63 K
Is not quite as good a pl. as 27322
which shows star 11 = (12.96) = 13.2 Corr. Magn.
Limit of 43959 taken as 13.0

As the dates of most of these plates are not very near Sept. 22, another search could be made if motion and direction of object were known. 19.0 +30 was exam. on all, but not very large field.

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Reported
See N.B. 809

Tuesday, October 28, 1924.

Special Object. Baade's Object.

Dr. S. gave me
I 44230
231
244 Ephemeris for Moving Obj., Asteroid or Comet.

By configuration of stars, image on 44230 slightly precedes 44231

44230 October 25, 1924
Broad, Ft. = Object? 21 13.5 +13.7 1855

44231 October 25, 1924
Obj., bright trail, 21 13.5 +13.7 (1855)

44244 Oct. 26, 1924
Obj., bright trail, 21 17.5 +13.1 (1855)

	ST	End.	Eff.	Mid Eff.			
44230	1 42	2 01	19	1 52	.605	.078	.183
31	2 4	2 35	31	2 20	.605	.097	.702
44	22 17	22 47	30	22 32	.603	.936	.539

Asteroid or
Position of I 44244 meas, Bb. 21, f. 124.

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Before November 12, 1924

(394) Arduina

Letter to Dr. S. from B. Asplind, Karlstad, Sweden. (October 1, 1924)

See also p. 178

Computations of places of Arduina, 1893 to 1915. Asking for plates, photog. positions.

I compared approximate regions with plates Catalogues within a width ± each position. See p. 147.

One object found
A 8370 July 3 1907, Rec. Obj. $18^h 30^m -28.^\circ 8$ (1900)
Iden. by B 27996
Peculiar image, probably superposed on and confused with a ⅈ. star, also defect
Does not show long trail but is very different shape and bright stars.
→ Arduina? Position Meas. Bk. 21, p. 126
Superposed on A 2752, to prove object.
Exp. ^{m} | Daily Motion ^{m} 1.0 −4'

Ard 4920 June 11, 1907 60

4931 June 20 60 Pos. should = 18 40.4 −28 1

4954 July 1 60

No object seen.

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Places of Adonina

	Mayn.	Reg. regim	
May 22, 1893	12.4	16.5 -21	Plates exam. for trails — not superposed on another pl.
before a plates			
no B or I plate			
Feb. 4, 1896	13.8	9.2 +24°	
no a, B, or I			
April 6, 1897	13.6	13.1 0°	
(B 18656 Mar 13 = 13.5 -2)			
18780 Apr. 9	13.3	-3	northern half
(no a or I)			of pl. exam. No object.
July 31, 1898	11.4	20.8 -28°	
no a, B, I pl.			
Dec. 23, 1899	13.2	6.2 +27°	
I 24350 Dec. 29		6.2 +27	
Center exam. No obj.			
Feb. 28, 1901	14.0	10.9 +16°	
no a, B, I			
Jan. 21, 1905	13.7	8.3 +27°	
no a, B, I			
June 24, 1907	11.9	18.6 -28°	
a 8370 July 3			Object — See p. 146
B 37695 June 29			Southern part of pl.
no I			exam.
Dec. 5 1908	12.8	5.1 +24°	
no a, B, I			
Feb. 16, 1910	13.9	10.2 +20°	
no a, B, I			
April 21, 1911	13.3	14.2 -7°	
B 10390 Apr. 29		14.5 -7	(Ast. would prec.)
no B or I			
Jan. 8, 1914	13.5	7.5 +28	
no a, B, I			

March 15, 1915 13.9 11.7 +11
no a, B, I

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Report of Arduina

Arduina

I examined lists for available plates of given dates, A, B, and I. No plates near in dates that would show object except A 8370.

A 8370 July 3, 1907 shows an object

1907 pos. measured = $18^h\ 36^m\ 16^s$ $-28^\circ\ 45'.0$

			Daily Mot.
Asplind's June 24 1907 =	$18^h\ 36^m.4$	$-28^\circ\ 17'$	$-1^m.0$ $-4'$
	$-9^m.0$	$-36'$	9 days
July 3	$18^h\ 27^m.4$	$-28\ 53$	$-9^m.0$ $-36'$

Is object Arduina?
What magnitude?

2 possible Ann plates, June 20 & July 1, were examined but no object found. Probably too faint.

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Reported

Friday, December 12, 1924.

C.P.D. -60° 2642 $11^h 6^m 51^s.0$ -60° 33'.7 m 10 (1875)

→ Letter of Ejnar Hertzsprung to Dr. S., Johannesburg, (Union Obs.) November 10, 1924

Letter refers to Bull. Ast. Inst. Netherlands – Vol. II, No. 54

Eclipsing Var. St. Hertz. finds faint on only 2 nights out of 129.

Range 2 m?

B* 19471 & 15 B 19420 Ref. 78

D.E.W. marked -60° 2642 = B 19646 & B 25185 Ref. 62 m

Iden. checked by Miss Wells.

Marked on Abt 3700 & 5433 (12 00 -60)

24 24

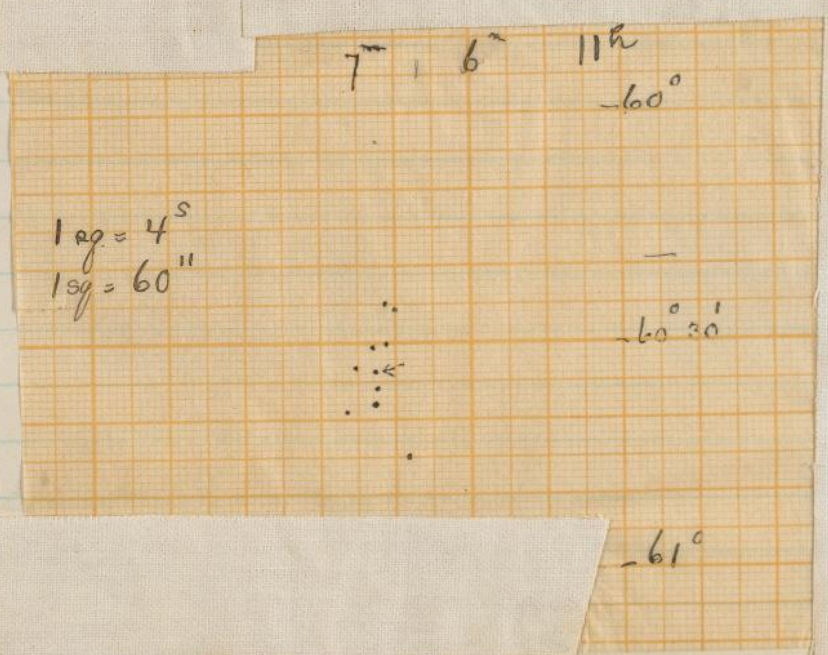
See page 161 → * to see if Am plates will show this star. Very ff – normal!

Hertz. gives Minima in letter — In Bul. 54

J.D. 2423967. = June 30, 1924 — 3828

Limits of Plates $10^h 26^m$ to $11^h 44^m$ -55° to 65

Plotting CPD positions



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Kapteyn Sq. close by, mkd B46812
also R.S. Cent. & R.S. Car.

Nebulosity around neighboring stars

Is star slightly brighter on 11302 ?
11317

See Objects on B12538

* ff 13861

Excel. fl. B15556 (longest); 46608, 10m; ~~46813~~ 39241, 16m

See B15721 for relation to nearby stars —
Corner — out of focus

B21266 perhaps ~~3.~~ ~~2.~~ ~~1.~~ faintest ? (Corner)

Possibly slightly ff. ~~40005~~, ~~39241~~ 1,60744
~~+8119~~

Perhaps 1 or 2 faintest / not marked.

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N.B. * ⁂ Except on long exp., the ft. stars probably make rat. slem trifle brighter

Est. of Magns. Conf. Sequence = 30 Ks marked B 46812

Magns. Bls. 48, f. 154

Stars	Bl 48, f. 154		Corr.			
	10.35	+.22	10.57			
8	10.98	= (+0.24)	11.22	on A 10928		
9	11.27	=	11.51			
10	11.63		11.87	Grades est.		
11	11.97		12.21	4		
12	12.39	+.27	12.63	3	Used	
13	12.68	+0.25	12.93	3	12.9	
14	13.07	+0.26	(13.33)	2	13.1	
15	13.06	+0.26	(13.32)	4	13.5	

Checked by A.D.W.

Verified by A.D.W.

Ft. stars are very much better on A 10928 than on B 46812. Assumed Magns. as given to 13. 14 & 15 near Magns. derived by grades.

15 is much fainter than 14 on better plate.

See already marked (ft stars) on A 7747

		Corr. Magn.			Entered
Ft. *	B 13861	11.8	July 1, 1895	Mag 11.7	—
Normal	11302	11.4	May 25, 1894	11.3	p. 152
"	18427	11.3	Jan. 28, 1897	11.3	154
"	46812	11.4	May 25, 1916		157
	21266	perhaps 11.5, near corner	April 26, 1898		f 155
Normal	46469	Conf. Seq. marked	11.3 April 8, 1916		156
	46786	Seq. 30 Ks "	11.4 May 23, "		157
	21171	11.3	April 12, 1898		154
Only limiting Mins.	~~46812~~	~~11.3~~	~~May 25, 1916~~		
8X10 f.	A 10928	13.3	June 2, 1914	AW 13.2	159

Normal by Miss Walker = 11.3

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1922phae.proj.1203w

Length of exp. affects est.

Normal on all these plates. Estimates of several pl
a trifle brighter than star marked x, top of p. 151. Sometimes

2 or 3 br. than B	3315	May 17, 1889	
Star x (p.151=top)	3559	June 16, 1889	
Duplicate stars	5001	May 1, 1890	
Close to Var.	7264	Nov. 17, 1892	
affect Magn	9191	April 28, 1893	
2412582			
2586	9291	May 2, 1893	
2586	9293	May 2, 1893	
2594	9420	May 10, 1893	
2814	10752	Dec. 16, 1893	
2922	10836	April 3, 1894	perhaps .1 fainter than
2931	10882	April 12, 1894	equal to star — nonad
?	10924		1 brighter than —
2952	11087	May 3, 1894	.1 or .2 " " —
2966	11152	May 17, 1894	
2973	11294	May 24, 1894	2 exposures — possibly
			the southern may be
			a trifle fainter.
2974			
Dup. 151	11302	May 25, 1894	
2977	11317	May 28, 1894	Trifle brighter?
3177	12743	Dec. 14, 1894	
3245	12813	Feb. 20, 1895	
3258	12834	March 5, 1895	
3292	12941	April 8, 1895	
3293	12988	April 9, 1895	
~~3510~~ 3145	12538	Nov. 12, 1894	
3295	13018	April 11, 1895	
3323	13199	May 9, 1895	
3322	13183	May 8, 1895	perhaps .1 or .2 fainter than normal
3346	13477	June 1, 1895	

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Normal

Plates made on p. 151, using Seg. 30 Ks. This star is usually thin & it seems a trifle smaller but dense, making it = X. The whole range should not be more than .2 on these plates.

3346	13478	June 1, 1895
3346	13479	June 1, 1895
3348	13521	June 3, 1895
3496	15016	October 29, 1895
3503	15111	Nov. 5, 1895
3510	15140	Nov. 12, 1895
3511	15151	Nov. 13, 1895
3516	15180	Nov. 18 1895
3516	15181	Nov. 18, 1895
3518	15190	Nov. 20, 1895
3541	15212	Dec. 13, 1895
3544	15239	Dec. 16, 1895
3569	15292	Jan. 10, 1896
3603	15353	Feb. 13, 1896
3621	15365	March 2, 1896
3635	15420	March 16, 1896
3652	15503	April 2, 1896
3658	15556	April 8, 1896
3668	15626	Apr. 18, 1896
3673	15635	Apr. 23, 1896
3689	15721	May 9, 1896
3699	15919	May 19, 1896
3712	16042	June 1, 1896
3721	16219	June 10, "
3724	16301	June 13, "
3727	16379	June 16, "
3740	16507	June 29, "
3744	16634	July 3, "
3755	16844	July 14, "
3758	16866	July 17, "

30

One plate, p. 151, 13861, shows a decided decrease but measures .5 only. No plate was found ~~little fainter?~~ showing further proof of Hertzsprung's variation. His range = 2m

Later — see p. 159

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Normal -60° 2642

13762	B	16969	July 21, 1896	
3772		17032	July 31, "	
3785		17106	August 13, "	
3895		18179	Dec. 1, "	Possibly a trifle fainter?
3929		18270	January 4, 1897	
3933		18290	Jan. 8, "	
3940		18321	" 15, "	
3946		18346	Jan. 21 "	
3953	See p. 151 —	18427	Jan 28 "	
3955		18454	" 30, "	
3957		18466	February 1, "	
3959		18513	Feb. 3, "	
3996		18629	March 12, "	
4007		18669	" 23, "	
4034		18802	April 19, 1897	
4034		18804	" 19, "	
4036		18859	" 21, "	
4037		18900	" 22, "	
4057		19072	May 12, "	
4057		19074	May 12, "	
4074		19263	" 29, "	
4074		19265	" 29, "	
4085		19470	June 9, "	
4085		19471	" 9, "	
4092		19537	June 16, "	
4106		19646	" 30, "	
4107		19668	July 1, "	
4107		19669	" 1, "	
4374		21067	March 25, 1898	
4382		21120	April 2, 1898	
4892	See p. 151	21171	April 12, "	

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Excel. plate 21428 15m Shining neb - and ft. stars

Normal

14392	B	21173	April 12, 1898
4410		21328	Apr. 30, "
		21329	" 30, "
4410			
4412		21361	May 2, "
4428		21428	" 18, "
4448		21565	June 7, 1898
4442		21557	June 1, "
4448		21566	June 7, "
4465		21774	" 24, "
4638		22328	Dec. 14, "
4773		22644	April 28, 1899
4777		22675	May 2, "
4785		22810	May 10, "
4795		22872	May 20, "
5050		24652	Jan. 30, 1900
5074		24734	Feb. 23, "
5102		24882	Mar. 23, "
5116		24970	Apr. 6, "
5140		25185	" 30, "
5159		25356	May 19, "
5169		25490	" 29, "
5382		26857	Dec. 28, "
5441		26967	Feb. 25, 1901
5484		27084	April 9, "
5488		27169	Apr. 13, "
5523		27332	May 18, "
5542		27574	June 6, "
5870		29557	April 30, 1902
5870		29561	" 30, "
6183		31365	Mar. 9, 1903

Perf. 151, 21268 perhaps faulty?

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Normal -60° 2642

B 31632 May 5, 1903
31656 May 6, "
33407 Apr. 20, 1904
33559 May 3, 1907
35351 Dec. 6, 1904
35834 April 21, 1905
36009 May 12, "
36017 May 12, "
36032 May 13, "
36034 May 13, "
37353 May 8, 1907
38444 March 9, 1908
38621 April 9, "
39001 May 26, 1908
39002 May 26, "
39240 June 25, "
39241 ~~April 25~~ " "
40001 April 7 1909
40005 " 7 "
41281 May 17, 1910
44761 July 15, 1914
44779 " 16, "
46347 March 28, 1916
46412 April 5, "
46439 " 6, "
46468 " 8, "
Cat. Dec. p 151 46469 " 8, "
46470 " 8, "
46542 May 1, "
46606 " 10, "
46608 " 10, "

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Normal

B	46630	May 11, 1916
	46753	May 21, "
See f. 151	46786	May 23, "
See f. 151	46812	May 25, "
	47116	June 7, "
	47117	June 7, "
	47165	June 8, "
	49635	March 24, "
	49879	April 12, 1917
	49924	" 13, "
	49927	" 13, "
	50036	Apr. 16, "
	50205	" 29, "
	50217	" 30, "
	50346	May 9, "
	50372	May 12, "
	50552	" 19, "
	50554	" 19, "
	50590	" 20, "
	50592	" 20, "
	50635	" 22, "
	50636	" 22, "
	50744	" 27, "
	50745	" 27, "
	50748	" 27, "
	50778	" 30, "
	50779	" 30, "
	50924	June 10, "
	50950	" 11, "
	50974	" 12, "
	51022	" 14, "

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1922phae.proj.1203w

53537 Eros. images

Normal -60° 2642

B 52265 April 2, 1918
52302 April 3 1918
52678 April 30, 1918
52696 May 1 "
52772 May 8, "
52866 May 18, "
53021 June 11, "
53477 March 8, 1923
53525 April 9, 1923
53527 Apr. 9, "
53536 " 12, "
53547 " 16, "
53561 " 17, "
53571 " 18, "
53573 " 18, "
53582 " 19, "
53629 " 25, "

17

MF 8501 April 30, 1924
8539 May 6, "
8540 May 6, "

3442 April 29, 1919
3734 May 31, 1919
5306 April 20, 1920
5280 Apr. 19, "
3466 May 1, 1919
3307 April 23, "
3207 April 4, "

10

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1922phae.proj - 1203W

Broken plates: Normal

B	3601		Slide 716
	5061	May 5, 1890	452
	7959	June 21, 1892	717
	11141	May 15, 1894	2171
	12940	April 8, 1895	843
	21036	March 17, 1898	950
	21300	April 28, 1898	1088
	21732	June 21, "	1110
not found	33+94	March 26, 1904	3286
	10807		673
	29043	December 28, 1901	2157

To

a Plates — Normal

a	3012	May 16, 1898	
	2208	January 30, 1897	Eff. 240
	2549	July 16, 1897	
	2200	Jan. 22, 1897	
	2201	" 22, "	
	3013	May 16, 1898	
	2241	—	
	(3018	not found)	
	7747	June 26, 1906	
	7636		
	8240	April 17, 1907	
	8773	May 29, 1908	
	11240	June 1, 1915	
	11255	June 5, "	
	14/13 11261	" 6, "	— Normal

Min

Last plate Mean, 10928 — very faint June 2, 1914

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1922phae.proj1203w

NB Error in Leading of Liden, p.96, J.D.

Minima Hertzsp. & Harvard.

J.D				
2413376.517	B	13861	July 1, 1895	11.8 Not Min
3420286.607	A	10928	June 2 1914	13.3 Only Min. in over 200 d. 13.2 d Min
2403828*		Min. in Bul – Neth, 54		February 12, 1924 2423828
2423967**		" " letter (Hertz.)		June 30, 1924

* Min, p.96 Bul. 54

3828.3330	12.45
3610	12.4
3856	12.5
.4119	12.3
.4375	12.45
.4646	12.6
.4895	f
.5151	f
.5400	f
.5639	f

** J.D. Hel. M.T. Min from letter

23967.2040	
.2290	
.2532	

from letter "Normal on JD. 3966.2566 & 3968.2150, duration not more than 2 d."

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1922phae.proj.1203w

Min. Dec. of Day Starting End Exp. Mid. Exp.

B 13861 July 1, 1895 14h 12m 14h 22m 10m 14h 17m .922 .594 .601 .517

Dr. Miss Walker

a 10928 June 2, 1914 14h 25m 50s 14h 35m 50s 10m 14 31 .003 .603 .001 .607

Dr. Hertzsprung exam. all plates, November, 1926, for minima and find these

– 60° 2642

faint on:

	E	O-C	plate
d		d	
2 418 098·61	0	−·14	AM 5525
2 420 286·61	63	+·16	A 10928
2 420 668·49	74	+·07	AM 10704
2 423 828·45	165	+·02	10pl Jo'burg
2 423 967·22	169	−·11	3pl Jo'burg

fairly faint on:

2 413 376·52	−136	+·41	B 13861
2 418 480·51	11	−·22	AM 6268

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1922phae.proj.1203w

-60° 2642 Count of plates exam.

p. 152	27	p. 159	13 A Plates Normal
3	30		1 " Faint
4	31		14
5	31		
6	31		
7	31		
8	17		
	198		
159	10		
Normal	208	B Plates	
Faint (151)	1		
	209		

B 209
A 14
MF 10
examined 233 plates

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1922phae.proj.1203w

C.P.D. -60° 2642 $11^h 6^m 51^s.0$ -60° 33'.7 $^m 10$ (18

Letter of Ejnar Hertzsprung, November 10, 1924.

	B		A	MF
Examined 233 plates	208	Normal	133	10
1889 to 1924	1	Faint	1	
	209		145	

Only on 1 B plate out of 209 was any evidence seen of change exceeding .2 or .3. This plate, B 13861, shows decrease of .5, and is doubtless just before or after a Minimum. Exam. MF plates. B 21266, April 26, 1898, possibly .2 fainter (in corner)

Exam. 14 A Plates. Last plate exam. shows Var. 2 Magns. ff.
A 10928. Compare with A 11240 for range.

Hertzsprung reported 2 Min. out of 129 nights
Harvard plates 2 " " " 233 plates

Minima:

			Corr. Magn.
B 13861	July 1, 1895 = J.D. 2413376.517	(Not Relic)	11.8
A 10928	June 2, 1914 = 2420286.607	" "	13.3

Estimate of Normal on several plates, compared with Seq. 30 Ks (p. 151) = 11.3 Corr. Magn. (Hertz. 10.6 or .7)
Determined better magnitudes for faint stars of 30 Ks on the better A plate (10928) See p. 151.

Note error J.D. heading Bul. 54
Tab. J.D.?

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1922phae.proj.1203w

Reported to Dr. S.

Gesell. 7042 $19^h\ 55^m\ 29^s.66$ (1900) $-12°\ 31'\ 9''.6$ = -12° 5613 BD

Letter of Frank Schlesinger, December 20, 1924,

"exceedingly faint, on 1 zone plate, on the other decidedly bright."

Marked on 1909

1 *Df.	-12° 5607	19	51	38.2 (1855)	-12	6.3	7.5	7.54	7.68	a5
	-12 5613	19	53	0.7	-12	38.0	7.3	7.64	8.20	90

See B 28437 ft. stars Enf. 61m

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1922phae.proj.120cw

Normal, a little fainter than -12° 5607
On many plates when near edge -12° 5613 seems
larger image, not very dense. Assumed out-of-
focus

Never found faint image.
What date - Schlesinger ?

(See p. 173) 168 plates exam., 1890 to 1922.

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1922phae.proj..1203W

On several plates, see 18026, this star is film. Assumed distorted

List of plates – Normal

B
5947 May 17, 1891
5948 " 17, "
6145 " 30, "
6146 " 30, "
6178 June 2, "
6179 " 2, "
9860 July 21, 1893
~~10447 October 20, "~~
~~13547 June 3, 1895~~

?
9898 July 22, 1893
10448 October 20, 1893
10447 " 20, "
10971 April 19, 1894
13547 June 3, 1895
13585 June 4, "
13670 June 6, "
13902 July 2, "
15748 May 9, 1896
16114 June 4, "
16429 June 17, "
16450 June 19, "
16574 July 1, "
16583 July 1, "
16646 July 3, "
16659 July 3, "
16788 July 10, "
16888 July 17, "
16903 July 18, "

26

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1922phae.proj.1203w

much larger than other stars of same magnitude, but on edge of image, July. Difficult to get plates with these in same focus.
Gord, See 20612, 22171

Normal

B 17149 August 14, 1896
17294 Aug. 31, "
17340 Sept. 3, "
17490 Sept. 28, "
17508 Sept. 30, "
17560 October 6, "
17718 Oct. 27, "
17909 Nov. 13, 1896
18026 Nov. 25, "
18027 Nov. 25, "
18663 March 13, 1897
18791 April 9, "
19093 May 12, "
19223 May 26, "
19331 June 1, "
19489 June 9, "
19604 June 23, "
19698 July 1, "
19776 " 6, "
20293 Sept. 13, "
20363 Sept. 15, "
20612 October 12, "
20674 Oct. 28, "
22171 Nov. 11, 1898
22898 May 20, 1899
23134 June 20, "
23367 July 8, "
23543 July 18, "
23585 July 19, "
25454 May 24, 1900
27525 May 29, 1901

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1922phae.proj.1203W

Normal

B 27793 June 26, 1901
28437 Sept. 4, 1901
28668 October 7, 1901
29663 May 14, 1902
29891 May 28, "
30873 October 11, "
31693 May 6, 1903
32342 July 28, "
32430 August 13, "
33548 May 2, 1904
34169 June 21, "
34523 July 30, "
36066 May 15, 1905
36440 July 12, "
37644 June 20, 1907
37673 June 28, "
39080 June 4, 1908
39433 August 6, "
39509 Sept. 5, "
39516 Sept. 5, "
40414 June 9, 1909
Abruptly Marked 40520 June 28, "
" & Ider. 41471 June 19, 1910
41675 July 16, "
41678 " 16, "
45401 August 1, 1915
45610 Sept. 7, "
45679 " 10, "
45977 October 4, "
45997 " 5, "

30

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1922phae.proj.1203w

Normal

46045 October 7, 1915
47148 June 7, 1916
48394 Sept. 22, "
48766 October 19, "

4

I Plates of Region Normal

I 1750 August 30, 1890
15726 Aug. 19, 1896
16000 Sept. 23, "
16002 " 23, "
16110 October 8, "
16190 " 19, "
16193 " 19, "
16416 November 2, "
16510 " 14, "
16601 " 24, "
18593 August 21, 1897
18622 Sept. 2, "
18982 " 24, "
19195 October 8, "
19441 Nov. 4, "
21019 August 5, 1898
21170 Sept. 13, "
25400 June 4, 1900 Slide 3948

18

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1922phae.proj.1203W

Normal

I 21175 Sept. 13, 1898
This plate shows Star ft. but it is on extreme edge of film, Assumed to be not full image.
23265 July 31, 1899
30755 Aug. 21, 1903
33234 Aug. 2, 1905
33235 " 2, 1905
33236 " 2, "

6

MF Plates
MF 3753 May 31, 1919
4565 August 23, 1919

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1922phae.proj.1203w

Normal

a 2617 August 6, 1897
8075 September 5, 1906
9070 Sept. 17, 1908
9430 June 26, 1909
9452 June 27, "
9641 August 11, "
~~10468~~

6

ac Plates from 1915 and later

ac 16470 May 15, 1915
16485 " 19, "
16566 July 6, " Slide 4081
16596 July 17, "
16721 Sept. 11, "
16761 " 22, "
16928 Nov. 3, "
17735 July 19, 1916
17843 Sept. 2, "
17921 " 22, "
18094 November 2, "
18219 " 22, "
21808 Sept. 18, 1919
23684 May 11, 1921
23880 July 26, "
24063 Sept. 7, "
24115 " 19, "
24121 " 23, "

18

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1922phae.proj.1203W

12310 2nd pl.

AM Plates 1915, and later, $20^h\,00^m\,-15°$.

AM	10445	April 19, 1915
	10633	June 5, "
	10657	June 10, "
	10703	June 18, "
	10940	August 2, "
	10977	August 11, "
	11007	" 16, "
	11329	October 6, "
	11395	" 27, "
	12034	June 20, 1916
	12045	" 22, "
	12079	" 28, "
	12097	" 30, "
	12310	August 5, "
	12358	" 22, "
	12369	" 24, "
	12387	" 28, "
	12654	October 22, "
	13500	August 11, 1917
	13537	" 25, "
	14274	" 9, 1918
	14798	June 24, 1919
	14964	August 27, "
	15048	October 25, "
	15396	August 9, 1920
	15633	June 30, 1921
	15903	June 28, 1922

27

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1922phae.proj.1203w

Summary —

p. 166	26	p. 169	18	
7	31	170	6	
168	30		24	I plates
9	4			
	91	B Plates		

B	91	
I	24	
MF	2	
A	6	
ac	18	
am	27	
	168	1890 to 1922

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1922phae.proj.1203W

174

for record of Feb. 4, see p. 178.

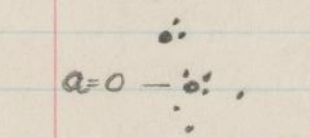
Thursday, February 27, 1925. Reported to Dr. S

Letter of W. S. Finsen, Union Obs.
of January 19, 1925.
Var.? in Corona Aust. region.

On 115 plates faint – normal
" 1 " 2.5 m. brighter
possibly on next night slightly brighter than normal.

Max. April 2, 1924
Positn 1875 $18^h 37^m 53^s$ $-37° 15' .4$

Sketch with letter



a = 0
b = 1
c = 2
a = Approx. 12 mag.
V normal = 2.8
on April 2 = 0.5

D.E.W. Marked on B 17239 Ft. stars seen. Trace? of Var. No identified stars are included in sketch, but I picked up configuration on a 4474 all faint, and variable is not seen on many plates.

Star b is above limit of short exposure plates. See list of plates exam.

* Var. never as bright as b, and never as bright as c when faint stars are seen.

Marked on:

B 25507	Exp. 60	Var. at least ½ magn. fainter than c	
17239	Exp. 71m	c = abnt. 3	Var. n. 5
11789	" 10	c very ft.	Var. barely seen

probably about 15.0 or fainter.

a 4474 Var. seen fainter than 14.6 see M of RT Cor A.

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1922phae.proj.1203W

S.

Plates showing δ. Sketch p. 174.
Var. always fainter or N.S. When C is seen, Var. is fainter or N.S.

			Eff.	
B	3834	July 17, 1889	60	
	5993	May 20, 1891	10	
	6111	May 21, 1891	10	
	9674	June 23, 1893	10	
	10036	July 31, 1893	10	
	10036	" 31 "	10	
	10037	" 31 "	10	
	10471	October 24, "	10	
	11760	August 7, 1894		
11789	12138	~~Sept. 12,~~ August 10, "	10	
	12170	Sept. 15 "	70	
	12171	Sept. 15 "	15	
	12853	March 6, 1895	30	
	16165	June 5, 1896	11	
	16983	July 21, "	10	
	17143	August 14, "	12	
17239	17484	~~Sept. 28,~~ August 25, "	11	
	17716	Oct. 27, "	13	
Mr. Fisher Copy Object Great Dept.	18608	March 10, 1897	20	
	18728	April 2, "	12	
	18950	Apr. 23, "	13	
	19087	May 12, "	12	
	19201	May 25, "	12	
	19219	May 26, "	10	
	19245	May 28, "	14	
	19449	June 8, "	13	
	19690	July 1, "	10	
	20122	August 19, "	15	

30

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1922phae.proj.1203w

B	20360	Sept. 15, 1897	Eff. 10~	
	21283	April 26, 1898	10	Slide 2204
	21385	May 12, "	13	
	21477	May 25, "	12	
	21576	June 7, "	12	
	21719	June 20, "	21	
	22514	April 6, 1899	10	
	23064	June 16, "	10	
	23666	July 26, "	12	
	25389	May 22, 1900	10	
	25507	May 31, "	60	
	25967	Sept. 4, "	10	Slide 2175
Is 6 var?	27445	May 27, 1901	10	
	29527	April 29, 1902	10	
	30016	June 12, "	60	
	30316	July 8, "	60	
6 ray fr?	30871	October 11, "	10	
	30972	" 22, "	10	
	32628	Sept. 3, 1903	10	
	33493	April 23 ?	10	
	33810	May 23, 1904	10	
	36895	Sept. 6, 1905	10	
	36962	Sept. 9, "	10	
	37067	October 6, "	10	
	39150	June 16, 1908	10	
	41503	June 26, 1910	10	
	41609	July 13, "	10	
	42312	May 19, 1911	10	
	44972	August 14, 1914	10	
	44993	" 15, "	10	
	47214	June 9, 1916	10	

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1922phae.proj.1203W

		Eff.
B 47274	June 10, 1916	10m
47538	June 20, 1916	10
47613	June 23, 1916	10
51525	July 20, 1917	10

4

A Plates exam. Never as bright as B.

		Eff.	
2139	October 17, 1896	10m	Var. ft.
3696	July 8, 1899	61	
3700	July 10, "	45	
4425	June 1, 1900	35	N.S. Ft. stars N.S.
4474	June 21, "	60	Ft.
6160	Sept. 19, 1902	60	Ft.
8455	Aug. 18, 1907	10	Ft
8867	June 17, 1908	11	Ft
9040	Aug. 25, "	60	Ft.
9491	June 29, 1909	10	Ft.
10241	August 27 1910	258	Ft. stars seem. Var. faintest or normal.
3810	August 4 1899	303	Normal — faint
Does not 12928	~~8x10 May 3, 1924~~		~~taken for NGC 6723~~ (6723?
even " 12966	~~8x10 " 28~~		~~" " " 6723~~
13085	Sept 16.		
13086	" 16		

Exam. 65 B plates 1889 to 1917.
12 A "

Continued, page 184.

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1922phae.proj.1203W

Wednesday, February 4, 1925.

Letter of B. Asplind, Karlstad, Sweden. January 18, 1925.

Concerning position of Ardiuna (394) already sent. See Bks. 25, f. 148.

Wolf Planet 1901 HA Heidelberg Oct. 11-16, 1901.

"Regains: roughly calculated":

1901	Aug. 5.5	δ^h 6.3	+0° 41′	}	Magn 13
	Sept. 4.5	23 47.5	− 2 22		
	Oct. 14.5	23 31.4	− 5 19		

Asplind asks for plates between July and November, 1901, with limits of plates, if object is not seen.

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1922phae.proj.1203w

Partly Marked on B 28570

Marking checked by M.A.S.

Comparison Seq. of 115 K is near. Magns. Bb. 7, p. 118

Marked on MC 3724

	Adopted	Correction	Corr. Magn.
1	8.22	+0.09	8.31
2	9.39	0.17	9.56
3	9.95	0.21	10.16
4	10.10	.22	10.32
5	10.28	.22	10.50
6	10.71	.23	10.94
7	11.09	.24	11.33
8	11.33	.24	11.57
9	11.90	.24	12.14
10	12.50	.25	12.75
11	12.78	.25	13.03
12	13.06	.26	13.32
13	14.02	.25	14.27
14	14.28	.25	14.53
15	14.75	.24	14.99

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1922phae.proj.1203W

180 28570 St. 22 20 Gul. 23 20 Eff. 60m mid. Eff. 22 50

J.D. 2415648.652

.702
.949
.65
.001
.652

Exam. of plates.

Limits of pl.
23h 38m 4h 0h 9m
+2.0 -7.5

1901 Berlin Asteroids — B 28570 September 20 Exp. 60m
shows 3 objects

Edwarda or Wolf's? — Faint obj. Magn. 13.5 or fainter,
23 44.2 -6 12 (1855) Approx.
2.3 +15
23 46.5 -5 57 (1900) Approx

Eubrate — Bright Obj Magn. about 10.7
0 1.0 -0 48 (1855)
2.3 +15
0 3.3 -0 33 (1900) Approx.

Aglaja — Another fairly bright object Magn. about = Stars 8 - 11.6
0h 6.0 +0 6 (1855)
2.3 +15
0 8.3 +0 21 (1900)

Limit of plate, ~~nearly~~ 15.0.

Better positions: Using near BD stars.

47 Aglaja 0m 6.0 +0m 5s (1855) — From Berlin Ast. 0 4.6 +0 3 (1901)
2.3 +15
0m 8.3 +0m 20s (1900)

0m 1.1 -0m 53s (1855)
2.3 +15

247 Eubrate 0m 3.4 -0m 38s (1900) — 23 59.6 -0 18 (1901)

340 Edwarda 23m 44.3 -6m 5s 1855
2.3 +15
23m 46.6 -5m 50s (1900) — 23 49.3 -5 30 (1901)

291 Alice especially looked for, not seen — 23 48.6 -2 12 (1901)

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1922phae.proj.12033

These indicate by short exp. that obj. as faint as 13 would not be seen

Other available plates — not fully examined.

	A	5754	Jan. 4	1902	Eff m 23	40 −6°
	I	27721	Oct.	5, 1901	10	23.4 +2
		27722	"	5	16	23.4 −8
		27724	"	5	27	23.4 +2
*		27734	"	6	34	23.8 −8
	B	28061	July	26	10	0.1 −2.4
		28062		26	10	0.1 +7
		28093		27	10	23.5 −2
region off	(*)	28235	Aug.	16	60	0.2 −10
		28306		23	11	23.8 −2.5
		28335		24	10	23.8 −7
		28336		24	10	23.8 +2
		28372		26	10	23.8 −3
		28374		26	10	0.1 −7
		28375		26	11	0.1 +2
*		28570	Sept.	20	60	23.8 −3
		28593		21	10	23.8 −8
		28638	October	3	10	23.5 −8
		28646	"	4	10	23.5 −2.7
		28647		4	10	23.8 −7.5
		28681		7	10	23.2 −12
		28682		7	10	23.2 −2

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1922phae.proj.1203W

Regions predicted compared.

B 28061 Comp. 10 Limit of plate not as faint as 12.0

28306 " 11 Limit about 12.5

28372 Poor.

27722 10 Not ft. stars

28374 Comp 10 Limit about 12.5

28638 " 10 " brighter than 12.0

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1922phae.proj.1203V



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1922phae.proj.1203W

See Bk. 25, p. 178. P.E.W.

B28570

#4

1922

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1922phae.proj.12033v

Report — Wolf's Asteroid 1901.

Several plates, with image regions and dates, but of short exp. all except one would not show object. Limits of several plates of 10 m. exp. exam. = 12.5. A trailed image of Magn. 13 would probably not be seen.

B 28570 September 20, Exp., 60m. Limits of plate 23h 30m to 0° 9' +2.0 to -7.5. Lim. Magn. = 15. Three asteroids found.

Approx. Magn.	Approx. 1900.0 α	δ	Identified as	
13.5	23h 46.6	-5° 50'	340 Edelarda	Berlin Asteroids 1901
10.5	0 3.4	-0 38	247 Eukrate	
11.5	0 8.3	+0 20	47 Aglaja	

291 Alice was looked for but not found. Region from plot. for Wolf's Ast. was exam. but not found.

March 18, 1925

Letter of March 1 — giving pos. 1901 Sept 20 23 48 39 -5 46.0
Oct 10 23 33 53 -5 38

New exam made of B 28570 & undoubtedly Ast. & Alice are at limit of magn. for this plate.

See Bk. 33, p. 46

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1922phae.proj.1203w

 Continued from p. 177. February 27, 1925

Finsen's Variable —

Recorded, page 174

Sequence of RT Cr. Aust

Ft. stars mkd on A4474

Marked on B 11789 Magnus. Bh. 45: 129 *

Star m = 12.4 Corr. 1922 Mag.

This is barely seen on Am 15486, Exp. 75m 25 (18.0 -30)

As Finsen's a = 12. Mag., Am plates would not be available in query of this object unless it were a Nova and had been brighter than 12 preceding April 2, 1924.

No Am plates near Date

No MF " " "

Mean 2 readings only Corr. 1922 Mag.

* 45: 129 l 11.54 +0.24 11.78

m 12.11 +0.24 12.35

See A 4474 t 14.28 +0.25 14.53

u

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Finsen's Var. Exam. Am plates of 1923
Normal ~~when~~. 6 usually seen, Var. N.S. faintly
Am 16382 August 30, 1923 Eff. 80m
16386 Sept. 1, 1923 Eff. 62

AX plates began in Peru April 22, 1924
6 seen on AX plates Var. never bright. C sometimes seen.
AX 488 April 29, 1924 Eff. 120m
535 May 13, " 121
613 June 23, " 61
645 June 28, " 106
664 July 2, " 93
725 July 26, " 90

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Saturday, February 28, 1925.

Miss Hutchinson, Wellesley College.

To measure CPD -55° 3615

$10^h 31^m 14^s.9$ $-55° 23'.7$ $10^M.1$ (1875)

Marked by Miss Walker on B 86032 & 27020 &
B 46630 & Am 10483

See Sketch of Ejnar Hertzsprung, letter of January 2, 1925

For Proof and probable Range

Br.		Ft. 19668 = St. 9	
B 21327	about 4	21565	7-8
19262	= 4	18629	8-9
19263	triple ft. than 4		
15420	4-5		

For change of Magn. or Position.

In examining this region, I superposed an early & a late plate, B 3315 & B 50950

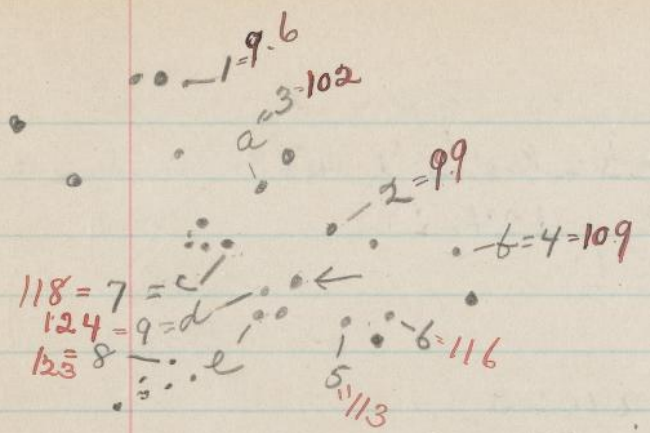
May 14, 1925 2 Vars. found, both known. Marked on both plates

10 23.2	-59	10	-59° 2135
10 50	-60.6		-60 2370

See Cat. for letters and more exact positions. Confirmed by iden. Cat No.

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1922phae.proj..1203V



in letters *
Sequence as marked by Hertzsprung

Sequence in Nos. D.E.W.
To include Hertz — stars
Selected on B 46630 provisionally

Change 8

Hertzsprung's "Steps"

* a =	.0		10.1 Assumed
b =	.411	.41	10.51
c =	.950	.54	11.05
d =	1.476	.53	11.58
e =	1.723	.24	11.82
		1.73	1.72

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1922phae.proj.1203w

Sequence of η Carinae (29 Ks)
Marked on B 36032 (letters) & 46630 (numbers) also 154/20
Magnus. Bk. 48, f. 124.

Also
Nova Velorum,
Marked on B 27020
Magnus. Bk. 44, f. 196

	η Car. 29 Ks		Nova Velorum	
Corr. 1922 Magnus.	1	8.4	a	9.3
	2	8.9	b	10.2
	3	9.6	c	11.0
	4	9.5	d	11.3
	5	9.9	e	11.5
	6	10.5	f	11.7
	7	10.8	g	12.1
	8	11.0	k	12.6
	9	11.4	k'	12.8
	10	11.7	etc.	
	11	11.8		
	12	12.1		
	13	12.2		
	14	12.5		
	etc			

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1922phae.proj.1203

Am 10433 · 11648

	1	8.8	9.8
	2	9 9	
a	3	10 2	10.8
b	4	10.6	
	5		
	6		
c	7	about 12.2	

) 4 — 2.2

9.2 9.4
10.0 10.2
10.8 11.0

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1922phae.proj.1203W

Tuesday, March 3.

Scale N botany well placed A 11487 (46630)

Sc. C. Var. Sequence. Read. fr. Cube Sequence η Car. Mag. Mean

				Mag.	Mag. − Mean
1	8.4	1.0	9.4	6.6	1.8
2	8.8			6.9	2.0
3	9.1			8.6	1.0
4	9.4			8.5	1.0
				8.7 Dbl?	1.2
				8.9	1.6
				9.4	1.4

Corr. for Sc. C = 0.0

Cat. 11487 I = 9.6

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1922phae.proj.1203N

Scale N AM 10433

Sc. C Var. Sequence.

1	6.7 1.6	8 3
2	7.6	
3	~~7.7~~ 8.4	
4	9.2	

(46630)

Seq. n Carinae

		Magn. .190	
1	6.8	8.4	1.6
2	7.5	8.9	1.4
3	~~8.6~~ 7.8	9.6	1.8
4	~~8.7~~ 8.0	9.5	1.5
5	8.5	9.9	1.4
6	8.7	10.5	1.8
7	8.9	10.8	1.9

Est. 1 = 9.6 2or3

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1922phae.proj.1203w

Am 11487

Scale N
Sc. C

Van. Sequence

1	8.2
2	8.5
3	89
4	9.2[3]

1 = 10.0

Sequence Nova Velorum (B 27020)

	Magn. J. 190	Diff.
a 7.3	9.3	2.0
b 8.4	10.2	1.8
c 9.2	11.0	1.8

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1922phae.proj.1203V

Wednesday, April 1, 1925

Var. Seq. AM 14629 $10^h\ 30^m$ $-60°$ Direct estimates compared with 29 Ks

	1	9.6		
	2	9.9		
a =	3	10.1	10.1 Assumed	
b =	4	10.9		4
	5	11.2		5
	6	11.5		6
c =	7	11.6	11.05	7
	8			8
				9

Vertex diff = .95

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1922phae.proj.1203M

Var. Sequence in B 10836

		By est.	By grades
1	3	10=9.6	
2	2		9.9
3	8		10.1
4	~~4~~ 7		10.9
5			11.3
6	3		11.6
7	2		11.8
8	5		12.8
9	1	2.8	12.4 ✓
	/28	12.4 ✓	

Var. Seq. nearest center

On 7492 images elongated but this plate seemed to bring

3	(96)	Poor images
34	9.9	position good
4	10.3	
6	10.7	Retain?
2	11.3	
4	11.5	
5	11.9	
-2	12.4	
	12.2 ✓	
	/26 ✓	

B 15420

1	4?	9.6
2	5	10.0
3	8	10.5
4	5	11.3
5	3	11.8
6	2	12.1
7	) 3	12.3
8		
9		12.6
	/30 ✓	

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1922phae.proj.1203w

For test of grades

Sep. 29 Ks. on B 10886

1					
2					
3					f. 190
4	-1	9.5 f.190	9.5	9.5	
5	4		9.9	9.9	
6	5		10 4	10 5	
7	3		10.7	10.8	✓
8	2		10.9	11.0	
9	4		11,3	11.4	
10	3	✓	11.6	11.7	
	21				

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1922phae.proj.1203w

Magns.

Var. Sequence

By grades

	(1) Direct Est.	(2)	(3)	(4)	(5)	Use
	f.195	f.196	f.196	f.196	Mean	Mean
	Am14629	B10836	B7492	B15420	(2,3,4)	(1) & (5)
1	9.6					9.6
2	9.9	9.9	9.9	10.0	9.93	9.92
a = 3	10.1	10.1	10.3	10.5	10.30	10.20
b = 4	10.9	10.9	10.7	11.3	10.97	10.94
5	11.2	11.3	11.3	11.8	11.47	11.34
6	11.5	11.6	11.5	12.1	11.73	11.62
c = 7	11.6	11.8	11.9	12.3	12.00	11.80
8	—	12.3	12.4	—	12.35	(12.35) Use 12.3
d = 9	—	12.4	12.2	12.6	12.40	12.40

Includes Corr. of 1922 see f.190

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1922phae.proj.1263w

marked on B10836

Magns.
Approved
by Miss A J Cannon
April 3, 1925

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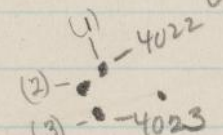
1922phae.proj.1203W

July 13, 1931

Letter of W H Wright, Lick Obs., July 6.

Variable = +0° 4022 or 4023

Marked, July 11, by A W, on AX 593



+0	4022	18 41	16.5	+0	29.7	9.3
	4023		17.3		22.0	8.5

4022 is ft AX 1355 A8477 8532

1647

medium 16413

Faint AX* 260 AM 15738 16117

181 15792

15960

15975

Star 2 ft AX ~~260~~ 1355 ft AM 8551

ft AM 10109 and others

Br AM 15489, 15305

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1922phae.proj..120W

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