

KG  
11366  
220

Ida E. Woods  
Book No. 45  
Cluster Variables

JY. 92.  
6584  
7099

6809  
1904  
6093

6101  
6723



KG11366220

Bb. 45

Aug, 1927

Interesting (?)

p. 78 6101 open

\* 6341 Baade

no material now

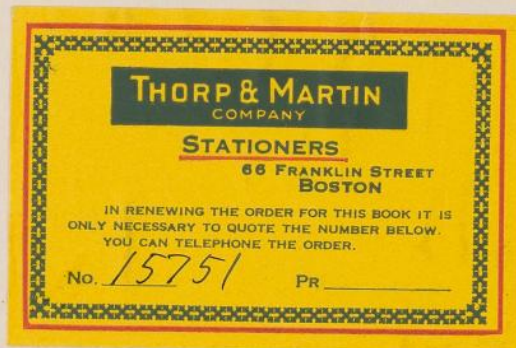
\* 6218 JEW early material

no material now

Dr. S.

Early material for  
other clusters

Faint Nebulae - omit



Harvard College Observatory

Ida E. Woods

Book No. 45.

Cluster Variables

Continued from Bk.  
See Index

KG 11366.220





6723

Var 1  
Var. 3  
" 4  
Var 5  
14







MSC 6723 Van 7?

3620 30 40 50 60 70 80 90 3700 10

in 3900 2 ft

2 ft

larger scale

93

Only 3 plates very ft.  
but apparently not Algor  
other plates do show a  
change as indicated of about  
1 magn.

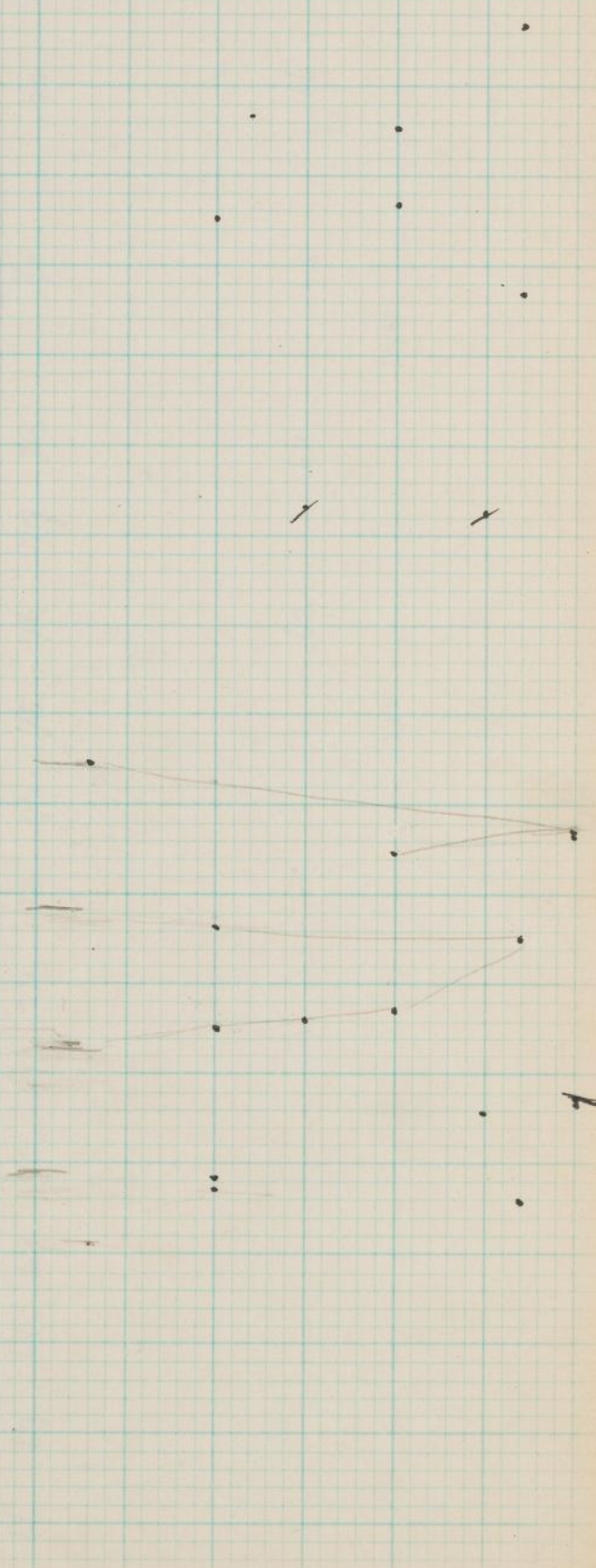


NYC 6723 Var. 1

3620 30 40 50 60 70 80

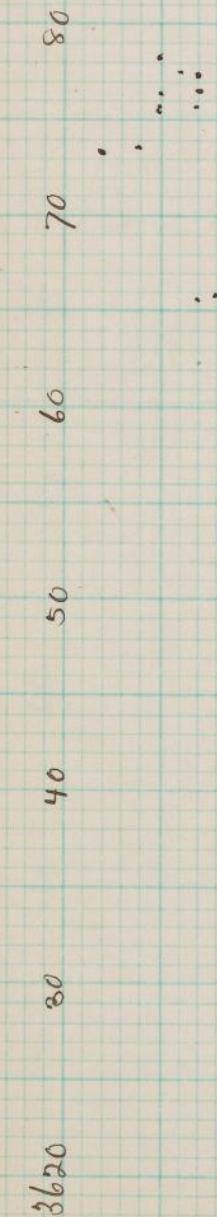
Comp. Max

Plotting all including 14.5 about 1.6 days  
6701 1711 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100





NGC 6723 Var. 3. 13.2 to 16.5



reject for final

Large scale

75

74

78

77

76

75

74

73

72

71

70

69

68

67

66

65

67

66

65

64

63

135

135

140



AgC. 6723 Var. 3

663 64 65 66 67 68

Maxima Conf.

663.809  
64.789  
65.769  
66.749  
67.729

73.609  
74.589  
75.569  
76.549  
77.529  
78.509

74 75 76 77 78



6723 Var 3

List of 13.7 and bughla

3665619 13.7

673.609 132

673.688 13.4

675.550 13.5

675.605 135

675.673 137

676.520 135

676.641 137

677.498 137

677.642 136

678.492 135

3673.609

0.98

72629

74.589

0.98

7551.9

76.549

0.98

77529

78509

X  
check by machine  
back to JD 3635

678.49

76.52

2) 1.97098

.98

678.49

665.61

12.88

98

308

294

14

678.49

665.61

12.88

98

104

117

1274

0.98

673.609

1274

660869

5.88

666.749

0.98

665.769

691

3.92

5.88

660869

196

662.829

664.789

62829

0.98

62829

0.98

63809

64789

0.98

65769

66.749

5.88

72.679

0.98

73.659

6723 Var 4

14.2

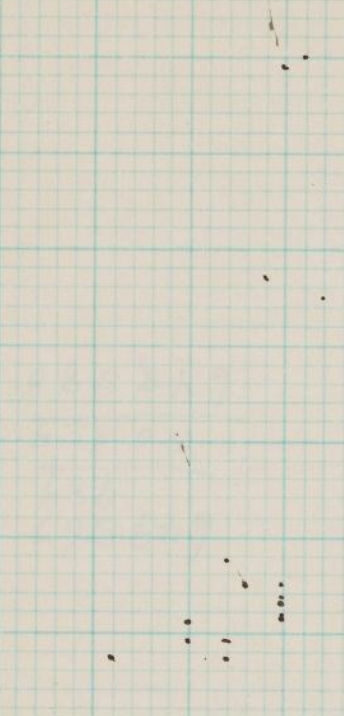
14.2

$$\begin{array}{r} 3618.8 \\ 5675 \\ \hline 649.1 \end{array}$$
$$\begin{array}{r} 649.567 \\ 618.791 \\ \hline 30.776 \end{array}$$

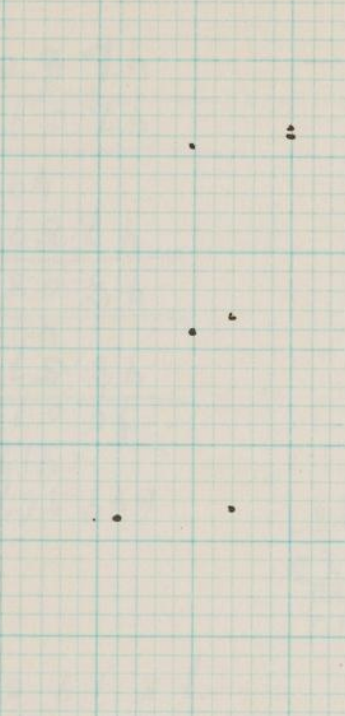


HyC 6723 Var. 4

3620 30 40 50 60 70 80 90 3700



~~647~~ 647 648 649 650 673 674 675 76 77





6723 Van. 5

14.5 to 15.0

635.6  
647.7  
648.6  
649.6  
650.6  
663.7  
665.6  
670.7  
674.680  
675.673  
676.641  
677.642

677.642  
74.680  
3) 2.9762  
   .987

649.567 (13.8)  
   .987  
650.554 2) 0987  
   9.87  
660.424  
   1974  
662.398  
   987  
663.385  
   2961  
666.346  
669.307  
   .987  
670.294  
   2961  
673.255  
   987  
74.242  
75.229  
   987 987  
76.216  
77.203  
78.190

649.567  
   2470  
674.267  
   494  
674.761  
675.255  
   494  
675.749  
676.243  
   494  
74.242  
49.567  
24.675 (25  
   19.74  
   4935  
   4935

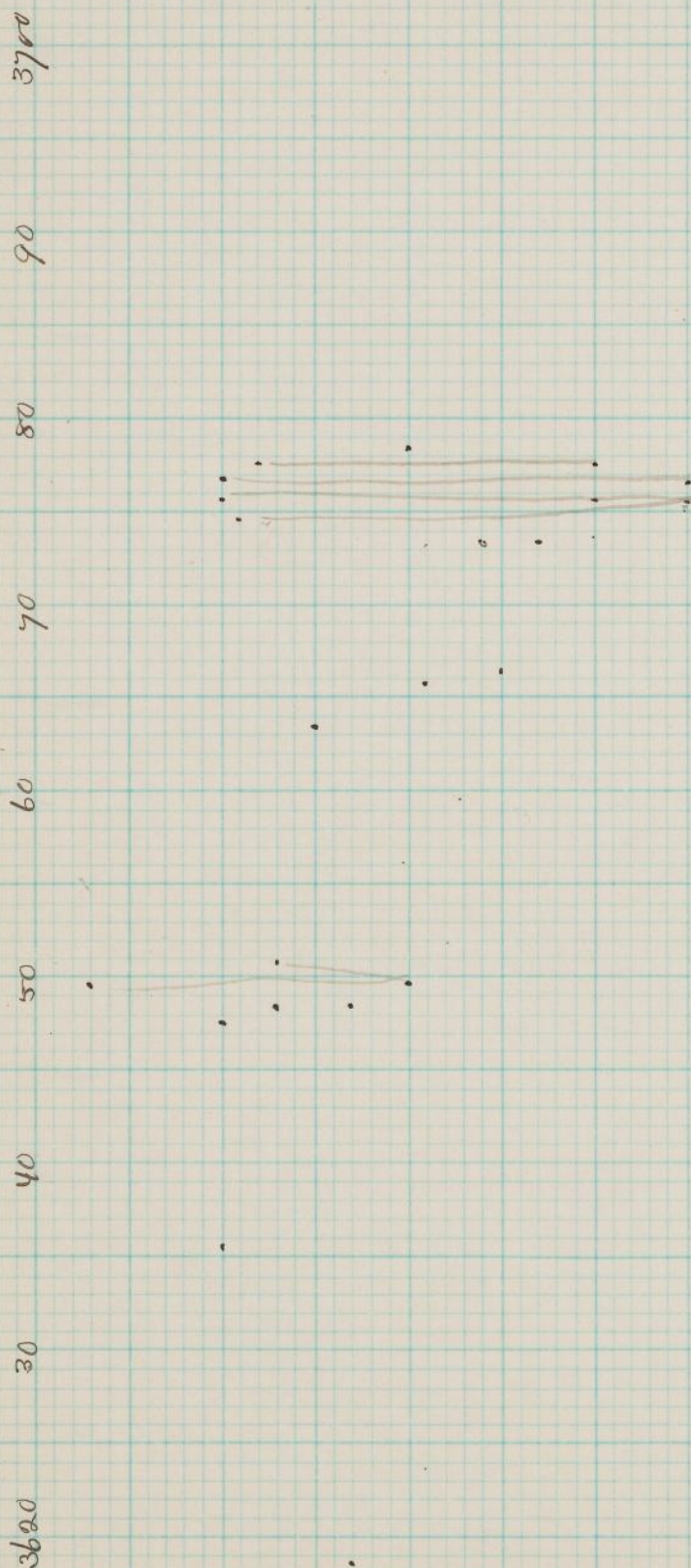
.494  
.988  
1.482  
1.976  
   494  
2.470  
74.267  
   494  
73.773  
676.737  
   494  
677.231  
77.725

649.567 9.073  
   .494  
49.073 8.579  
48.579  
   494  
48.085  
47.591  
   494  
47.097  
46.603

649.567  
   987  
50.554  
648.580



6723 Var. 5





6723 Var. 5  $P = 0.987$  or  $\frac{1}{2} = .494$  no max at  $\frac{1}{2}$  13.8 = Max  
 3673 3649.567 74 75 76 77 78 = Min



3648

3647



6723 Var. 5 *Langer scale*

674. 75 76 77 78

73 74 75 76 77 78 74 74.5 75 76



6723 Var. 13 see unprinted values at end

1046 or  $\frac{1}{2} \div 523$

Var. 13

3620 30 40 50 60 70 80 90

149

150

160

147

110

111

160

1046 or  $\frac{1}{2} \div 523$

677

676

675

674

673

650

649

648

1046 or  $\frac{1}{2} \div 523$



Var 13  
 94-  
 3704  
 05-22  
 Aug 13



(13)

less than 2d

$$14.0 = 3673.609$$

$$0.992$$

$$674.601$$

$$675.593$$

$$76.708$$

$$1.033$$

$$75.675$$

$$3673.609$$

$$5.675$$

$$2) 2066$$

$$1.033$$

$$73.609$$

$$10.333$$

$$63279$$

$$1033$$

$$52949$$

$$42.619$$

$$41.32$$

$$3673609$$

$$1.033$$

$$74642$$

$$50.883$$

$$1033$$

$$49.858$$

$$75675$$

$$1.033$$

$$76.708$$

$$48.817$$

$$1033$$

$$47.784$$

$$48.45$$

$$49.55$$

$$73.61$$

$$75.70$$

$$1.10$$

$$2406$$

$$2.09$$

$$104$$

$$75.68$$

$$673.609$$

$$2) 2071$$

$$1.036$$

$$1010$$

$$673.609$$

$$49.50$$

$$2) 24109$$

$$1.205$$

$$673.609$$

$$12.05$$

$$671.559$$

$$49.509$$

$$675.8$$

$$675.55$$

$$0.25 = \frac{1}{2}$$

$$673.609$$

$$1.030$$

$$9$$

$$673.609$$

$$1.205$$

$$674.814$$

$$676019$$

$$673.609$$

$$1.046$$

$$674.655$$

$$675.701$$

$$1046$$

$$76.747$$

$$648.56 (14.8)$$

$$49.57$$

$$101 (144)$$

$$673.609 1010$$

$$1010$$

$$663.539$$

$$653439$$

$$5050$$

$$648389$$

$$5050$$

$$653439$$

$$675.70$$

$$73.609$$

$$2.091$$

$$673.609$$

$$1046$$

$$663149$$

$$648.389$$

$$1010$$

$$649.399$$

$$1046$$

All 14.5 to 15.0

$$673.688 (14.8)$$

$$675.673$$

$$674.680 (14.7)$$

$$4.680$$

$$0.992$$

$$0.993$$

673.609 only max

$$675.700$$

$$2) 2.091$$

$$1.046$$

$$673.609$$

$$1.046$$

$$72.563$$

$$1046$$

$$62.103$$

$$51.643$$

$$1046$$

$$50.597$$

$$49.551$$

$$1046$$

$$48.505$$

$$48.505$$

$$1046$$

$$47.459$$

$$1046$$

$$36.999$$

$$26.539$$

$$1046$$

$$16.079$$

$$1046$$

$$13.125$$

$$18.171$$

one



$$(13) \quad 1.046 \text{ or } \frac{1}{2} ? \quad 0.523$$

$$\begin{array}{r} 18171 \\ 1046 \\ \hline 19217 \\ 1046 \\ \hline 29677 \\ 1046 \\ \hline 30723 \\ 1046 \\ \hline \end{array}$$

$$\begin{array}{r} 41183 \\ 1046 \\ \hline \end{array}$$

$$\begin{array}{r} 51643 \\ 1046 \\ \hline \end{array}$$

$$\begin{array}{r} 50597 \\ 1046 \\ \hline \end{array}$$

$$\begin{array}{r} 49551 \\ \hline \end{array}$$

$$\begin{array}{r} 48505 \\ 1046 \\ \hline \end{array}$$

$$\begin{array}{r} 47459 \\ 1046 \\ \hline \end{array}$$

$$\begin{array}{r} 57919 \\ \hline \end{array}$$

$$\begin{array}{r} 68379 \\ 1046 \\ \hline \end{array}$$

$$\begin{array}{r} 69425 \\ \hline \end{array}$$

$$\begin{array}{r} 70471 \\ 3138 \\ \hline \end{array}$$

$$\begin{array}{r} 73609 \\ 1046 \\ \hline \end{array}$$

$$\begin{array}{r} 74655 \\ \hline \end{array}$$

$$\begin{array}{r} 75701 \\ 1046 \\ \hline 76747 \\ 677793 \\ 1046 \\ \hline 688253 \\ \hline \end{array}$$

$$\begin{array}{r} 98713 \\ 523 \\ \hline \end{array}$$

$$\begin{array}{r} 703943 \\ 1046 \\ \hline \end{array}$$

$$\begin{array}{r} 04989 \\ \hline 06035 \\ \hline \end{array}$$

$$\begin{array}{r} 04989 \\ 523 \\ \hline \end{array}$$

$$\begin{array}{r} 5512 \\ \hline \end{array}$$

$$\begin{array}{r} 1046 \\ \hline \end{array}$$

$$\begin{array}{r} 04989 \\ 1046 \\ \hline \end{array}$$

$$\begin{array}{r} 15449 \\ \hline \end{array}$$

$$\begin{array}{r} 25909 \\ \hline \end{array}$$

$$\begin{array}{r} 1046 \\ \hline \end{array}$$

$$\begin{array}{r} 26955 \\ \hline \end{array}$$

$$\begin{array}{r} 028001 \\ \hline \end{array}$$

$$X = 0.028001$$

$$\begin{array}{r} 04989 \\ 523 \\ \hline 4466 \\ \hline \end{array}$$

$$(146 = 5555)$$

$$\begin{array}{r} 04989 \\ 523 \\ \hline \end{array}$$

$$\begin{array}{r} 5512 \\ \hline \end{array}$$

$$\begin{array}{r} 6035 \\ \hline \end{array}$$

$$146 = 27.518$$

Belmont

$$\begin{array}{r} 6035 \\ 523 \\ \hline \end{array}$$

$$\begin{array}{r} 11265 \\ \hline \end{array}$$

$$\begin{array}{r} 16495 \\ \hline \end{array}$$

$$\begin{array}{r} 523 \\ \hline \end{array}$$

$$\begin{array}{r} 21725 \\ \hline \end{array}$$

$$\begin{array}{r} 26955 \\ \hline \end{array}$$

$$\begin{array}{r} 523 \\ \hline \end{array}$$

$$\begin{array}{r} 27478 \\ \hline \end{array}$$

$$27.518 = 14.6$$

$$27.518 = 14.6$$

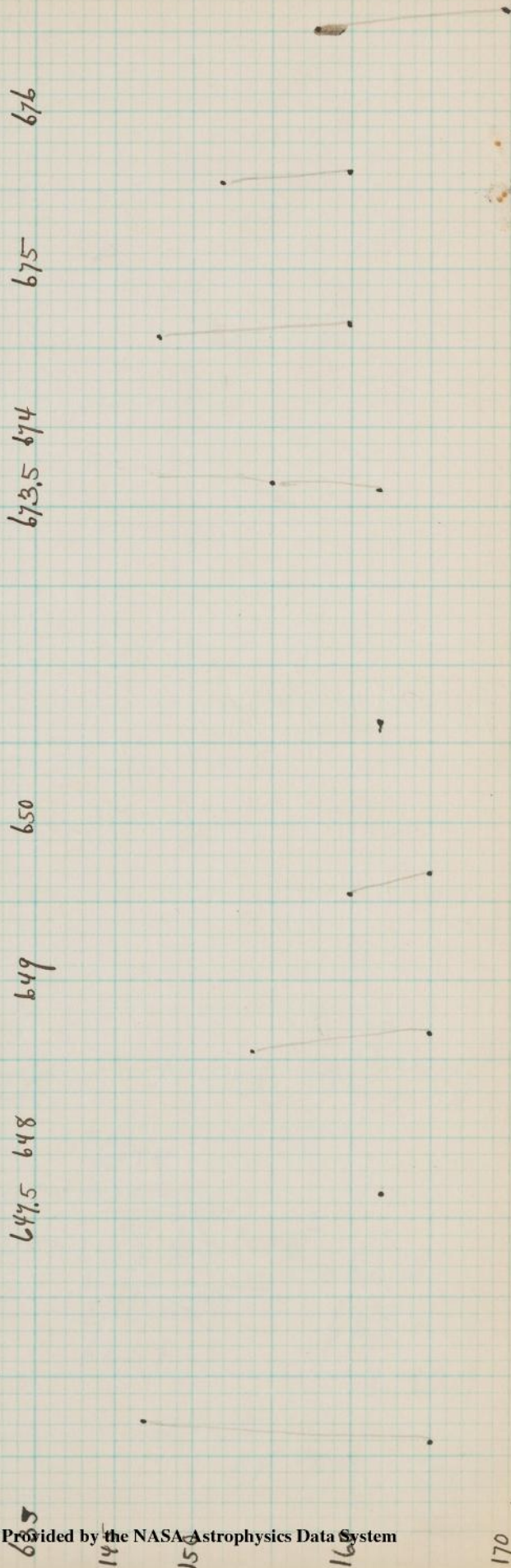


J.R.C. 6723 Var. 14

3620 30 40 50 60 70 80 90 3700 10



647.5 648 649 650 673.5 674 675 676





6723 Var. 14

673.7

674.599

0.899

674599

635.715

900) 38884 L43

3600

2884

2700

184

Only 2 Max. Steep changes — short period



6723 Var. 16 close to another star. May affect meas.

3620 3630 3640 3650 3660 3670 3680 3690 3700

647 648 649 650 673.5 674 675 676 677



Var. 3



Duration = ?

1 2 3 4

see p. 45  
(growth)

Copied  
back

3248.5  
12074

15.5 15.2 15.1 13.7 14.8 12.5 12.5 13.5 12.3

675 15.5 15.2 ~~edge of film~~ 13.6 15.2 12.7 12.4 13.4 13.0 12.5

679 15.3 15.2 13.7 13.5 15.2 13.1 12.6 13.2 13.6 12.5

111 13.8

175

469 14.8 15.0 14.6 <15.0 ~~10.6~~ 13.8 13.4 13.4 14.2 12.5?

526 12.9 14.3 14.2 12.8 11.1 13.0 12.6 13.2 14.8 13.0

528 12.7 13.7 14.8 13.0 11.1 13.1 12.8 13.4 13.3 12.8

620 13.3 13.5 13.1 13.6 12.8 12.7 12.8 13.3 13.3 13.0

643 13.4 ~~13.8~~ 14.8 13.4 12.9 12.9 ~~13.3~~ 13.2 13.8 12.8

784 ~~about 15.2~~ 14.4 13.4 ~~about 15.3~~ <15.0 13.3 14.8 13.3 14.5 12.3

926 <15.2 14.5 ~~13.4~~ <15.3 ~~about 15.2~~ 13.2 14.9 13.1 14.5 13.0

930 <15.1 13.2 ~~11.1~~ <15.3 15.0 13.0 15.0 12.9 15.3 13.3

938 <15.2 15.2 — <15.5 15.2 12.7 15.2 12.8 15.0 13.3

957 <15.2 ~~13.9~~ 15.0 <15.5 <15.5 13.1 <15.0 12.5 15.5 13.2

965 <15.0 14.6 13.6 <15.2 <15.2 13.0 <15.2 13.0 15.5 13.0

970 <15.2 13.4 14.8? <15.5 <15.5 12.6 <15.2 13.0 14.2 13.3

974 <15.2 14.9 14.8 <15.5 <15.5 13.3 <15.2 13.0 13.2 14.6



Quota = ?

2 3 4 5 6

Copied back 10

3248.5 reeds  
12074

15.5 15.2 15.1 13.7 14.8 12.5 12.5 13.5 12.3

075 15.5 15.2 <sup>reeds</sup> 13.6

15.2 12.7 12.4 13.4 13.0 12.5

079 15.3 15.2 13.7 13.5 15.2 13.1 12.6 13.2 13.6 12.5

111 13.8

175

469 14.8 15.0 14.6 <15.0 ~~10.6~~ 13.8 13.4 13.4 14.2 12.5?

526 12.9 14.3 14.2 12.8 11.1 13.0 12.6 13.2 14.8 13.0

528 12.7 13.7 14.8 13.0 11.1 13.1 12.8 13.4 13.3 12.8

620 13.3 13.5 13.1 13.6 12.8 12.7 12.8 13.3 13.3 13.0

643 13.4 ~~13.6~~ 14.8 13.4 12.9 12.9 ~~12.8~~ 13.2 13.8 12.8

784 <sup>about</sup> 15.2 14.4 13.4 <sup>about</sup> 15.3 <15.0 13.3 14.8 13.3 14.5 12.3

926 <15.2 14.5 ~~13.4~~ <15.3 <sup>about</sup> 15.2 13.2 14.9 13.1 14.5 13.0

930 <15.1 13.2 ~~14.1~~ <15.3 15.0 13.0 15.0 12.9 15.3 13.3

938 <15.2 15.2 — <15.5 15.2 12.7 15.2 12.8 15.0 13.3

957 <15.2 ~~13.0~~ 15.0 <15.5 13.1 <15.0 12.5 15.5 13.2

965 <15.0 14.6 13.6 <15.2 13.8 <sup>0</sup> <15.2 13.0 15.5 13.0

970 <15.2 13.4 14.8? <15.5 <15.5 12.6 <15.2 13.0 14.2 13.3

974 <15.2 14.9 14.8 <15.5 <15.5 13.3 <15.2 13.0 13.2 14.6



	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
12979	<15.1	14.8	13.5	<15.2	<15.5	13.4	<15.2	13.2	15.4	14.4
984 <del>admiral</del>	15.2	14.8	13.6	<15.5	<15.5	12.5	<15.1	13.2	15.6	13.0
987	<15.4	15.4	13.4	<15.0	<15.0	13.4	<del>&lt;15.2</del>	<del>13.1</del>	14.8	12.3
988	<15.1	14.8	13.6	<15.5	<15.2	13.0	<15.2	13.1	14.8	12.7

Copied — back



	Var.13	Var.14	Var.16
12687	155	16.5	16.0
	—	16.2	16.2
	148	16.8	155
	147	16.8	162
	146	16.5	162
	146	<del>170</del>	14.8
	148	< 16.5	165
12966	156	< 16.2	< 16.5



6723	Ornit	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
12664				14.7	160		16.5				
667				16.5	152		170				
669				15.8	160		150				
671				14.5	pl. broken		145				
672				160	158		14.5				
676				165	170		158				
679				15.5	160		158				
684				162	165		165				
12687		14.0	—	15.5	16.5	16.2	16.0				
12691											
12708											
715				off edge	162		162				
769				14.8	168		15.5				
777				147	168		162				
787				146	165	148	16.2				
821					Poor		—				
928				146	170	155	148				
966				146	< 165	165	165				
				156	< 162	< 165	< 165				



N.E.C. 6723

J.D. S.M.T.

A plates

12523	July 17 1923	23618.791	12658	Sept 10 1923	23673.688
563	Aug 3	23635.598	662	"	23674.599
566	"	715	664		.680
571	4	23636.624	667	12	23675.550
576	8	23640.589	669		.605
586	14	23646.644	671		.673
589	15	23647.565	672	13	23646.520
592	"	.684	676		.641
595	16	23648.564	679	14	23677.498
598		.684	684		.642
601	17	23649.567	687	15	23678.492
604		.688	691		.611
606	18	23650.526	708	29	23692.539
609		.641	715	30	23693.596
624	31	23663.683	769	Oct 11	23704.594
638	Sept 2	23665.619	777	12	23705.555
645	3	23666.674	787	13	23706.573
656	10	23673.609	821	Nov 3	23727.518
			928	May 3 1924	23909.888
			966	28	23934.693



ASC 6723

Max

P

Var.		Max	Min	36	
1	Prood	138	16.2	3678.492	1.6
2	Omit	—			
3	Prood	13 <sup>2</sup> <del>5</del>	16.5	3673.609	0. <sup>d</sup> 98
4	W	14.5	15.7	Diff? 1st half all max 1st half nearly all ft	
5	Prood	<del>14.2</del> 138	170	3649.567	0.987
6	Bailey	—			
7	Prood	138	15.0	3 plates ft but not Algal. Irregular?	
8	Bailey	—			
9	Deflection omit	—			
10	Imus	14.5	<160		
11	Bailey	—			
12	Bailey	—			
13	Prood	140	165	0.523?	3673.609 Max
14	Prood	147	165	only 2 Max. Certainly short Per	
15	Prood	147	155	omit measures small range n of 2 stars difficult	
16	Prood			Center	
17					
18					
19					



6723

Var. 1

A complete period?

approx.  
13.5

73.688	14.5	1.862
75.550	14.5	
76.641	14.5	1.091
78.492	13.8	1.851
		1.584
78.225 abmt = 14.5		

75.4	
76.8	1.4
78.5	1.7

1.8

3673.688

$$\begin{array}{r} 3648.564 \\ 8673.688 \\ \hline 1.8 ) 25.124 (14 \\ \underline{1.8} \\ 71 \\ \underline{72} \end{array}$$

3678.492 Max 648.564

$$\begin{array}{r} 3678.492 \\ \underline{1.8} \\ 76.692 \\ \underline{74.892} \\ \underline{1.8} \\ 73.092 \end{array}$$

$$\begin{array}{r} 3678.492 \\ \underline{1.6} \\ 3676.8 \\ \underline{675.2} \\ 673.6 \end{array}$$

$$\begin{array}{r} 15 ) 25.124 (1675 \\ \underline{15} \\ 101 \\ \underline{90} \\ 112 \\ \underline{105} \\ 74 \\ \underline{75} \end{array}$$

$$\begin{array}{r} 25.124 (15 \\ \underline{16} \\ 91 \\ \underline{80} \\ 11 \end{array}$$

3.678.492

$$\begin{array}{r} 3678.492 \\ \underline{1.6} \\ 76.892 \\ \underline{75.292} \\ \underline{16} \\ 73.692 \\ \underline{16} \\ 57.692 \\ \underline{16} \end{array}$$

3635.

145	1.675	3678.492
147		6

145	648.564	
147	649.688	1.124
145	673.688	24.000
145	75.550	1.862
145	76.641	1.091

41.692

1.6

43.29

1.6

44.89

46.49

1.6

48.09

49.69

3641.692

1.6

3625.692

3.2

3628.892

3632.092

1.6

33.692

35.292



6723 Var. 1



6723 - Var 3



# Variable



# Comments

Published in the interests of The American Association of Variable Star Observers  
D. B. PICKERING, PRESIDENT      WM. TYLER OLCOTT, SECRETARY

VOL II.

MARCH, 1929

No. 1

## NEW OBSERVERS IN 1928

The year 1928 brought to the Association some new members of great promise. Knowing the history of our struggle to maintain our high standard for number and quality of observations and what small percentage of our new members usually remain for long devoted to the active work of observation, we may well feel proud of the harvest we acquired last year.

During the writer's visits to the observatories of Germany in 1927, he discussed at length with such eminent astronomers as Professor Ludendorff of Potsdam and Professors Guthnick and Prager of Neubablesberg, the status of variable star observation among the amateurs of their country. He learned to his great surprise, that not only was there no associated or concerted work being done outside of the great institutions, but that there was no effort on the part of the professional to encourage the amateur. In fact these great men mentioned the names of but two amateurs who were known to them as having done valuable work in the field of variable stars. These had individually but repeatedly published their results in the *Astronomische Nachrichten*.

One of these was Herr Max Beyer of Hamburg-Grossborstel—of the Beyer-Graff Atlas, now made so attractively available to our members—and the other was Herr Erich Leiner of Konstanz. Despite the fact that our membership numbered many from different countries, we could not claim even one in Germany. Later in the year a correspondence was begun with the gentlemen above named, which resulted in both becoming active and enthusiastic members of the A. A. V. S. O. Still later, Herr Paul Ahnert, a friend of Herr Beyer's, joined the Association and we have reason to expect a still further augmentation of our forces from that country. These gentlemen are all contributing splendidly and with great regularity to our reports and as Mr. Campbell has told you, have more than done their parts in giving our annual report the strength and character it bears. Both Herr Beyer, who observes with a refractor of about 5" aperture, and Herr Leiner who uses telescopes of 3" and 4", have long determined periods and curves from their own observations. The latter is a member of the Variable Star Committee of the *Astronomischen Gesellschaft*. Herr Ahnert has telescopes of 1, 2 and 3 inches. Although it was summer before their reports began to arrive, they added over 1200 observations to our annual report for 1928. In the words of Mr. Campbell, they are indeed "A fine asset to the A. A. V. S. O."

We were very much pleased to learn that our reports were being augmented by observations made at Smith College. Prof. Harriet W. Bigelow, a member of long standing, and her associate Miss Guiler, have been making observations for us with the 11" refractor. Their estimates of minimum brightness will prove particularly valuable.

A new member, using a 4" refractor, whose good reports seem to indicate that he has not been deterred by New York's unpleasantly glaring night-lights, is Mr. Milton Schoenfeld—a namesake of a great astronomer. Mr. Schoenfeld is associated with a group of student observers at New



York University. We hope that in time he may be able to interest others in contributing.

Mr. F. W. Smith of Glenolden, Pa., became a student observer while attending Haverford College. Now, as one of our interested contributing members, he is fortunate in having the use of the 6 and 10 inch refractors of Haverford and Swarthmore. It is understood that he plans to make astronomy his profession. He is to be congratulated upon being the first to notice and report the recent drop in SU Tauri.

At the foot of the towering majesty of Mt. Hamilton, and perhaps inspired by the great Lick Observatory at its summit, John Soberanes of San Jose, California, is doing splendid things with his 8" refractor. Not the least evidence of his enterprise is the fact that he invariably uses the good services of the Air Mail to shoot his reports into H. C. O.

Another recent member, whose interest impelled him to attend our annual meeting at Harvard in 1928, is Mr. deForest Swanson of Montclair, N. J. This young man has made a good, consistent and persistent record since he began observing. We have every confidence that his enthusiasm will not wane.

From the ranks of the recently organized Amateur Astronomers' Association of New York, we were fortunate enough to win two or three members. Outstanding among these is Mr. H. B. Webb of Jamaica, L. I., N. Y. His painstaking work with his 31" glass, gives promise of still more valuable results when he acquires the equipment for the new 5" glass he has recently purchased.

Another young man who we hear is to adopt astronomy as a vocation, is Mr. B. S. Whitney of Beaver, Okla. Because of his splendid observational record as a student at Oklahoma University, where he used the 6" glass of that institution, he has been granted the use of the 5" refractor of the A. A. A. S. formerly so successfully used by our old friend of loving memory, the late Chas. Y. McAteer.

We are now receiving many valuable observations of the southern sky from a young man on the other side of the world—Mr. Martin Dartayet, who as a protege of our good friend Prof. B. H. Dawson, began observing variables with his 4" glass in Buenos Aires, Argentina. He is now a computer at the National Observatory at La Plata, where he is enabled to continue his fine work on the southern variables with far greater efficacy, having the use of telescopes of 10 to 20 inch apertures. He is considered at H. C. O. a very careful and accurate observer.

Mr. C. R. Gregory at the Theological Seminary of Auburn, N. Y., is doing good work with his 3" glass, despite the time which he must necessarily devote to his studies.

A new member from a new country is Rastislav Rajchl of Czechoslovakia, the sole representative in the A. A. V. S. O. of that great land. He came to us with a record experience, for though only 18 years of age, he is a candidate for the University and has already achieved more than 2300 observations of variable stars with his 3" glass.

Mrs. Otto Haas of Haverford, Pa., studied variable star observing under that distinguished member of ours, Dr. Caroline Furness of Vassar College, our hostess of last summer. She subsequently received her Ph. D. in astronomy from the University of California, and now has the fine 4" refractor, which, in his lifetime, was the pride of our old friend John J. Crane, of Sandwich, Mass. So good is the work of Mrs. Haas, that we hope her reports will become longer and more frequent. She is proving her love of the science by urging its interest upon her two fine sons.

When that Star of Italian Variable observers—Sig. G. B. Lacchini—left his native heath in Faenza to become Assistant Astronomer at the Royal Observatory of Catania, Sicily, he left behind three young men whom he had inspired, to become his successors in the amateur field. Two of these we know as faithful members—Sigs. Benini and Ancarini. The third who has recently come to the fore, is Sig. Guistano Gallanti. He is using the Mertz telescope left behind by Lacchini and promises well as a good consistent observer.



And lastly we must tell of the splendid record being made by one of the very youngest of the active observers of the Association. We are reminded of the time, years ago, when there flashed into the firmament of the A. A. V. S. O. a brilliant star whose name has long been familiar to us as Peltier of Delphos. But unlike the usual nova, the brilliancy of Peltier has never waned. We often wonder if we shall ever have another like him! But every boy has his chance, and perhaps young Mr. Clinton Ford of Ann Arbor, Mich. may be the light in Cygnus that followed that in Aquila. He is now traveling abroad and after the fine record made at home (over 1000 contributed observations) is availing himself of every opportunity to observe and report from Europe. At the invitation of Professor de Sitter he used the instruments at the Leiden Observatory last September, and when such chances are not to be had, he does his best with field-glasses. He will be observing from his home again in September, 1929. We had the pleasure of meeting him at Vassar last summer—and liked him a lot.

We wonder if the sun-spots had anything to do with this splendid 1928 crop? or was it "The sweet influence of the Pleiades"? At any rate we shall consider ourselves most fortunate if the new members acquired during 1929, shall prove by their work to be made of the same sterling stuff as those mentioned above.

In the words of the Secretary of Agriculture, we must hope for another "Bumper Crop".

#### THE SPRING MEETING AT WASHINGTON, 1929

At the time of our annual meeting at Cambridge, Oct., 1927, we were delighted to receive a cordial invitation from our good friend Mr. James Stokley of the Editorial Staff of "Science Service", inviting us to hold our 1929 spring meeting in Washington, D. C. as guests of that organization. This splendid offer we very gladly accepted. At various subsequent times we have discussed with Mr. Stokley the details of our program and can now suggest, very tentatively, what these will be.

Almost surely they must submit to some change, for it would be highly improbable that our plans could be definitely fixed so far ahead. We make this statement now with the hope of inspiring you to make every possible effort to be with us.

What place could be lovelier than Washington in blossom-time! and where could the devotee of science find more to satisfy his craving for men and institutions of research and record! It may be the first opportunity for some of you to visit our National Capital—but whether you succumb to the lure of the beauty of this "City of Magnificent Distances" or come because of the richness of the scientific feast that is offered, you can be well assured of leaving perfectly satisfied.

Friday and Saturday, May 17th and 18th have been chosen as the days of the meeting. The first General Session will be held in the splendid Auditorium of the National Academy of Sciences building, at 2 p. m. on Friday. The beauty and dignity of this edifice at 21st and B Sts., is worth going far to see. It faces the park of rolling green wherein stands that architectural masterpiece—that moving inspiration to patriotism—the Lincoln Memorial. It is the home of the National Research Council and of Science Service as well, and for two days it will be the Headquarters of the A. A. V. S. O. Its permanent exhibit of the latest scientific inventions and devices, its large library and its sumptuous auditorium, all lend their appeal and bespeak the hospitality that awaits us.

As usual the Council will convene an hour before the General Session. All from a distance, who may require a night's travel to the Capitol, will thus have ample time to become settled at their hotels and perhaps have a look around town before the noonday gathering. The Notice of the Meeting will, as usual, suggest hotels whose location and rates will best suit our needs.

At 4:30 o'clock, following the first General Session, it is planned to



usefulness for our efforts in the cause of astronomy. It might well be pointed out that there is no branch of our science where the amateur can more directly aid in the conduct of modern research, than in the sphere of computing.

For many of our members so situated that they cannot make observations of variable stars this is an opportunity to undertake some really important and valuable work. I might add that when cloudy nights make observations of variables impossible, observers could on such occasions well undertake these reductions of occultations.

The Chairman of the Committee on Occultations has to date made two annual reports of the work done by our members; but for the information of those members not present at our meetings I shall briefly outline what has been accomplished during 1928.

Professor Brown recently told me that he had received some 350 reduced occultations during the past year. Of that number some 220 were made by members of our Association.

The following fifteen members have taken part in this branch of our work: Mrs. Carpenter, Miss Emerson, Miss Howarth, Miss Farnsworth, Miss Slocum, Miss Williams, Miss Walker, Miss Young and Messrs. Green, Barnes, Kurtz, Abetti, Ingham, Phillips and Yalden.

#### OBSERVATION OF OCCULTATIONS, AND REDUCTION OF OCCULTATIONS

The work with occultations has three subdivisions. Prediction of and afterward observing the phenomenon. The Graphic Construction of Eclipses and Occultations by William F. Rigge, S. J., published by the Loyola University Press, Chicago, Ill., fully describes a most excellent form of graphic prediction. Those preferring a numerical form of prediction will find one in the American Ephemeris, and computing forms for that method will be furnished by the Committee on Occultations. Several graphic prediction charts for different localities have been prepared and distributed to our members.

To observe an occultation one must have a telescope, a stop watch, a good time piece, and a suitable wireless set to determine the rate and error of that time piece so as to have correct time to the nearest half second.

Those who for any reason cannot observe occultations can still render a most useful service by making the reductions of published observations. Lists of these will be furnished, together with full instructions for procedure, and computing forms. The only requirement for this work is a working acquaintance with the methods of spherical trigonometry and the use of logarithms.

The appeal by Professor Brown for more observations of occultations, published in the various astronomical journals, was made in view of the promised cooperation by the A. A. V. S. O.; and it is therefore our duty to render such service to the best of our ability.

The Chairman of the Committee on Occultations would be glad to have more of our members volunteer to take part in this, now a very important branch of our work.

J. Ernest G. Yalden, Chairman,

January 5, 1929.

Committee on Occultations.

#### NOTE

The members of the A. A. V. S. O. are invited to contribute clippings, in any language, on METEORS, FIREBALLS, SHOOTING STARS and METEORITES, toward a scrapbook on those subjects at H. C. O. Clippings should be marked with name, place and date of periodical. Address, "Meteors," Harvard College Observatory.

Original reports on The Lyrid shower of 1803, Apr. 20 are desired, whether printed or MS. or copies. E. C. Herrick published a few in 1839, but there should be others in old newspapers, letters, etc. Address "METEORS," Harvard College Observatory.



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## Book 45, Index.

Page			
6	N.Y.C. 6584,	Index to Work.	
22	N.Y.C. 7099,	" " "	
40	N.Y.C. 6809,	" " "	
52	1904,	" " "	
60	6093,	" " "	
78	6101	" " "	
90	6723	" " "	















6

18 10 37-52 14.7

h.

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M.G.C. 6584

Index to Work.

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Bibliography

8

List of Plates

10 etc. Epim. " new Plates

39,

94, 96

2 New Vars. Position meas.



M.G.C. 6584

## Bibliography

H.A. 76, No. 4 "I"

H.B. 801 Bailey, Vars.

← J.E.W., Bk. 5, p. 160-162. 1 obj. suspected X plates <sup>not</sup> proved

8

Idem.

322480

N.G.C. 6584 18 11 -52.3

Exam. Available Plates

page

Exp 2

13 A 12087

13, 12 12203

14 12205 Sept. 25 1922 35 4

Two plates for comp 12213 " 28, " 40 3+ use for confirming Vars -

12, 10 12521 July 17, 1923 50 4

Obj. mbd. 10 13537 Sept 17-18, 1925 40 4i  
(thru 14110)

28431	August 16, 1907	18 1 -50	10	4
8444	" 17, "	18 21 -50	10	3
8533	Oct 16 1907		10	4
9753	Sept 1, 1909	18 0 -50	14	3
9001	August 4, 1908	18 0 -55	60	3i



B Plates

B 29480	18 10 -52	Cup	For identifications
29606	18 9 -52	60"	
29988	18 8 -52	61	

X 12134

Bibliography  
HB 801 9 Vassarster Bailey (outside Cl.)

10

Objects marked April 6, 1927

No other plates?

in A 12203 13537 Exam

Many Nebulae A 12521  
in region - 13537

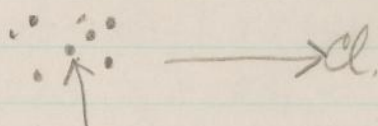
Defective film on 13537  
with plates

Marked for present

a few marked in 13537 superposed

No. 1 18 14 - 52.2 (1900)

Br or defective on 12521



Ft 13537

12203 like 13537

12187 " "

10

Leave  
not proved

No. 2

18 8 - 52.4 (1900)

Br. 12521

Ft 13537

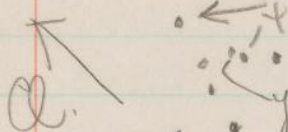
12203

12187

Very ft. B 29988

B 29606

9001 too poor for proof



Br. = brighter than x  
Ft = as ft as y

Good range

not proved

✓

No. 3

18 2 - 52.5 (1900)

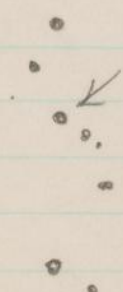
Br. 12521

Ft 13537

12203

NS 12187

This is  
Prof. B's  
No. 51



Bright Star  
Good range  
near free edge



Position measured, Bk. 39, p. 96

No. 4 large range

18 17.5 - 52.9 (1900)

Br. 12521

Ft 13537

12187

12203

Nearly Max

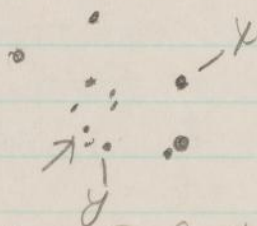
NSA9001

in B29608

\* Max B29988

~~W~~ ~~by~~ ft

star at Max



Neur

Proved

2 stars? note angle

Br. = perhaps a little brighter than x

Ft = about = y

Evan. B long exp. & A<sup>v</sup>

12

Tuesday, April 12, 1927.

W9C 6584 Exam. A 12203

12521

12521 superposed

12203, film reversed  
already marked by  
Prof. Bailey (?)

No 56 large range

51 good

55 large "

57 good "

No. 5 Br? 12203

Ft 12521

18 13-51.0

13537

(1900)

12187

←

Leave for  
more platesB plates seem about  
normal.Not much range but seems  
to vary some

No. 6 18 11 -52.1 (1900)

Br. 12521

Ft 12203

Leave

• • i •  
x - y

12187

13537

B 29606

Proved

Br = a little b. than x

about Max 29988

Ft = about = y

A 9001 off edge

Good range, Ft. star

Position measured, Bb. 39, p. 94.



No. 7 near No. 4, fol. 38 of 4  
 $18^h 19^m -53.0 (1900)$

Leave

$x \rightarrow \circ \leftarrow$   
 $\therefore$

Seems a little brighter than  $x$  on 125215  
 13537, a little fainter on  
 Slight if any var. 12187 12203

No. 8

$18^h 0.5 - 52.6 (1900)$

Leave

Small range but seems real.  
 near 3, precedes & S of 3

$\therefore \therefore \nwarrow \circ \therefore$   
 $\therefore -x$

Br. 12521

Ft 12203

13537

off edge 12187  
 (not for proof)

Br = brighter than  $x$

Ft = fainter than  $x$

Exam, 12203

12187

12187 superposed

No new objects found.

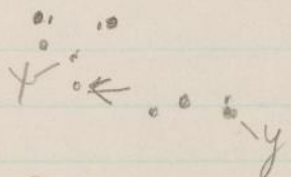
Saturday, August 13, 1927

Comparing  
A 12205

13537

12205 superposed — N.B. Film reversed

No. 9



By

Brighter than x

Small range — Watch  
if any

Ft = about = y

Br. 13587

12521

12203 Sept 24

187 " 13

Ft or defective 12205 Sept 25

Apparently confirmed on 12213

















Saturday, August 6, 1927

N.G.C. 7099

To examine whole field.

Use B13914 for identification

A 12248

12772

12772 superposed  
images of 12772 very inferior to 12248

No objects found

12248

12866

12866 superposed (red lines by Prof. B.?)  
One object — may be defect

Bu 12866

NS on 12248

12686

12772

12780

12813



August 6.

21

neg 7099

A12248

12686

12686 superposed

12248

12780

12780 superposed

1 object — Defect? See 12720

12248

12813

12813 superposed

No objects

12248

12720 Oct 1, 1923

12720 superposed Oct 12, 1923

See object 12780, Same?

N.S.

12772

Am 16432 - Oct, 6, 1923

12724

12725

12730

12732

12764

Marked pos. of obj from 12780 on 12720

22 M30

MC. 7099

Very many faint Nebulae in this  
21 34 42 - 23 38.0 (1900) region

Notes &amp; Index

Field very thin.

Bailey, H.A. 76, No. 4, 3 Vars.

HA 38 Plate XII

List of plates, dates, etc p. 24-28

Exam plates p. 20, 21,



NGC 7099 Bibliography

Ha 38

76, No. 4, 3 Vars., Bailey

M.S.C. 7099

for A 12167 Aug. 28, 1922  
 12209 Sept. 27, "  
 12230 Oct. 7, "  
 20 etc. 12248 Oct. 23, "  
 12250 " 24, "  
 12510 July 9, 1923  
 12525 July 17, "  
 12539 July 20, "  
 12646 Sept 4, "  
 12652 " 7, "  
 12653 " 8, "  
 12678 " 13, "  
 21 12686 " 14, "  
 12692 " 15, "  
 12694 " 15, "  
 12710 " 29, "  
 12717 " 30, "  
 12718 " 30, "  
 21 12720 Oct. 1, "  
 12724 " 2, "  
 12725 " 2, "  
 12730 " 4, "  
 12732 " 5, "  
 12739 " 6, "  
 12740 " 6, "  
 12746 " 7, "  
 12747 " 7, "  
 12754 " 9, "  
 12755 " 9, "





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Reg. C. 7099

A	12761	October 10, 1923
	12763	" 10, "
	12764	" 10, "
	12771	" 11, "
20	12772	" 11, "
21	12780	" 12, "
	12781	" 12, "
	12795	" 15, "
	12812	" 30, "
21	12813	" 30, "
	12823	Nov. 3, "
	12827	" 4, "
20	12836	" 11, "
here	12866	" 29, "
"	12870	Dec. 1, "
not here	13071	Aug. 26, 1924.
not "	13097	Sept 23, "
not "	13131	Oct. 23, "
"	13135	" 27, "
	13378	June 29-30, 1925
	13381	June 30-July 1, "
	13403	July 20-21, "
	13412	July 21-22, "
	13420	July 22-23, "
	13426	July 23-24, "
	13430	July 25-26, "
	13434	July 27-28, "
	13446	July 30-31, "
	13452	Aug. 6-7, "
	13482	" 18-19, "

30





M.C. 7099

a 13486 Aug. 20-21, 1925

13487 " 20-21, "

13489 " 20-21, "

13498 Sept 4-5, "

13499 " 5-6, "

13506 " 7-8, "

13523 " 10-11, "

13529 " 14-15, "

13535 " 17-18, "

~~13537~~ 13539 " 17-18, "

13540 " 18-19, "

13541 " 18-19, "

13547 " 19-20, "

13548 " 19-20, "

13549 " 21-22, "

13551 " 23-24, "

13582 Oct. 9-10, "

13604 Nov. 6-7, "

13616 Nov. 16-17, "

13837 June 17-18, 1926

13845 June 19-20, "

14062 Oct. 1-2, "

14069 " 2-3, "

23

Total 82

Apparently held at Argenta



































40 M 55

 $19^h 33.7^m - 31.2^\circ$ 

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HB 813 5 Vars., J. S. Parake —  
" 8 " , Bailey  
Ha 76, No. 4 2 " "

M.C. 6809

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 List of Plates, 1922 and later.

- ✓ A 12166 August 28, 1922  
 ✓ 12184 Sept. 12, "  
 ✓ 12188 Sept. 13, "  
 ✓ 12208 " 27, "  
 ✓ 12226 October 8, "  
 ✓ 12229 " 9, "  
 ✓ 12247 " 23, "  
 12249 " 24, "  
 ✓ 12393 May 26, 1923  
 ✓ 12395 " 27, "  
 ✓ 12432 June 14, "  
 ✓ 12509 July 9, "  
 12524 " 17, "  
 12538 " 20, "  
 12542 " 21, "  
 12556 " 31, "  
 12558 August 2, "  
 12560 " 2, "  
 12625 " 23, "  
 12632 Sept. 1, "  
 12677 " 13, "  
 12685 " 14, "  
 12690 " 15, "  
 12693 " 15, "  
 12716 " 30, "  
 12723 Oct. 2, "  
 12729 " 4, "  
 ✓ 12731 " 5, "



1927phae.proj.1322W

Wint. 12759, 12799, 13092, 13116, 13117  
 St. Reg. 13410

A 12738 October 6, 1923

12745 " 7, "

12753 " 9, "

12762 " 10, "

12770 " 11, "

12786 " 12, "

12794 " 15, "

12822 Nov. 3, "

12825 " 4, "

12826 " 4, "

12846 " 13, "

853 " 15, "

923 May 2, 1924

990 June 9, "

13056 August 16, "

063 " 21, "

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098 " 24, "

13118 October 15, "

13127 " 22, "

13134 " 24, "

13142 " 27, "

147 " 28, "

150 " 30, "

180 April 2-3, 1925

13209 " 28-29, "

213 " 29-30, "

216 May 2-3, "

13364 June 24-25, "

377 " 29-30, "





NGC 6809

- a 13377 June 29-30, 1925  
 13380 June 30-July 1, "  
 13387 July 10-11, "  
 13393 " 11-12, "  
 13400 " 16-17, "  
 13401 " 20-21, "  
 13402 " 20-21, "  
 13404 " 20-21, "  
 13406 " 20-21, "  
 13411 " 21-22, "  
 13413 " 21-22, "  
 419 " 22-23, "  
 427 " 23-24, "  
 429 " 25-26, "  
 431 " 25-26, "  
 433 " 27-28, "  
 445 " 30-31, "  
 450 August 5-6, "  
 451 " 6-7, "  
 460 " 10-11, "  
 470 " 13-14, "  
 484 " 18-19, "  
 488 " 20-21, "  
 490 " 20-21, "  
 492 " 24-25, "  
 497 Sept. 4-5, "  
 522 " 9-10, "  
 536 " 17-18, "  
 550 " 22-23, "  
 581 October 9-10, "





MGC 6809

A 13586 October 16-17, 1925

13603 Nov. 6-7 "

615 " 16-17, "

636 April 20-21, 1926

13700 May 11-12, "

836 June 17-18, "

841 June 18-19, "

844 " 19-20, "

897 July 12-13, "

910 " 14-15, "

938 " 30-Aug, "

959 Aug. 5-6, "

983 " 17-18, "

14063 Oct 1-2, 1926

14072 " 5-6, "

075 " 9-10, "

16 (thru 14110)

42 28

44 30

46 30

48 16

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1927phae.proj.1222w







52 M 79

 $5^h 20^m 4^s 24^\circ 36.9'$  N.E.C. 1904

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ming No. Bibliography  
H. B. 802 Bailey, Variables.  
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A 12316 April 16, 1923  
 12800 October 19, "  
 12802 " 19, "  
 12803 " 20, "  
 12804 " 20, "  
 814 November 1, "  
 816 " 1, "  
 818 " 2, "  
 819 " 2, "  
 820 " 2, "  
 838 " 11, "  
 840 " 11, "  
 842 " 11, "  
 844 " 12, "  
 845 " 12, "  
 847 " 13, "  
 849 " 14, "  
 850 " 14, "  
 852 " 14, "  
 854 " 16, "  
 856 " 16, "  
 857 " 17, "  
 858 " 17, "  
 868 " 29, "  
 869 " 29, "  
 871 December 1, "  
 12873 " 4, "

















60

M 80

N.Y.C. 6093

16<sup>h</sup> 11<sup>m</sup> 5<sup>s</sup> - 22 43.7

## Index of Work.

p. 61  
62  
64, etc

Bibliography  
List of Plates  
Exam. of A plates

To do

Check Miss L.'s Kumm Var. by original plate or print



## Bibliography.

HA 76, <sup>no</sup>4 Bailey, 2 Vars.  
 H.B. 798 " 5 " (<sup>Discussion,</sup> not announcement of new.)  
 HA 38, Plate X "  
 HC 90 Leauth, Vars.  
 A 2762 } Luyten, new vars, just off field of 8x10  
 A 12622 }

Note —

Open space S following Cluster  
 Ref. B. notes "deeply obscured area near  
 $\rho$  Alphicchi."

MSC. 6093

A Plates

From Plates

Exp. 2

12733 with St. Reg

30

A 12027 June 14, 1922

12028 " 14, "

40 4i

12029 " 14,

40 3+

12030 " 14,

40 3

12031 " 14,

40 3

12056 June 30,

40 4i

12057 " 30,

40 3i

12058 " 30,

40 3

12177 Sept. 9,

40 4

12404 June 2, 1923

40 3+

12456 " 20, "

12461 " 21, "

40 3+

12467 " 22, "

43 3

12499 July 8, "

40 3

12501 " 9, "

504 " 9, "

40 4i Broken

514 " 15, "

40 4i

517 " 15, "

40 4i

549 " 30, "

35 4i

619 Aug. 30, "

40 3+

628 Sept. 1, "

40 4i

640 " 3, "

40 4i

642 " 3, "

40 4i

659 " 11, "

40 4i

660 " 11, "

13 4i

665 " 12, "

30 4i

705 " 28, "

30 4i

749 Oct. 9, "

34 3i

931 May 5, 1924

40 3i

13029 July 5, "

40 4



1927phae.proj.12.2W

64

August 9, 1927

Objects marked on

A12501

Idem. B11896

ood plates

12031

12628

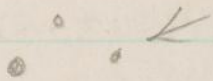
NYC 6093

Comp A12501

13029

13029 superposed

✓ No 1



o

16 2-32.8

Bn 12501

Fr 13029

16 4.9-22.48

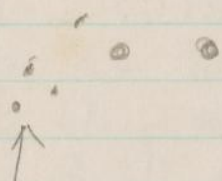
12056

12642

This is Bailey No. 33, mhd A12029  
 TW Scorpii - Learch.

✓ No 2

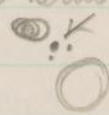
omit



Defect on 12501

✓ No 2

to star just N of Cl.



Is defective on 12501.

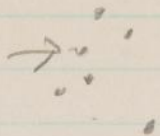
Exam. many plates, always  
 bright. Have not found yet  
 even on 12501 as the film  
 seems defective



Bailey objects, some at least, mbd, A 12177

65

No. 3  
16 8 - 23.3  
(1855)



A P Scorpii 16 10 10 - 23 21 (1900)

✓

Br Median ~~12501~~<sup>12056</sup>  
\* 12501

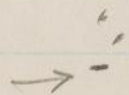
Fl 13029

12642

12177

Baileysun 12705

✓ No. 4



Moving obj.  
Asteroid on 12501

"Ast" marked on 12056 — probably same.

→ Faint Nebula mbd 12501 and 12056

Wednesday, August 10, 1929

Comparing

a 12056

12501

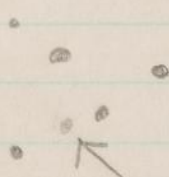
12056 superposed plates hardly comparable  
No new obj.

a 12501

12642

12501 superposed

No. 5



Apparently new

H 3.6-21.9  
(1855)

a ft star

B 12501

12056

12517

Very ft 12642

~~12056~~

ns 13029

ft 12404

12665



No. 6 Apparently New Large range (1924)

16 10.5-22.0<sup>21.9</sup>  
(1855)

12749 very fr  
12931 very bright

Increasing br. —  
Bailey sum B 11896

Liste Br	12642	12659	NS 12501	12514
	12640	12660	12056	
	12665	12705 fainter.	13029	
	12549	12733 (4 <sup>m</sup> left)	12517	
	12619	(if seen, right)	12504	
	12628		12499	

Not Nova

✓ No. 7  
16 11-23.8  
(1855)

Probably is VZ Scorpii 16 13 42-23 10 (1900)

Liste Br 12501  
13029  
B 11896

AS Bailey sum 12642  
Fr 12056  
12177  
NS 12705

✓ No. 8  
Probably  
not a Var  
and not  
a Star

Defect? Or Asteroid?

Br 12501 July 9

NS 12642  
12056  
13029

NS 12499 July 8  
12517  
12029  
12665

Aug. 10.

W.S.C. 6093

Comparing X

12501

12705

12705 superposed

✓ No. 9

16 9-22.6  
(1855)

S Scorpii 16 11.7-22 39 (1900)

Verified by print of Var.

✓ No. 10

16 9-22.7  
(1855)

R Scorpii 16 11.7-22 42 (1900)

Verified by Var. print.

No. 13 on this pair of plates



Aug. 10

Comparing

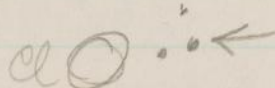
12501

12517

12501 superposed

~~No new objects~~

✓ No. 11 near Cluster


This is Bailey Var. 1 in Cluster  
See Plate X

very large range

Ber. 12517


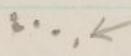
\*12642

12177

7/12501

12705

No. 12 watch

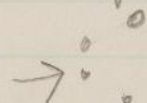
not proved. 

 affected by many faint stars -  
See 12705 - 12501

No. 13 was omitted p 68

16 6.0-23.8  
(1855)

a very ft star watch may be change

12501 - 12705

  
 Apparent  
 new, if var.

Thursday, August 11, 1927

Comparing

a 12404

12665

12665 superposed

x 7, 9, 10 found independently but not numbered.

6 confirmed see pl. nos, p 67

no — Is 6 a Nova?

✓

No. 14

44 Sco. 16. 8 46 - 21 27  
Learitt

16 6 - 21.4

(1855)

NS 12665

Ft but seen 12501

Very bright 12404

a

a 12461

12549

12461 superposed

1, 5, 7, 9, 10 found independently, not mtd.

6 confirmed

✓

No. 15

16 2.0 - 22.4

(1855)

Be 12549

not much range but  
Ft 12461 seems Var.

Medium 12501

→

UW Scorpii 16 4 18 - 22 27 (1900)  
Learitt



Aug. 11

Comp.

~~12501~~ + 12031

12931

Plates not comparable in images  
Not used

12031

12931

12931 superposed. Does not show  
nearly the limit of other plate  
Used for this date for brighter  
stars only.

Nos 1 and 11 found











1927phae.proj.1222W







78

not Messier  $\Delta 68$   
6<sup>h</sup> 14<sup>m</sup> 23<sup>s</sup> - 71° 58'

N.G.C. 6101

## Index of Work

page 79  
80Bibliography  
List A Plates

Conclusion: 3 recent A Plates — not promising



## Bibliography

H.A. 76, No. 4 No Vars. Bailey "faint, open Cl."

Hy. C. 6101

List of A Plates.

Exp. 2

A 12025	June 13, 1922	40	4
12026	" 13, "	40	4-
12457	June 20, 1923		
12927	May 3, 1924		
12929	May 5, "	90	4i

Apparently  
Not rec'd  
Not rec'd











Friday, August 12, 1927.

Comparing

A 12025

12929

rather dark

12929 superposed

No objects found

















90

not Messier

A573

8 52 50-36°45'8" NHC. 6723

## Index of Work.

p. 91

p. 92

96

Bibliography

List of Plates

Limits of Region

Vars. marked on A 12687



## Bibliography

HA 76, No. 4 16 Vars. Bailey  
 HB 803 6 New Vars. " J near Cluster  
 H.A. 38 Plate XI, Fig 4. Print, Bailey's Vars.

92

rest? 12777

{ 12571 Obj. mbd - Bailey? }

12674 } multi  
12798 } St. Region.

## NBC 6723 List of A Plates

p. 100	A	12523	July 17, 1923	23618 <sup>v</sup>
		12563	August 3, "	3635 <sup>v</sup>
p. 104		12566	" 3, "	3635 <sup>v</sup>
p. 102		571	" 4, "	3636 <sup>v</sup>
		576	" 8, "	3640 <sup>v</sup>
Best? p. 102		586	" 14, "	3646 <sup>v</sup>
		589	" 15, "	3647 <sup>v</sup>
Vars. mbd p. 98 100		592	" 15, "	3647 <sup>v</sup>
		595	" 16, "	3648 <sup>v</sup>
		598	" 16, "	3648 <sup>v</sup>
		601	" 17, "	3649 <sup>v</sup>
		604	" 17, "	3649 <sup>v</sup>
		606	" 18, "	3650 <sup>v</sup>
p. 102		609	" 18, "	3650 <sup>v</sup>
		624	" 31, "	3663 <sup>v</sup>
		638	Sept. 2, 1923	3665 <sup>v</sup>
		645	" 3, "	3666 <sup>v</sup>
		656	" 10, "	3673 <sup>v</sup>
		658	" 10, "	3673 <sup>v</sup>
		662	" 11, "	3674 <sup>v</sup>
		664	" 11, "	3674 <sup>v</sup>
		667	" 12, "	3675 <sup>v</sup>
		669	" 12, "	3675 <sup>v</sup>
		671	" 12, "	3675 <sup>v</sup>
		672	" 13, "	3676 <sup>v</sup>
		676	" 13, "	3676 <sup>v</sup>
		679	" 14, "	3677 <sup>v</sup>
		684	" 14, "	3677 <sup>v</sup>
Vars. mbd 98		12687	" 15, "	3678 <sup>v</sup>



T <sub>g</sub>	Start.	E <sub>ph</sub>
21	30	45
18	2	40
20	50	40
18	43	40
15	58	300
19	50	40
18	01	40
20	53	40
18	04	40
20	57	40
18	13	40
20	06	43
17	16	40
20	03	40
21	55	40
20	30	40
21	48	50
20	48	<del>40</del>
22	42	40
20	38	40
22	35	40
19	35	30
20	56	30
22	34	30
18	55	30
21	49	30
18	28	30
21	55	30
18	23	31

NYC. 6723

f. 102	A	12691	Sept. 15, 1923	3678 <sup>v</sup>
<del>h</del> f. 103		12708	" 29, "	3692 <sup>v</sup>
"		715	" 30, "	3693 <sup>v</sup>
"		769	October 11, "	3704 <sup>v</sup>
f. 104		777	" 12, "	3705 <sup>v</sup>
"		787	" 13, "	3706 <sup>v</sup>
<del>h</del>		821	Nov. 3, "	3727 <sup>v</sup>
π f. 102, 103		928	May 3, 1924	3909 <sup>v</sup>
" f. 102		12966	" 28, "	3934 <sup>v</sup>

f 92 29 nothing this 14110, 1926)  
 94 9 " " 14320, 1929  
 38



21	16	30
20	25	33
21	52	30
22	34	30
21	40	30
22	10	29
22	11	35
19	05	30
16	03	30

Good plate 12563

Limits of A plates (8x10) These may vary  
Cluster about in center

Limits mbd on B 11069

$\alpha$  18 <sup>43</sup>44 to 19 2

$\delta$  -35.3 to -38.5

\* See Region (M W) 18 9 - 29.9  
Some overlapping A plates produced  
some Vars. recorded in this region



## B Platos

B 11069	18 52 -38	diff.	for identification
12138	18 50 -38	10 <sup>m</sup>	
13756	18 52 -38	60	

98 N.C. 6723 Saturday, August 13, 1927

Identify by Comparing  
B11069Nos. mbd on A 12687A 12592  
12687

12687 superposed

No. 1

18 49 - 36.3

j.

x

Br = brighter than x  
Fl = about = y fainter than yProved  
NewBr 12687  
658+1\* 12592  
523  
601

Position meas. Bb. 39, p. 134

No. 2

18 51 - 36.7

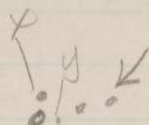
x

WatchSmall, if any, range  
Very faint at Max

Not proved



18 44.5-36.5

No. 3 

good range

Proved  
New

Br = brighter than x

Ft = about = y

Br 12687

Ft 12592

~~This is Bailey No.~~

Medium 12523

12658

664


12563

12566

3785

1988 N.S. (14x17)

Position meas., Bk. 39, p. 136

No. 4 

18 48.2-36.8

Good range

Proved

Br = x

Ft = about = y

Br 12687

Ft 12592

Medium  
12609

12523

12777

12658

This is Bailey No. 120 Bk. 41, p. 70

New

Position measured, Bk. 39, p. 135

No. 5

18 44.6-37.5

Proved  
NewBr = nearly = x  
Ft = about = y

Br 12592

Ft 12687

12563

Medium

12523

12601

12658

664

Position meas., Bk. 39, p. 139.

August 13

✓ No. 6 ↓ ○ Cluster

Bailey

Probably Bailey, See print.

Comparing #

12523

12592

12523 superposed

Asteroid on A 12523

No. 7 ↓ ' . - x  
y - . .

Large range

18 51 - 38.3

Br = brighter than x

Fl = about = y

Proced  
New

Br 12592

Fl 12523

12687

Found  
independently 12708

\*1988

12928

Position meas. Bb. 39, p. 142

New No. 8

Proced

←

18 47 - 36.3

Innes 18 46.7 - 36 14  
no letters

Position meas. Bb. 39, p. 137

Br 12592

Fl 12523

12687

a 1988 (14x17)

Medium I  
B 12138

This is

Bailey No. 117

Bb 41, p. 67

99W

This is Bailey 59 on A 12821



Aug. 13

Quit  
Good range

No. 9

18 56.5 - 36.0

Br = a triple or than x

Not  
fixed  
Watch

12592

12687

12658

12601

12563

679

684

777

787

810

821

928

966

566

571

586

589

595

Probably defective

12523 ~~Probably defective~~  
defect has vanished!

102

Monday, August 15, 1927

Comparing A 12586  
12691

12691 superposed

No objects found

Comparing 12609  
1296612966 superposed  
18 58.5-35.9

No. 10

→

Junes

Be 12609

NS 12966

does not  
seem too far  
for plate

Apparently not defect

This is Bailey No. 116 Bb 41, p. 66  
D.G.W.

? This is Junes 18 58.1-35 53

Comparing A 12571  
12928

12928 superposed

✓

No. 11

16

45.5-37.5

follows 5, slightly S

• • • ←

Be 12928

FK 12571

Bailey 18 45.4-37 26 = UV Cool

Number Bailey?



Tuesday, August 16, 1927

Comparing A 12708  
12928

12708 superposed

✓ No. 12

18 50.5 - 37.9

quite br., large range

◀ Nova?

Br. 12708

12777

12687

684

N.S. 12928, 12966

Very ft 12566, 12571, 12586

Ft. blue 12592

12523

Marked 61 B? on 12821

= Bailey

UX Cor A 18 50 42 - 37 55.8

Wednesday, August 17, 1927.

Comparing

a 12566

12777

12777 superfluous

New  
Proved

No. 13

18 48-35.8

Not large range

Br = Brighter than x

• • • • •  
• • • • •

Br 12777

Medium  
12658

Ft 12566

12821

12687

12787

12592

12664

12810

Position measured, Bb. 39, p. 138

No. 14

18 49 - 37.8

Small range, ~~if any~~

Cont. p. 105

Br. little br. than x Ft = fainter than y

Proved

New

y • • • • •  
• • • • •

Star near suspected  
see p. 105 No. 17

Position meas.  
Bb. 39, p. 140

Br. 12566

Aug. 3

Ft 12777

12523

Same day

12568 687

→ mtd 121 on 12571

12563 or defective

See Bb. 41, p. 71 = Var 121

Confirmed  
by Miss Cannon,

No. 15

18 47 - 37.9

Small var. ~~if any~~

Superfluous  
August 20  
1927.

y • • • • •  
y • • • • •

Br = much brighter than x

Ft = much fainter than y

New

Br 12777

Ft 12566

See 12592

See 12523

\* 12656

This shape

(from 12787

12810

seems to change.

Probably S image constant

It almost vanishes

notice shape of image — 2 stars?

Perhaps northern star is the Var.

Position meas.

Medium

Ft 12687

12589

\* 12656

Bb. 39, p. 141

12715

\* 12821

\* 12928

12592

12769

12523

\* 12571

12598

12966

12563

\* 12672

12645

12586

12708



14 — specially interesting ?  
not much range  
no. 14 cont.

12658 Sept 10 FT 12645  
NB quick change 12656  
12662 Sept 11 12664

Found  
August 2, 1929 no. 16

no. 16  
•  
Ocl  
-150 magn

This is star chosen  
as 16.0 p 107

B 12638	Med	FT 12687
671	12645	658
672	656	662
	669	664
	679	667
		684
		708

Suspected  
Aug. 14, 1929 No. 17

17 → ..

..-14 examined several plates — probably no  
change of any amount.

smaller  
images  
or 12662 faintest?  
— perhaps 7 image  
barely seen

NGC 6723      Magnitudes

Comp. Seq. used    158 K      B 44678    Bk 34, 50

Both Seq. covered by Am 14887 (19.0 - 30)

Star 10 is nearly limit (158K is near center)



N. B 6723 is close to bright dbl.

158K Bk 34, p. 50  
International Magnitudes

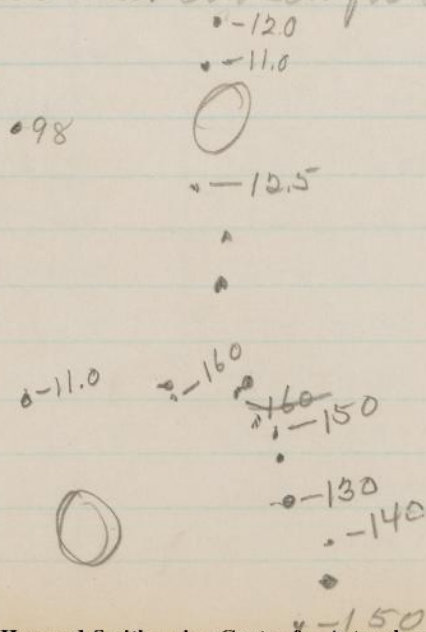
- 1 9.3
- 2 10.0 (about)
- 3 10.4
- 4 11.2
- 5 11.4
- 6
- 7 11.9
- 8 12.2
- 9 12.5
- 10 12.7
- 11 13.0
- 12 13.3
- 13 13.8
- 14 14.1
- 15 14.5

Comparison Stars near Cluster chosen for about 1 magn. diff. intervals

marked also on A 12523

Estimated from Seg on  
am & B plates

Intervals below 12.5 chosen  
assuming A 12687 limit = 16.5  
marked on A 12687



16.0 found to be Var. p. 105  
use star entered fol.  
This may be about 15.8

Estimates made in summer of 1929. Are magn. good?

6723

Var.

	1	3	4	5	6	7	8	10	11	12	13
12523	15.2	14.7	14.2	15.2	Barley	15.2					14
563	15.5	15.8	14.4	14.5		14.5					15
566	15.6	14.8	14.5	—		14.5					15
571	16.2	16.	14.5								1
576	14.5		1								
586											
589											
592	16.2	16.0	14.5	14.5		14.0					150
595	14.5	—	14.5	14.8		14.0					148
598	15.0	15.8	14.6	15.2		14.0					153
601	15.5	—	14.2	13.8		14.0					144
604	14.7	16.2	14.5	15.5		13.8					152
606			14.5			1					148
609	16.2	16.0	14.5	14.8		14.0					148
624	15.5	14.5	14.6	15.0		14.0					146
638	15.5	13.7	14.5	15.6		14.0					160
645	15.5	13.8	14.6	16.0		13.8					160
656	16.2	13.2	14.6	16.2		13.8					14
658	14.5	13.4	15.2	15.9		14.2					14
662	16.0	—	15.0	—		13.8					—
664	16.5	13.6	15.2	14.6		13.8					14
667	14.5	13.5	15.0	17.0		13.8					16
669	15.0	13.5	15.5	16.5		13.8					18
671	15.5	13.7	15.5	14.5		14.0					14
672	16.2	13.5	15.5	17.0		13.8					16
676	14.5	13.7	15.5	14.5		14.0					14
679	15.5	13.7	15.3	16.5		13.7					15
684	16.5	13.6	15.5	14.7		13.8					11
12687	13.8	13.5	15.2	15.5		13.8	11.5	16.0	14.0	—	1



quick change?  
 16 close to  
 other stars -  
 probably affects estimates

2 13 14 15 16  
 148 152 16.5  
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