

KG  
11366  
034



KG11366.034











KE 11366.034

HARVARD  
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JUL 17 1956



Discovery in Pl. 6: 121

August 28, 1919

new object disc. by superimposing AC 21657 + AC 14582  
 Apprx. 1855 20 1. +17 15.

- ✓ { AC 2773 Sept. 30, 1897 Exp. 60 shows no trace of object.  
 ✓ { A 2124 Oct. 12, 1896 Exp. 60 " " " " " "

Both these plates show extremely faint obj.

- ✓ { MC 1333 Oct. 16, 1911 Exp. 60 shows no trace of obj.  
 ✓ { MC 11340 Oct. 18, 1916 Exp. 60 " " " " " "

✓ AC 13438 Nov. 4, 1912 n.s.

✓ AC 13442 Nov. 5, 1912 n.s.

✓ AC 14012 May 7, 1913 n.s.

✓ AC 14018 May 9, 1913 n.s.

✓ AC 14086 June 12, 1913 n.s.

✓ AC 14210 July 25, 1913 n.s.

✓ AC 14216 July 26, 1913 n.s.

✓ AC 14222 July 27, 1913 n.s.

✓ AC 14240 Aug. 4, 1913 n.s.

✓ AC 14267 Aug. 19, 1913 n.s.

✓ AC 14281 Aug. 21, 1913 n.s.

✓ AC 14322 Sept. 2, 1913 n.s.

✓ AC 14394 Sept. 25, 1913 n.s.

✓ AC 14422 Oct. 2, 1913 n.s.

✓ AC 14471 Oct. 28, 1913 n.s.

✓ AC 14492 Nov. 1, 1913 n.s.

✓ AI 11809 Nov. 5, 1913 n.s.

✓ AC 14528 Nov. 7, 1913 n.s.

✓ AI 11899 Nov. 11, 1913 n.s.

+17° 42' 25" 20 1.0 +17 14.

This cat. star is slightly south  
 and slightly precedes nova?

August 28, 1919

Estimates to determine magn. of comp. stars, <sup>for nova</sup> from  
 Standard Seq. B11. Direct estimates:

| AI 11869                        | AI 11869                    | mean  |   |   |
|---------------------------------|-----------------------------|-------|---|---|
| C = 7.7                         | 7.7                         | 7.70  | 0 | 0 |
| e = 8.4                         | 8.5                         | 8.45  | 0 | 1 |
| f = 9.0                         | 9.1                         | 9.05  | 0 | 1 |
| d = 7.9                         | 8.0                         | 7.95  | 1 | 0 |
| b = 7.3                         | 7.4                         | 7.35  | 1 | 0 |
| a = 7.0                         | 7.0                         | 7.00  | 0 | 0 |
| g = $\frac{11.1}{10.4}$<br>W.S. | $\frac{11.0}{10.5}$<br>W.S. | 10.45 | 0 | 1 |

Too great a difference in magn. between f + g. see page 9  
 for continuation.

200117

August 29, 1919

meas. of this obj. on plates between Nov. 21, 1913 + Dec. 27, 1913  
 Direct Estimates.

✓ AC 14582 Nov. 22, 1913  
 7.4

✓ AI 12040 Dec. <sup>19</sup>19, 1913  
 10.9

✓ AC 14595 Nov. 25, 1913  
 8.1

✓ AI 12053 Dec. 27, 1913  
 m.s. < 11.0

✓ AC 14609 Dec. 3, 1913  
 8.8

✓ AC 14618 Dec. 5, 1913  
 9.1

✓ AI 11933 Nov. 21, 1913  
 10.9

✓ AI 11938 Nov. 22, 1913  
 7.3

✓ AI 11953 Nov. 26, 1913  
 8.4

✓ AI 11994 Dec. 11, 1913  
 10.0

✓ AI 12024 Dec. 15, 1913  
 10.5

August 29, 1919

Nova? cont.

AM Plates examined from 1899 - 1913<sup>NW.21</sup> Dec. 27<sup>913</sup>  
to present date show no sign of star.

List of plates as follows:

Plates were put away accidentally therefore all I can state now is that all AM plates covering the region of  $21^h + 15^\circ$  were examined, that were in the box on that date, August 29, 1919.

20 01 17

August 30, 1919

Nova? cont.

No early B Plate from Vol. 26 except spectrum which  
are too poor.

- |                                              |                          |
|----------------------------------------------|--------------------------|
| ✓ A 4665 Sept. 4, 1900 10 <sup>m</sup> n.s   | ✓ I 7054 Sept 16, 1892   |
| ✓ A 6075 Aug 12, 1902 10 <sup>m</sup> n.s    | ✓ I 17668 Mar 25, 1897   |
| ✓ A 3750 July 18, 1899 10 <sup>m</sup> n.s   | ✓ I 17910 April 18, 1897 |
| ✓ B 32463 Aug. 15, 1903 246 n.s ?            |                          |
| ✓ I 25879 Sept 26, 1900 10 <sup>m</sup> n.s  |                          |
| ✓ I 7184 Sept. 27, 1892 10 <sup>m</sup> n.s  |                          |
| ✓ I 8847 July 20, 1893 11 <sup>m</sup> n.s   |                          |
| ✓ I 16133 Oct 9, 1896 11 <sup>m</sup> n.s    |                          |
| ✓ I 23643 Sept 23, 1899 12 <sup>m</sup> n.s  |                          |
| ✓ I 27769 Oct 10, 1901 19 <sup>m</sup> n.s   |                          |
| ✓ MC 11339 Oct 18, 1916 12 <sup>m</sup> n.s  |                          |
| ✓ I 20837 June 9, 1898 39 <sup>m</sup> n.s   |                          |
| ✓ I 17910 April 18, 1897 11 <sup>m</sup> n.s |                          |
| ✓ I 18655 Sept. 5, 1897 10 <sup>m</sup> n.s  |                          |
| ✓ I 4129 Sept 2, 1891 10 <sup>m</sup> n.s    |                          |
| ✓ I 7054 Sept 16, 1892 10 <sup>m</sup> n.s   |                          |
| ✓ I 16258 Oct 24, 1896 10 <sup>m</sup> n.s   |                          |
| ✓ I 23584 Sept 20, 1899 10 <sup>m</sup> n.s  |                          |
| ✓ I 25719 Sept 1, 1900 10 <sup>m</sup> n.s   |                          |
| ✓ I 25732 Sept 2, 1900 10 <sup>m</sup> n.s   |                          |
| ✓ MC 5858 July 18, 1914                      |                          |
| ✓ I 15675 Aug 11, 1896                       |                          |
| ✓ I 21300 Sept 30, 1898                      |                          |

September 4, 1919

To determine magn. of c.s. between  $f$  and  $g$  and  
through  $h$

| H | 00 | AI 11869 |      | AI 11938 |       | mean |
|---|----|----------|------|----------|-------|------|
|   |    | $f$      | 9.0  | 9.1      | 9.05  |      |
| H | 15 | $f'$     | 9.3  | 9.4      | 9.35  |      |
|   |    | $f^2$    | 9.8  | 9.7      | 9.75  |      |
|   |    | $f^3$    | 9.8  | 9.8      | 9.80  |      |
|   |    | $g$      | 10.5 | 10.5     | 10.50 |      |
|   |    | $h$      | 11.0 | 11.0     | 11.00 |      |

10

Sept 4, 1919  
Aug.

| 1<br>H 15       | Meas. machine    |                 | Meas. <sup>tidit.</sup> of pr. of nova |                                            |
|-----------------|------------------|-----------------|----------------------------------------|--------------------------------------------|
|                 | h                | v               | v                                      | h                                          |
| <u>AC 14595</u> |                  |                 |                                        |                                            |
| <del>nova</del> | <del>11.98</del> | <del>6.27</del> | <del>6.25</del>                        | <del>11.98</del>                           |
| <del>a</del>    | <del>12.26</del> | <del>6.09</del> | <del>6.09</del>                        | <del>11.70</del>                           |
| <del>b</del>    | <del>11.71</del> | <del>6.09</del> | <del>6.07</del>                        | <del>11.95</del>                           |
| <del>c</del>    | <del>11.95</del> | <del>6.47</del> | <del>6.07</del>                        | <del><math>\frac{12.26}{11.9}</math></del> |

|      | v    | h                   | v    | h     | Mean v. | Mean h. |
|------|------|---------------------|------|-------|---------|---------|
| nova | 6.27 | 11.98               | 6.27 | 11.97 | 6.270   | 11.975  |
| a    | 6.09 | <sup>70</sup> 11.98 | 6.09 | 11.71 | 6.090   | 11.705  |
| b    | 6.47 | 11.95               | 6.47 | 11.96 | 6.470   | 11.955  |
| c    | 6.08 | 12.26               | 6.09 | 12.26 | 6.085   | 12.260  |

1  
H 40

|     |           |    |    |      |     |      |     |
|-----|-----------|----|----|------|-----|------|-----|
| { a | +17° 4215 | 19 | 59 | 11.8 | +17 | 10.5 | 8.5 |
| { b | +17° 4226 | 20 | 1  | 0.5  | +17 | 35.6 | 9.3 |
| { c | +18° 4165 | 20 | 2  | 57.5 | +16 | 59.9 | 8.0 |

Sept. 4, 1919

c.s. for nova marked on AI 11869, cont on  
A 2124.

|                |           |    |    |      |     |      |     |
|----------------|-----------|----|----|------|-----|------|-----|
| a              | +16° 4119 | 19 | 57 | 24.7 | +16 | 43.6 | 7.0 |
| b              | +17° 4206 | 19 | 57 | 41.3 | +17 | 19.1 | 7.2 |
| c              | +18° 4404 | 20 | 3  | 5.2  | +18 | 21.7 | 8.0 |
| d              | +17° 4213 | 19 | 58 | 34.3 | +17 | 27.4 | 8.0 |
| e              | +17° 4235 | 20 | 3  | 2.5  | +17 | 42.0 | 8.2 |
| f              | +17° 4236 | 20 | 3  | 5.0  | +17 | 24.0 | 9.1 |
| f'             | +17° 4226 | 20 | 1  | 0.5  | +17 | 35.6 | 9.3 |
| f <sup>2</sup> | +16° 4123 | 19 | 57 | 47.2 | +16 | 50.1 | 9.0 |
| f <sup>3</sup> | +17° 4240 | 20 | 4  | 2.6  | +17 | 9.8  | 9.5 |
| g              | +17° 4222 | 20 | 0  | 23.1 | +17 | 4.5  | 9.2 |
| g'             | +17° 4228 | 20 | 1  | 29.0 | +17 | 14.7 | 9.2 |
| h              | +17° 4231 | 20 | 2  | 10.0 | +17 | 13.9 | 9.5 |
| k              | .         | .  | .  | .    | .   | .    | .   |
| l              | .         | .  | .  | .    | .   | .    | .   |
| m              | .         | .  | .  | .    | .   | .    | .   |
| n              | .         | .  | .  | .    | .   | .    | .   |
| o              | .         | .  | .  | .    | .   | .    | .   |

Sept. 4, 1919

Mass. to det. pos. of nova? mill. glass plate

2  
+

15

|      | $x$    | $y$           | $x$    | $y$    | Diff $x$ | Diff $y$ | Diff $x \times 4 \text{ sec. S}$        |
|------|--------|---------------|--------|--------|----------|----------|-----------------------------------------|
| nova | -0.95  | 0.00          | -0.90  | 0.00   | -0.92    | 0.00     |                                         |
| 1    | -27.70 | -6.00<br>27.7 | -27.60 | -6.00  | -27.65   | -6.00    | -111.9452<br>5.0252                     |
| 3    | -12.25 | +19.70        | -12.30 | +19.70 | -11.25   | +19.70   | +10.33<br>+19.70<br>-1.3820<br>-43.2620 |
| 2    | +26.70 | -17.10        | +26.75 | -17.10 | +26.72   | -17.10   | +27.64<br>-17.10<br>+115.7563           |

|   |      |      |    |    |      |     |      |     |       |       |
|---|------|------|----|----|------|-----|------|-----|-------|-------|
| 1 | +17° | 4215 | 19 | 59 | 11.8 | +17 | 10.5 | 8.5 | 1.047 | 4.188 |
| 2 | +16° | 4165 | 20 | 2  | 57.5 | +16 | 59.9 | 8.0 | 1.047 | 4.188 |
| 3 | +17° | 4226 | 20 | 1  | 0.5  | +17 | 35.6 | 9.3 | 1.047 | 4.188 |

|    |    |        |     |      |    |   |        |     |       |
|----|----|--------|-----|------|----|---|--------|-----|-------|
| 19 | 59 | 11.8   | +17 | 10.5 | 20 | 2 | 57.5   | +16 | 59.9  |
|    |    | -111.9 |     | -6.0 |    |   | +115.8 |     | -17.1 |
| 20 | 1  | 3.7    | +17 | 16.5 | 20 | 1 | 1.7    | +17 | 17.0  |
|    |    | +1.3   |     | +0.0 |    |   | -0.7   |     | +0.5  |

|    |   |       |     |       |
|----|---|-------|-----|-------|
| 20 | 1 | 0.5   | +17 | 35.6  |
|    |   | -1.4  |     |       |
|    |   | -43.3 |     | +19.7 |
| 20 | 1 | 43.8  | +17 | 15.9  |
|    |   | 1.9   |     | -0.6  |
|    |   | -0.5  |     |       |

|                  |    |     |     |     |      |      |
|------------------|----|-----|-----|-----|------|------|
| Mean. pos. nova? | 20 | 1   | 2.4 | +17 | 16.5 | 1855 |
|                  | 20 | 3.0 |     |     | 24   |      |
|                  | 20 | 3   | 4   | +17 | 243  | 1900 |

Sept. 17, 1919.

Copy of stars taken from 50 + 54 within region of  
 nova ~~for~~ to obtain magn: brighter than Barto region  
 $\frac{20}{+7} 10 + 17.5.$

| H.R.         | DM          | RA       | Dec.   | Ptn. Magn. | Sp.           | Corr.  |
|--------------|-------------|----------|--------|------------|---------------|--------|
| 7645         | 4183        | 19. 55.6 | +17 15 | 5.56       | Ma            | 6.91   |
| 7662         | 4365        | 19 58.8  | +18 14 | 6.14       | K             | 7.14   |
| 7672         | 4121        | 19 59.7  | +16 48 | 5.89       | g             | 6.45   |
| 7696         | 4153        | 20 3.5   | +16 24 | 6.67       | Ma            | 8.02   |
| b =          | 4206        | 19 59.7  | +17 26 | 6.77       | <del>78</del> | 7.27 ✓ |
| a =          | 4119        | 19 59.4  | +16 51 | 6.83       | A2            | 6.92 ✓ |
|              | <u>4201</u> | 19 58.5  | +18 1  | 6.75       | g0            | 7.31   |
|              | 4150        | 20 3.0   | +16 22 | 7.08       | K0            | 8.08   |
|              | 4162        | 20 4.5   | +16 39 | 6.96       | K2            | 8.03   |
| <u>extra</u> | 4131        | 20 0.6   | +16 23 | 7.59       | A0            | 7.59 ✓ |
|              | 4118        | 19 59.4  | +16 26 | 7.68       | K0            | 8.68   |

September 17, 1919

| 20       |  | Scale Meas. to det. magn. of c.s. for Nova. |                             |          |                |
|----------|--|---------------------------------------------|-----------------------------|----------|----------------|
| 20       |  | +17.5                                       | MC 5810                     | Diff     | P.C. and Diff. |
| Barte    |  | 1                                           | 1.8 <sup>2.0</sup>          | 6.19     | 6.6 1.59       |
| Scale M. |  | 2                                           | 2.0 <sup>2.2</sup>          | 6.64     | 7.2 1.64       |
|          |  | 3                                           | 2.2 <sup>2.4</sup>          | 6.45     | 7.3 1.55       |
|          |  | 4                                           | 2.8 <sup>3.0</sup>          | 7.00     | 8.0 1.30       |
|          |  | 5                                           | 3.0 <sup>3.2</sup>          | 6.54     | 8.2 1.54       |
|          |  | 6                                           | 4.3 <sup>4.5</sup> 4.45 4.4 | 6.11     | 9.1 1.46       |
|          |  | 7                                           | 4.7 <sup>4.9</sup> 4.95 5.0 | 5.91     | 9.5 1.36       |
|          |  | 8                                           | 5.0 <sup>5.2</sup> 5.35 5.5 | 5.72     | 10.0 1.07      |
|          |  | 9                                           |                             | 5.7 5.78 |                |
|          |  | 10                                          |                             | 6 5.79   |                |
|          |  | 11                                          |                             | 6.7 5.53 |                |
|          |  | 12                                          |                             | 7.2 5.41 |                |
|          |  | 13                                          |                             | 7.5 5.31 |                |
|          |  | 14                                          |                             | 7.9 5.60 |                |
|          |  | 15                                          |                             | 8.7 5.14 |                |
|          |  | 16                                          |                             | 8.6 5.28 |                |
|          |  | 17                                          |                             | 9.0 5.42 |                |
|          |  | 18                                          |                             | 9.0 5.64 |                |
|          |  | 19                                          |                             | 9.7 5.31 |                |
|          |  | 20                                          |                             | 9.6 5.58 |                |

See page 14 for reductions.

Sept. 17, 1919.

Exp. 38: 46

MC 5810

sout.

|                                                  | 1st                   | 2nd                                | Curv Magn.     | P.C., 2nd                     | Curv Magn. |
|--------------------------------------------------|-----------------------|------------------------------------|----------------|-------------------------------|------------|
| $\mu_{\text{max.}}$<br>$+16^{\circ} 41' 9'' = a$ | Br.                   |                                    |                | 4.9                           | 2.25 7.15  |
| $+17^{\circ} 42' 06'' = b$                       | Br.                   |                                    |                | 5.3                           | 2.06 7.36  |
| Scale M                                          | c                     | 1.0 <sup>1.2</sup>                 | .              | 5.8                           | 1.86 7.66  |
|                                                  | d                     | 1.0 <sup>1.2</sup>                 | .              | 6.0                           | 1.79 7.79  |
|                                                  | e                     | 1.9 <sup>2.1</sup>                 | 6.55 8.65      | 6.8                           | 1.57 8.37  |
|                                                  | f                     | <sup>3.0 2.9</sup><br>2.8 2.7 2.95 | 6.47 9.42      | 8.0                           | 1.38 9.38  |
|                                                  | f'                    | <sup>2.9 2.7</sup><br>2.7 2.5 2.80 | 6.49 9.29      | 8.0                           | 1.38 9.38  |
|                                                  | f''                   | <sup>3.0 3.0</sup><br>2.8 2.8 3.00 | 6.46 9.46      | 7.9                           | 1.40 9.30  |
|                                                  | f'''                  | <sup>3.7 3.4</sup><br>3.5 3.2 3.55 | 6.38 9.93      | 8.2                           | 1.36 9.56  |
|                                                  | g                     | <sup>3.4 3.7</sup><br>3.2 3.5 3.55 | 6.38 9.93      | 8.8                           | 1.30 10.10 |
|                                                  | g'                    | <sup>4.0</sup><br>3.8 4.00 4.0     | 6.30 10.30     | <del>8.3</del> <sup>9.0</sup> | 1.28 10.28 |
|                                                  | h                     | <sup>4.9</sup><br>4.7 4.85 4.8     | 6.04 10.89     | 9.5                           | 1.24 10.74 |
|                                                  | k                     |                                    | 5.0 6.00 11.00 |                               |            |
|                                                  | l                     |                                    | 6.2 5.71 11.91 |                               |            |
|                                                  | m                     |                                    | 6.9 5.59 12.49 |                               |            |
|                                                  | n                     |                                    | 7.2 5.56 12.76 |                               |            |
|                                                  | o                     |                                    | 7.8 5.50 13.30 |                               |            |
|                                                  | p                     |                                    | 8.0 5.48 13.48 |                               |            |
|                                                  | q                     |                                    | 8.5 5.46 13.96 |                               |            |
|                                                  | r                     |                                    | 8.9 5.42 14.32 |                               |            |
|                                                  | s                     |                                    | 9.5 5.40 14.90 |                               |            |
|                                                  | t                     |                                    | 9.6 5.40 15.00 |                               |            |
| $+16^{\circ} 41' 31'' = 7.6$                     | <sup>1.9</sup><br>1.7 |                                    | 6.57 8.47      | 7.0                           | 1.53 8.53  |

September 17, 1919

Plotted.

Scale meas. to det. magn. of c.s. for Nova

|          |       |         |      | mean  | Diff |      |         |      |       |       |      |
|----------|-------|---------|------|-------|------|------|---------|------|-------|-------|------|
|          |       |         |      | Diff. |      | P.C. | MC 5810 | mean | Diff. |       |      |
| 20       | +17.5 | MC 5709 | 1st  | 1.9   | 2.0  | 6.29 | 6       | 6.8  | 6.6   | 6.70  | 1.49 |
|          | Carte | 1       | 1.7  | 2.0   | 2.10 | 6.84 | 6.74    | 7.2  | 7.2   | 7.20  | 1.64 |
| Scale M. | 2     | 1.8     | 2.2  | 2.30  | 6.55 | 7.4  | 7.3     | 7.35 | 1.50  |       |      |
|          | 3     | 2.0     | 2.4  | 2.90  | 6.40 | 8.0  | 8.0     | 8.00 | 1.30  |       |      |
|          | 4     | 2.6     | 3.0  | 3.20  | 6.54 | 8.6  | 8.2     | 8.40 | 1.34  |       |      |
|          | 5     | 3.1     | 3.2  | 4.2   | 4.45 | 4.32 | 6.24    | 9.1  | 9.1   | 9.10  | 1.46 |
|          | 6     | 4.0     | 4.45 | 4.95  | 5.0  | 4.95 | 5.91    | 9.8  | 9.5   | 9.65  | 1.21 |
|          | 7     | 4.7     | 4.95 | 5.1   | 5.15 | 5.2  | 5.85    | 10.0 | 10.0  | 10.00 | 1.07 |
|          | 8     | 4.9     | 5.15 | 5.2   | 5.5  | 5.75 | 5.60    |      |       |       |      |
|          | 9     |         | 5.5  | 5.75  | 5.60 | 5.88 |         |      |       |       |      |
|          | 10    |         | 5.8  | 7.0   | 5.90 | 5.89 |         |      |       |       |      |
|          | 11    |         | 6.6  | 6.7   | 6.65 | 5.58 |         |      |       |       |      |
|          | 12    |         | 6.8  | 7.2   | 7.00 | 5.61 |         |      |       |       |      |
|          | 13    |         | 7.2  | 7.5   | 7.35 | 5.46 |         |      |       |       |      |
|          | 14    |         | 7.8  | 7.9   | 7.85 | 5.65 |         |      |       |       |      |
|          | 15    |         | 8.6  | 8.7   | 8.65 | 5.19 |         |      |       |       |      |
|          | 16    |         | 8.7  | 8.6   | 8.65 | 5.23 |         |      |       |       |      |
|          | 17    |         | 9.0  | 9.0   | 9.00 | 5.42 |         |      |       |       |      |
|          | 18    |         | 9.1  | 9.0   | 9.05 | 5.59 |         |      |       |       |      |
|          | 19    |         | 9.6  | 9.7   | 9.65 | 5.36 |         |      |       |       |      |
|          | 20    |         | 9.8  | 9.6   | 9.70 | 5.48 |         |      |       |       |      |
|          | 21    |         |      |       |      |      |         |      |       |       |      |
|          | 22    |         |      |       |      |      |         |      |       |       |      |

Expend 86.38.46

Mc 5709 cont.

| Wave           | 1 <sup>st</sup>              | 2 <sup>nd</sup> | Curve Magn. | P. C.                    | Curve Magn.               |
|----------------|------------------------------|-----------------|-------------|--------------------------|---------------------------|
| a              | Br.                          |                 |             | 4.2 <sup>4.9</sup> 4.55  |                           |
| b              | Br.                          |                 |             | 5.0 <sup>5.35</sup> 1.15 |                           |
| c              | 1.0 <sup>1.2</sup>           | .               |             | 5.8 <sup>5.8</sup> 1.86  | 7.20                      |
| d              | 1.2 <sup>1.4</sup>           | .               |             | 6.0 <sup>6.0</sup> 1.79  | 7.79                      |
| e              | 1.9 <sup>2.1</sup>           | 6.55            | 8.65        | 6.9 <sup>1.55</sup>      | 8.45                      |
| f              | 2.5 <sup>2.7</sup>           | 6.49            | 9.19        | 7.8 <sup>1.41</sup>      | 9.21                      |
| f'             | 2.8 <sup>3.0</sup>           | 6.45            | 9.45        | 7.7 <sup>1.42</sup>      | 9.12                      |
| f <sup>2</sup> | 2.8 <sup>3.0</sup>           | 6.45            | 9.45        | 8.0 <sup>1.39</sup>      | 9.39                      |
| f <sup>3</sup> | 3.0 <sup>3.2</sup>           | 6.43            | 9.63        | 8.2 <sup>1.37</sup>      | 9.57                      |
| g              | 3.0 <sup>3.2</sup>           | 6.43            | 9.63        | 8.8 <sup>1.30</sup>      | 10.10                     |
| g'             | 3.2 <sup>3.4</sup>           | 6.40            | 9.80        | 9.2 <sup>1.27</sup>      | 10.47                     |
| h              | 4.7 <sup>4.9</sup>           | 4.90            | 4.9 6.03    | 10.93                    | 9.8 <sup>1.21</sup> 11.01 |
| k              | 5.0 <sup>5.2</sup>           | 5.15            | 5.1 5.97    | 11.12                    |                           |
| l              |                              | 6.0             | 5.75        | 11.75                    |                           |
| m              |                              | 6.9             | 5.59        | 12.49                    |                           |
| n              |                              | 7.2             | 5.57        | 12.77                    |                           |
| o              |                              | 7.5             | 5.52        | 13.02                    |                           |
| p              |                              | 8.2             | 5.48        | 13.68                    |                           |
| q              |                              | 8.7             | 5.43        | 14.13                    |                           |
| r              |                              | 9.2             | 5.41        | 14.61                    |                           |
| s              |                              | 9.8             | 5.40        | 15.20                    |                           |
| t              |                              | 9.8             | 5.40        | 15.20                    |                           |
| +16°           | 4.137=7.6 <sup>1.8</sup> 2.0 | 6.56            | 8.56        | 7.0 <sup>7.0</sup> 1.52  | 8.52                      |

September 18, 1919

Exp. 38.46

3 00

Scale meas. to det. magn. of c.s. for Nova.

Scale M.

A &amp; M 110 15

Carte 20 + 17.5

2<sup>nd</sup> am  
12073 mean Diff.

1 6.8 6.8 6.80 1.39

2 <sup>7.4</sup> 7.3 7.2 7.28 1.56

3 7.6 7.7 7.65 1.20

4 7.7 7.9 7.80 1.50

5 7.8 8.1 7.95 1.79

6 8.7 8.6 8.65 1.91

7 <sup>8.90</sup> 8.8 8.9 8.90 1.968 <sup>9.05</sup> 9.0 9.1 9.2 9.12 1.95

9 9.5 9.7 9.60 1.88

10 9.7 9.8 9.75 <sup>2.04</sup> magn.

Nova

a 5.8 6.0 5.90 0.85 6.65

b 6.0 6.2 6.10 0.95 6.95

c 6.1 6.7 6.40 0.99 7.09

d 6.8 6.7 6.75 1.27 8.07

e 7.0 7.1 7.05 1.35 8.35

f 7.8 7.8 7.80 1.65 9.45

f' 7.7 7.9 7.80 1.61 9.31

f<sup>2</sup> 7.8 8.0 7.90 1.65 9.45f<sup>3</sup> 8.0 7.9 7.95 1.71 9.71

g 8.3 8.2 8.25 1.80 10.10

g' 8.7 8.7 8.70 1.91 10.61

h 9.0 9.8 9.00 1.95 10.95

K 9.0 9.8 9.15 1.95 10.95

l 9.5 9.9 9.70 2.00 11.50

Do + 7.6

7.2 7.2 7.20 1.42 8.62

September 18, 1919

Copied 38:46

Scale meas. to det. magn. of c.s. for Nova.

AM 12073

| Carte 20 +17.5       | 2 <sup>nd</sup> | 2 <sup>nd</sup> |       |
|----------------------|-----------------|-----------------|-------|
| 1                    | 6.8             |                 |       |
| 2                    | 7.2             |                 |       |
| 3                    | 7.7             |                 |       |
| 4                    | 7.9             |                 |       |
| 5                    | 8.1             |                 |       |
| 6                    | 8.6             |                 |       |
| 7                    | 8.9             |                 |       |
| 8                    | 9.2             |                 |       |
| 9                    | 9.7             |                 |       |
| 10                   | 9.8             |                 |       |
| a                    | 6.0             | 0.95            | 6.95  |
| b                    | 6.2             | 1.03            | 7.23  |
| c                    | 6.7             | 1.24            | 7.94  |
| d                    | 6.7             | 1.24            | 7.94  |
| e                    | 7.1             | 1.38            | 8.48  |
| f                    | 7.8             | 1.65            | 9.45  |
| f'                   | 7.9             | 1.68            | 9.58  |
| f <sup>2</sup>       | 8.0             | 1.71            | 9.71  |
| f <sup>3</sup>       | 7.9             | 1.68            | 9.58  |
| g                    | 8.2             | 1.78            | 9.98  |
| g'                   | 8.7             | 1.91            | 10.61 |
| h                    | 9.0             | 1.95            | 10.95 |
| k                    | 9.3             | 1.99            | 11.29 |
| l                    | 9.9             | 2.02            | 11.92 |
| a <sub>0</sub> = 7.6 | 7.2             | 1.42            | 8.62  |

3 - 35

September 24, 1919

11.30

*Direct estimates of Nova*

|                         |                        |                        |                        |                        |
|-------------------------|------------------------|------------------------|------------------------|------------------------|
| AM 12073<br>n.s. < 12.5 | AC 939<br>n.s. < 10.4  | AC 1834<br>n.s. < 10.9 | AC 2897<br>n.s. < 11.8 | AC 3908<br>n.s. < 11.8 |
| AC 78<br>n.s. < 11.8    | AC 1080<br>n.s. < 12.5 | AC 1911<br>t.p.        | AC 2933<br>n.s. < 12.5 | AC 3931<br>n.s. < 10.4 |
| AC 79<br>t.p.           | AC 1497<br>n.s. < 11.8 | AC 1965<br>n.s. < 12.5 | AC 2992<br>t.p.        | AC 3974<br>n.s. < 9.4  |
| AC 88<br>n.s. < 11.8    | AC 1541<br>n.s. < 11.8 | AC 1993<br>n.s. < 12.5 | AC 2998<br>t.p.        | AC 3996<br>n.s. < 10.4 |
| AC 359<br>n.s. < 11.1   | AC 1668<br>broken.     | AC 2022<br>n.s. < 12.8 | AC 3027<br>n.s. < 12.5 | AC 4046<br>n.s. < 9.7  |
| AC 392<br>n.s. < 10.9   | AC 1724<br>n.s. < 9.4  | AC 2584<br>n.s. < 11.1 | AC 3708<br>n.s. < 10.9 | AC 4058<br>n.s. < 11.8 |
| AC 470<br>n.s. < 11.8   | AC 1762<br>n.s. < 10.9 | AC 2697<br>n.s. < 11.8 | AC 3775<br>n.s. < 10.4 | AC 4075<br>n.s. < 11.8 |
| AC 549<br>multinimage   | AC 1791<br>t.p.        | AC 2722<br>n.s. 10.4   | AC 3819<br>n.s. < 11.1 | AC 4225<br>n.s. < 12.5 |
| AC 594<br>n.s. < 10.4   | AC 1797<br>t.p.        | AC 2734<br>n.s. < 10.9 | AC 3853<br>n.s. < 10.4 | AC 4274<br>n.s. < 12.5 |
| AC 894<br>n.s. < 10.4   | AC 1824<br>n.s. < 11.8 | AC 2784<br>n.s. < 10.4 | AC 3862<br>n.s. < 10.4 | AC 4934<br>n.s. < 10.4 |

September 24, 1919

nova (cont.)

|                                        |                               |                               |                               |                               |
|----------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| AC 4960<br>broken                      | AC 5428<br>n.s. $\angle 10.9$ | AM 2774<br>n.s. $\angle 11.8$ | AM 3592<br>n.s. $\angle 12.5$ | AM 3929<br>n.s. $\angle 12.8$ |
| AC 5066<br>n.s. $\angle 10.4$          | AC 5423<br>n.s. $\angle 12.5$ | AM 2849<br>n.s. $\angle 12.5$ | AM 3618<br>t p                | AM 3954<br>n.s. $\angle 12.5$ |
| AC 5071<br>n.s. $\angle 10.9$          | AC 5466<br>n.s. $\angle 11.8$ | AM 2876<br>n.s. $\angle 11.8$ | AM 3670<br>n.s. $\angle 12.5$ | AM 4192<br>n.s. $\angle 12.8$ |
| AC 5145<br>too,                        | AC 5537<br>n.s. $\angle 10.4$ | AM 2908<br>n.s. $\angle 12.5$ | AM 3699<br>mult. inv.         | AM 4253<br>n.s. $\angle 12.5$ |
| AC 5209<br>n.s. $\angle 11.8$<br>12.20 | AC 5552<br>n.s. $\angle 11.8$ | AM 2968<br>n.s. $\angle 12.5$ | AM 3721<br>n.s. $\angle 12.8$ | AM 4285<br>n.s. $\angle 12.5$ |
| AC 5230<br>n.s. $\angle 11.1$          | AM 2300<br>n.s. $\angle 12.8$ | AM 2991<br>n.s. $\angle 11.8$ | AM 3765<br>n.s. $\angle 11.8$ | AM 4306<br>n.s. $\angle 12.5$ |
| AC 5254<br>n.s. $\angle 10.0$          | AM 2583<br>n.s. $\angle 11.8$ | AM 3044<br>n.s. $\angle 12.5$ | AM 3813<br>n.s. $\angle 12.5$ | AM 4396<br>n.s. $\angle 12.5$ |
| AC 5277<br>n.s. $\angle 11.1$          | AM 2664<br>n.s. $\angle 12.5$ | AM 3083<br>n.s. $\angle 11.8$ | AM 3893<br>n.s. $\angle 12.8$ | AM 4458<br>n.s. $\angle 12.5$ |
| AC 5361<br>n.s. $\angle 11.8$          | AM 2672<br>n.s. $\angle 11.1$ | AM 3106<br>n.s. $\angle 11.8$ | AM 3906<br>n.s. $\angle 11.1$ | AM 4503<br>mult. inv.         |
| AC 5366<br>n.s. $\angle 11.8$          | AM 2729<br>n.s. $\angle 11.8$ | AM 3211<br>broken             | AM 3913<br>n.s. $\angle 11.1$ | AM 4515<br>t p                |

September 24, 1919

Nova (cont)

|                        |                       |                        |
|------------------------|-----------------------|------------------------|
| Am 4520<br>n.s. < 11.8 | Am 218<br>n.s. < 11.1 | Am 950<br>11.8         |
| Am 4537<br>n.s. < 12.5 | Am 232<br>n.s. < 11.1 | Am 974<br>n.s. < 11.1  |
| Am 4573<br>n.s. < 12.5 | Am 517<br>n.s. < 9.4  | Am 1003<br>n.s. < 11.1 |
| Am 4603<br>n.s. < 11.8 | Am 518<br>n.s. < 10.4 | Am 1057<br>mult. im.   |
| Am 4652<br>n.s. < 10.9 | Am 542<br>9.20        | Am 1078<br>n.s. < 10.4 |
| Am 4656<br>n.s. < 12.5 | Am 600<br>n.s. < 11.8 | Am 1090<br>t p.        |
| Am 4697<br>n.s. < 11.8 | Am 862<br>n.s. < 11.1 | Am 1102<br>n.s. < 10.9 |
| Am 103<br>n.s. < 11.1  | Am 871<br>n.s. < 11.8 | Ending<br>1.13 PM.     |
| Am 122<br>n.s. < 11.8  | Am 890<br>n.s. < 11.8 |                        |
| Am 195<br>n.s. < 10.4  | Am 926<br>mult. im.   |                        |

September 25, 1919

Direct estimates of Nova (cont.)

9.25

|                         |                         |                         |                        |                        |
|-------------------------|-------------------------|-------------------------|------------------------|------------------------|
| AC 9737<br>t p.         | AC 10530<br>n.s. < 12.5 | AC 10982<br>n.s. < 11.1 | AC 6657<br>n.s. < 11.1 | AC 7705<br>n.s. < 11.1 |
| AC 9742<br>n.s. < 10.0  | AC 10581<br>n.s. < 11.1 | AC 10998<br>n.s. < 10.4 | AC 6694<br>n.s. < 11.1 | AC 7780<br>n.s. < 12.5 |
| AC 9813<br>n.s. < 11.8  | AC 10668<br>n.s. < 10.0 | AC 6369<br>t p.         | AC 6737<br>n.s. < 11.8 | AC 7825<br>n.s. < 10.9 |
| AC 9857<br>n.s. < 11.8  | AC 10670<br>n.s. < 10.0 | AC 6418<br>t p.         | AC 6752<br>n.s. < 11.1 | AC 7840<br>n.s. < 11.1 |
| AC 9866<br>n.s. < 11.1  | AC 10750<br>n.s. < 11.1 | AC 6441<br>n.s. < 11.1  | AC 6805<br>n.s. < 11.1 | AC 7907<br>n.s. < 11.1 |
| AC 9907<br>n.s. < 11.1  | AC 10818<br>n.s. < 11.1 | AC 6478<br>n.s. < 10.4  | AC 6999<br>n.s. < 11.1 | AC 7882<br>t p.        |
| AC 9920<br>n.s. < 10.4  | AC 10856<br>n.s. < 11.1 | AC 6500<br>n.s. < 10.4  | AC 7081<br>n.s. < 11.1 | AC 8012<br>n.s. < 12.5 |
| AC 9991<br>t p.         | AC 10894<br>n.s. < 10.0 | AC 6508<br>n.s. < 11.1  | AC 7107<br>n.s. < 10.4 | AC 8518<br>n.s. < 10.0 |
| AC 10009<br>n.s. < 11.1 | AC 10965<br>n.s. < 12.5 | AC 6578<br>broken       | AC 7624<br>n.s. < 10.9 | AC 8552<br>n.s. < 10.0 |
| AC 10465<br>n.s. < 11.1 | AC 10976<br>n.s. < 10.9 | AC 6599<br>n.s. < 11.1  | AC 7672<br>n.s. < 10.9 | AC 8596<br>n.s. < 10.0 |

September 25, 1919

nova (cont)

|                        |                        |                        |                        |                        |
|------------------------|------------------------|------------------------|------------------------|------------------------|
| AC 8653<br>n.s. < 10.4 | AC 9535<br>n.s. < 11.8 | AM 4990<br>n.s. < 11.8 | AM 2036<br>n.s. < 11.8 | AM 5088<br>n.s. < 11.8 |
| AC 8704<br>n.s. < 11.1 | AC 9590<br>n.s. < 11.1 | AM 1302<br>n.s. < 11.1 | AM 2066<br>n.s. < 11.1 | AM 5091<br>n.s. < 12.5 |
| AC 8798<br>n.s. < 11.1 | AC 9627<br>n.s. < 10.4 | AM 1338<br>n.s. < 11.1 | AM 2187<br>n.s. < 12.5 | AM 5149<br>n.s. < 12.5 |
| AC 8813<br>n.s. < 12.5 | AC 9694<br>n.s. < 11.1 | AM 1347<br>n.s. < 11.1 | AM 2193<br>n.s. < 12.5 | AM 5186<br>n.s. < 11.8 |
| AC 8859<br>n.s. < 11.1 | AC 9730<br>n.s. < 11.1 | AM 1375<br>n.s. < 11.8 | AM 54<br>n.s. < 11.1   | AM 5200<br>n.s. < 11.8 |
| AC 8898<br>n.s. < 11.1 | AM 4855<br>n.s. < 11.8 | AM 1503<br>broken      | AM 88<br>broken        | AM 5404<br>n.s. < 11.8 |
| AC 8968<br>Iso.        | AM 4898<br>n.s. < 11.8 | AM 1597<br>broken      | AM 96<br>faint         | AM 5508<br>n.s. < 11.8 |
| AC 8976<br>n.s. < 11.1 | AM 4929<br>n.s. < 11.8 | AM 1634<br>n.s. < 11.1 | AM 5051<br>mult. im.   | AM 5589<br>n.s. < 11.8 |
| AC 9039<br>n.s. < 10.9 | AM 4948<br>n.s. < 12.5 | AM 1905<br>n.s. < 11.8 | AM 5053<br>n.s. < 11.8 | AM 5611<br>n.s. < 11.8 |
| AC 9529<br>n.s. < 11.1 | AM 4973<br>n.s. < 11.8 | AM 1984<br>n.s. < 11.8 | AM 5057<br>n.s. < 11.1 | AM 5653<br>n.s. < 12.8 |

September 25, 1919

## Nova (cont.)

|                        |                        |                        |                        |                        |
|------------------------|------------------------|------------------------|------------------------|------------------------|
| AM 5714<br>n.s. < 12.8 | AM 6407<br>n.s. < 11.1 | AM 7024<br>n.s. < 11.1 | AM 7662<br>n.s. < 11.8 | AM 8481<br>n.s. < 11.8 |
| AM 5727<br>n.s. < 12.5 | AM 6435<br>n.s. < 12.5 | AM 7036<br>n.s. < 11.8 | AM 7684<br>n.s. < 11.1 | AM 8525<br>n.s. < 11.8 |
| AM 5781<br>n.s. < 12.5 | AM 6477<br>n.s. < 11.8 | AM 7048<br>n.s. < 10.9 | AM 7726<br>t p.        | AM 8562<br>n.s. < 10.0 |
| AM 5838<br>n.s. < 11.8 | AM 6511<br>n.s. < 11.8 | AM 7132<br>n.s. < 10.9 | AM 7783<br>n.s. < 10.9 | AM 8609<br>t p.        |
| AM 5850<br>n.s. < 11.1 | AM 6565<br>broken      | AM 7173<br>n.s. < 11.1 | AM 7804<br>n.s. < 10.9 | AM 8631<br>n.s. < 10.0 |
| AM 5871<br>n.s. < 12.8 | AM 6662<br>n.s. < 11.8 | AM 7179<br>n.s. < 10.4 | AM 7895<br>n.s. < 11.1 | AM 8662<br>n.s. < 10.9 |
| AM 5888<br>n.s. < 12.5 | AM 6723<br>n.s. < 11.8 | AM 7219<br>n.s. < 11.8 | AM 8249<br>n.s. < 10.9 | AM 8671<br>n.s. < 10.0 |
| AM 6157<br>broken      | AM 6735<br>n.s. < 11.8 | AM 7234<br>n.s. < 11.1 | AM 8323<br>n.s. < 11.8 | AM 8688<br>n.s. < 9.7  |
| AM 6231<br>n.s. < 10.4 | AM 6938<br>n.s. < 11.8 | AM 7293<br>n.s. < 11.1 | AM 8405<br>n.s. < 11.1 | AM 8702<br>n.s. < 9.4  |
| AM 6289<br>n.s. < 11.8 | AM 7021<br>broken      | AM 7609<br>n.s. < 10.9 | AM 8425<br>n.s. < 11.1 | AM 8727<br>t p.        |

September 25, 1919

Mora      sout

|                                      |                         |                         |                         |
|--------------------------------------|-------------------------|-------------------------|-------------------------|
| AM 8736<br>n.s. < 10.0               | AC 14563<br>t p         | AC 15510<br>n.s. < 11.8 | AC 11141<br>n.s. < 12.8 |
| AM 8876<br><del>broken</del><br>n.s. | AC 15213<br>n.s. < 11.1 | AC 15513<br>n.s. < 11.8 | AC 11755<br>n.s. < 10.9 |
| AM 9001<br>n.s. < 10.9               | AC 15275<br>n.s. < 11.8 | AC 15553<br>n.s. < 10.4 | AC 11768<br>t p.        |
| AM 9022<br>n.s. < 9.7                | AC 15285<br>n.s. < 10.0 | AC 15562<br>t p         | AC 11804<br>n.s. < 10.4 |
| AM 9111<br>n.s. < 11.1               | AC 15310<br>n.s. < 11.1 | AC 15569<br>n.s. < 11.1 | AC 11829<br>n.s. < 9.7  |
| AM 9134<br>n.s. < 9.7                | AC 15343<br>n.s. < 10.9 | AC 11509<br>n.s. < 11.8 | AC 11969<br>n.s. < 11.1 |
| AM 9199<br>n.s. < 11.1               | AC 15397<br>n.s. < 11.8 | AC 11043<br>n.s. < 10.4 | 11.35                   |
| AM 9234<br>n.s. < 11.1               | AC 15403<br>n.s. < 9.7  | AC 11082<br>n.s. < 11.1 |                         |
| AM 9258<br>n.s. < 10.4               | AC 15442<br>n.s. < 11.8 | AC 11085<br>n.s. < 12.8 |                         |
| AM 9287<br>n.s. < 10.4               | AC 15452<br>n.s. < 12.5 | AC 11122<br>n.s. < 12.8 |                         |

September 30, 1919

8 20

Mra (cont.)

|                        |                        |                        |                        |                        |
|------------------------|------------------------|------------------------|------------------------|------------------------|
| AM10679<br>n.s. < 12.5 | AC12441<br>n.s. < 11.1 | AC12771<br>n.s. < 11.8 | AC11097<br>n.s. < 10.4 | AM10692<br>n.s. < 12.5 |
| AC17889<br>n.s. < 12.5 | AC12459<br>n.s. < 10.0 | AC12806<br>n.s. < 11.8 | AM11130<br>n.s. < 10.0 | AM10800<br>n.s. < 10.9 |
| AM11357<br>n.s. < 12.5 | AC12479<br>n.s. < 10.0 | AC17125<br>n.s. < 11.8 | AM11851<br>n.s. < 9.4  | AM10849<br>n.s. < 11.8 |
| AC16696<br>n.s. < 11.8 | AC12502<br>n.s. < 11.1 | AC17501<br>n.s. < 11.1 | AM11879<br>n.s. < 10.0 | AC21346<br>n.s. < 10.9 |
| AC17407<br>n.s. < 10.4 | AC12561<br>n.s. < 12.5 | AC17650<br>n.s. < 11.8 | AM11905<br>n.s. < 9.7  | AC21366<br>n.s. < 12.5 |
| AC17631<br>n.s. < 12.5 | AC12598<br>n.s. < 11.8 | AC17748<br>n.s. < 11.8 | AC16424<br>n.s. < 12.8 | AC21497<br>n.s. < 11.1 |
| AC12074<br>n.s. < 11.1 | AC12631<br>n.s. < 11.8 | AC17774<br>n.s. < 11.1 | AC16642<br>n.s. < 10.4 | AC21558<br>n.s. < 11.1 |
| AC12126<br>n.s. < 11.8 | AC12701<br>n.s. < 11.8 | AC18003<br>n.s. < 10.9 | AC18295<br>n.s. < 12.5 | AC21678<br>n.s. < 11.8 |
| AC12412<br>n.s. < 10.9 | AC12711<br>n.s. < 11.8 | AC18054<br>n.s. < 12.5 | AC19032<br>n.s. < 11.8 | AC19602<br>n.s. < 12.5 |
| AC12419<br>n.s. < 11.1 | AC12739<br>n.s. < 12.5 | AC16983<br>n.s. < 12.8 | AM10703<br>n.s. < 10.4 | AC20191<br>n.s. < 11.1 |

September 30, 1919

Nova cont.

|                         |                         |                                                        |                         |                        |
|-------------------------|-------------------------|--------------------------------------------------------|-------------------------|------------------------|
| AC 20353<br>n.s. < 10.4 | AC 13442<br>n.s. < 11.1 | AC 14281<br>n.s. < 11.8                                | AI 12053<br>n.s. < 10.0 | MC 6338<br>n.s. < 15.1 |
| AC 20384<br>n.s. < 11.8 | AC 14267<br>n.s. < 10.9 | AC 14012<br>n.s. < 10.4                                | AI 11938<br>7.1         | MC 6411<br>14.0?       |
| AC 20553<br>n.s. < 11.1 | AC 14240<br>n.s. < 11.8 | AC 14222<br>n.s. < 11.1                                | AI 11933<br>9.9         | MC 11340<br>14.5?      |
| AC 20830<br>n.s. < 11.1 | AC 14595<br>7.7         | AC 14216<br>n.s. < 12.5                                | AI 11869<br>n.s. < 11.1 | MC 5709<br>n.s. < 15.0 |
| AM 11015<br>n.s. < 12.8 | AC 14609<br>9.3         | AC 14086<br>± 10.                                      | AI 11994<br>9.7         | MC 5810<br>n.s. < 15.0 |
| AC 14471<br>n.s. < 10.4 | AC 14582<br>7.0         | AC 14528<br>n.s. < 11.1                                | AI 12024<br>9.8         | 10 30                  |
| AC 14422<br>n.s. < 11.1 | AC 21657<br>n.s. < 10.4 | AC 14492<br>n.s. < 12.8                                | MC 16228<br>14.3?       |                        |
| AC 14394<br>n.s. < 11.1 | AC 14210<br>n.s. < 11.8 | AI 11953<br>8.3                                        | MC 16227<br>14.0?       |                        |
| AC 14322<br>n.s. < 10.4 | AC 14018<br>n.s. < 11.8 | <sup>11899</sup><br><del>AI 11953</del><br>n.s. < 10.0 | MC 11339<br>n.s. < 15.0 |                        |
| AC 13442<br>n.s. < 11.1 | AC 13438<br>n.s. < 11.1 | AI 12040<br>9.9                                        | MC 1333<br>14.6?        |                        |



30

Constellation of Ophiuchus

October 21, 1919

meas. (1855) 18 7 21.1 +11 34.6  
 (1900) 18 9 27.0 +11 35.1

11 40 Seg. marked on  
 AC 21798  
 includes on  
 AC 21692.

Comparing seg. of Z Herculis into temporary  
 seg. of star at 18 7 +11 35 to obtain  
 var. of said star. Small Z after C.S. shows seg.  
 belongs to Z Herculis.

AC 21635

ns < 9.7 f, h 9.8 July 27, 1919 AC 21635  
 h & g 10.8 10.10 3 n.s. < 10.1  
 10.4 3

AC 21868 Oct. 6, 1919  
 7.7 AC 21868  
 b 3 b 8.0  
 b 1 b 8.3 8.10 8.2  
 8.2

12 05

AC 21663 Aug 4, 1919

ns < 9.7 Z f, h 9.8  
 h & g 10.8 10.10 10.4

AC 21663  
 n.s. < 10.1

2 &lt; g on AI 18962

Oct. 17.

2 < g AI 18961 from  
 Oct. 17.

AC 21710

2 b. g 9.5 f, h 9.7 Aug. 20, 1919 AC 21710  
 g 2 f 9.7 9.60 1 9.4  
 9.5

12 20 I 8728 July 10, 1893

I 20988 July 7, 1898

I 23429 Sept 5, 1899

I 9106 Aug. 8, 1893

(12) B 10158

(12) B 10220

(13) B 16543 June 30, 1896

(135) B 25169 April 23, 1900

(12) B 28729 Oct 10, 1901

(14) B 29522 April 29, 1902

(14) I 33030 April 30, 1905

(11) I 8762 July 13, 1893

B 22700 May 2, 1899

12 55 (14) B 13725 June 11, 1895

1 25 (12) I 25961 Oct. 20, 1900

(13) I 28678 April 18, 1902

I 9355 Sept. 2, 1893 (14)

not on next.

AC 21724 Aug 22

2 b. g

AC 21724  
 9.4

2 b. g AC 21730 Aug 23, 1919

AC 21818 Sept 24, 1919

AC 21730  
 9.4

AC 21818 too poor.

2 b. g. AC 21830 Sept. 26, 1919

AC 21830  
 9.4

2 b. g. AC 21854 Sept. 29, 1919

AC 21854  
 9.4

var. = d AC 21860 Oct. 1, 1919

8.3 b' 3 d 8.6 8.70  
 8.9 2 8.8

AC 21860

8.7

var. 1. &lt; b AC 21798 Sept 13, 1919

7.5 d 2 a 7.7 7.65  
 7.7 7.6

AC 21798

7.7

I 15928 Sept 11, 1896 14  
 I 18522 Aug 13, 1897 14  
 I 37898 July 22, 1912 13  
 I 1324 June 21, 1890 11.5  
 I 1693 Aug 27, 1890 13  
 I 6512 July 6, 1892 13.5  
 I 11348 Aug 17, 1894 11.5  
 I 26001 Nov. 2, 1900 14.5  
 B 21314 April 29, 1898 12  
 B 23692 July 27, 1899 12.5  
 B 27790 June 26, 1901 14.5  
 B 30622 Sept. 22, 1902 13.5  
 B 32542 Sept 1, 1903 14.5  
 B 33587 May 3, 1904 14  
 B 34681 Aug 18, 1904 14.5  
 B 36109 May 25, 1905 14  
 B 36468 July 22, 1905 13.5  
 B 39179 June 17, 1908 14  
 B 41368 May 28, 1910 14  
 B 41486 June 25, 1910 14  
 B 41652 July 15, 1910 13.5  
 B 41783 Aug. 14, 1910 (14)  
 I 6575 July 12, 1892 13  
 I 6689 July 30, 1892 (12)

(12)  
 B 36468 July 22, 1905  
 B 39179 June 17, 1908 (13.5)  
 B 41368 May 28, 1910 13.5  
 B 41486 June 25, 1910 14  
 B 41652 July 15, 1910 12  
 B 41783 Aug. 14, 1910 13.5  
 I 6575 July 12, 1892 12.5

AM Plates. at 18<sup>h</sup> 0<sup>o</sup>

3.30

425

1.45

2.20

3.00

se means. for limiting magn.

October 23, 1919

9 30 Two stars meas. on Qm Plate continued.

9 45 AM 1489 Aug 4, 1902  
 AM 4801 May 3, 1907

AM 10109 Sept. 11, 1914

12 20 12257 July 24, 1916

1 00 6588 Sept. 13, 1909

6325 July 8, 1909

5689 July 26, 1908

5645 July 8, 1908

1 30 5071 Aug 16, 1907

2 10 4546 Sept 5, 1906

4371 July 9, 1906

4354 June 29, 1906

3651 June 21, 1905

3598 June 7, 1905

3561 May 25, 1905

3958 Aug. 18, 1904

1953 May 18, 1903

1287 May 28, 1902

818 May 28, 1901

622 Sept. 3, 1900

576 Aug 2, 1900

473 May 22, 1900

m.s.  
 13.0

AM 9232 July 23, 1913

9107 June 25, 1913

8592 Sept. 3, 1912

10750 July 3, 1915

10356 Mar. 26, 1915

10122 Sept. 14, 1914

10034 Aug. 8, 1914

10000 July 28, 1914

12271 July 26, 1916

12267 July 25, 1916

11094 Sept. 7, 1915

7670 Aug. 12, 1911

7581 July 20, 1911

7029 June 19, 1910

6937 May 27, 1910

6312 July 6, 1909

6192 May 30, 1909

6144 May 17, 1909

6126 May 13, 1909

5814 Sept. 13, 1908

5806 Sept. 12, 1908

5741 Aug. 6, 1908

5633 July 6, 1908

5621 July 2, 1908

5499 May 27, 1908

5398 April 22, 1908

5175 Sept. 28, 1907

5164 Sept. 18, 1907

5021 July 29, 1907

m.s.  
 12.0

October 23 1919

{ A 8948 July 9, 1908 n.s.  $\angle 14.0$   
 A 3547 May 22, 1899 n.s.  $\angle 15.0$   
 A 959 Oct. 5, 1894 n.s.  $\angle 11.0$

## AM Platts.

4962 July 2, 1907  
 4941 June 28, 1907  
 4817 May 9, 1907  
 4655 Oct. 20, 1906  
 4535 Aug. 25, 1906  
 4393 July 12, 1906  
 4313 June 14, 1906  
 4271 May 29, 1906  
 4244 May 19, 1906  
 4190 April 28, 1906  
 4150 Mar. 27, 1906  
 3505 May 9, 1905  
 3449 April 7, 1905  
 3422 Mar. 30, 1905  
 2995 Sept. 1, 1904  
 2915 Aug. 4, 1904  
 2855 July 21, 1904  
 2796 July 1, 1904  
 2767 June 20, 1904  
 2660 May 19, 1904  
 2279 Sept. 18, 1903  
 2260 Sept. 3, 1903  
 2137 July 16, 1903  
 2119 July 14, 1903

n.s.  
 $\angle 12.0$

2110 July 12, 1903  
 1918 May 6, 1903  
 1483 July 25, 1902 n.s.  
 1424 July 3, 1902  $\angle 12.0$   
 1270 May 26, 1902  
 1021 Sept. 3, 1901  
 897 July 5, 1901

October 23, 1919

## A M Plates cont.

9191 July 9, 1913  
 9079 June 13, 1913  
 8659 Sept. 21, 1912  
 9029 June 7, 1913  
 8945 May 24, 1913  
 8968 May 28, 1913  
 8908 May 14, 1913  
 8725 Oct. 18, 1912  
 8686 Oct. 8, 1912  
 8603 Sept. 5, 1912  
 8551 Aug. 8, 1912  
 10960 Aug. 8, 1915  
 10832 July 17, 1915  
 10797 July 13, 1915  
 10770 July 10, 1915  
 10726 June 21, 1915  
 10671 June 12, 1915  
 10444 April 19, 1915  
 9738 April 26, 1914  
 9530 Oct. 1, 1913  
 9509 Sept. 28, 1913  
 9431 Sept. 7, 1913  
 9313 Aug. 6, 1913  
 9299 Aug. 4, 1913  
 9285 July 31, 1913  
 12675 Oct. 24, 1916  
 12392 Aug. 29, 1916  
 12343 Aug. 17, 1916

12292 Aug. 2, 1916  
 12248 July 23, 1916  
 12241 July 22, 1916  
 12087 June 29, 1916  
 11945 June 10, 1916  
 11291 Oct. 2, 1915  
 11269 Sept. 27, 1915  
 11002 Aug. 15, 1915  
 8543 Aug. 15, 1912  
 8532 Aug. 3, 1912  
 8477 July 18, 1912  
 8415 July 8, 1912  
 8403 July 6, 1912  
 8345 June 14, 1912  
 8309 June 8, 1912  
 8248 May 24, 1912  
 8239 May 23, 1912  
 8197 May 18, 1912  
 8128 April 26, 1912  
 8120 April 24, 1912  
 7860 Oct. 12, 1911  
 7826 Sept. 24, 1911  
 7758 Sept. 16, 1911  
 7717 Aug. 26, 1911  
 7599 July 22, 1911  
 7423 May 21, 1911  
 7291 Sept. 10, 1910  
 7279 Sept. 8, 1910

7177 Aug. 2, 1910  
 7121 July 12, 1910  
 7107 July 10, 1910  
 7096 July 8, 1910  
 7077 July 5, 1910  
 7057 July 1, 1910  
 6983 June 3, 1910  
 6920 May 14, 1910  
 6605 Sept. 19, 1909  
 6505 Aug. 22, 1909  
 6389 July 21, 1909  
 6257 June 20, 1909  
 6251 June 19, 1909  
 6172 May 27, 1909  
 6166 May 25, 1909  
 5569 June 17, 1908  
 5429 May 3, 1908  
 5087 Aug. 19, 1907  
 4624 Oct. 12, 1906  
 3921 Sept. 30, 1905  
 3882 Sept. 16, 1905  
 3835 Aug. 26, 1905  
 3739 July 26, 1905  
 3726 July 22, 1905  
 3688 July 5, 1905  
 3464 April 21, 1905  
 2714 June 4, 1904  
 2619 May 5, 1904

October 23, 1919

## AM Plates cont.

2573 April 22, 1904  
 2245 Sept. 1, 1903  
 1554 Sept. 22, 1902  
 1553 Sept. 22, 1902  
 1542 Sept 17, 1902  
 1448 July 10, 1902  
 1251 May 15, 1902  
 1237 May 2, 1902  
 1051 Sept. 7, 1901  
 800 May 22, 1901  
 646 Sept. 12, 1900  
 403 March 31, 1900  
 153 Sept. 21, 1899  
 28 July 29, 1899  
 10 July 25, 1899

u.s  
< 11.0

## I Spectrum Plates.

23016 June 11, 1899 u.s  
 23017 " 11, 1899 u.s  
 28878 June 7, 1902 u.s  
 37959 Aug 30, 1912 u.s  
 37782 May 24, 1912 u.s  
 34802 Aug. 10, 1907 u.s

October 25, 1919

70 05 Mas. to determine magn. of comparison stars for  
Nova in Ophiuchi

I 39684

Scale M.

1<sup>st</sup> 2<sup>nd</sup> Crown. Magn.  
nova 5.5<sup>5.7</sup> 5.85 6.0 3.75 9.60

a 1.9<sup>2.1</sup>

a' 2.0<sup>2.2</sup>

a<sup>2</sup> 2.8<sup>3.0</sup>

b 2.7<sup>2.9</sup>

c 3.5<sup>3.7</sup>

d 4.0<sup>4.2</sup> 4.20 4.2 4.22 8.42

e 4.0<sup>4.2</sup> 4.30 4.4 4.20 8.50

f 4.0<sup>4.2</sup> 4.35 4.5 4.18 8.53

g 4.8<sup>5.0</sup> 5.25 5.5 3.91 9.16

h 5.5<sup>5.7</sup> 5.85 6.0 3.75 9.60

k 6.0<sup>6.2</sup> 6.35 6.5 3.60 9.95

l 6.5<sup>6.7</sup> 6.60 6.5 3.56 10.16

m 6.7<sup>6.9</sup> 6.95 7.0 3.50 10.45

n 7.0<sup>7.2</sup> 7.50 7.8 3.42 10.92

o 7.8 3.38 11.18

p 8.1 3.34 11.44

q 8.7 3.26 11.96

r 9.7 .

s 9.9 .

October 25, 1919

Meas. to determine magn. of comp. stars of Nova  
on Pole

I 39680-

Scale Nl. 1<sup>st</sup> 2<sup>nd</sup> diff.

|    |     |      |     |                 |
|----|-----|------|-----|-----------------|
| 5  | 1.7 | 1.9  |     | 4.59            |
| 6  | 3.0 | 3.2  |     | 3.91            |
| 8  | 3.7 | 3.9  |     | <del>4.33</del> |
|    |     |      |     | <del>3.41</del> |
| 9  | 4.2 | 4.4  | 1.1 | 4.53            |
|    |     | 4.30 |     | <del>3.93</del> |
| 10 | 4.7 | 4.9  | 1.0 | 4.07            |
|    |     | 4.95 |     |                 |
| 11 | 5.8 | 6.0  | 1.1 | 3.65            |
|    |     | 5.90 |     |                 |
| 12 | 6.0 | 6.2  | 0.1 | 3.71            |
|    |     | 6.15 |     |                 |
| 13 | 6.7 | 6.9  | 0.0 | 3.40            |
|    |     | 6.90 |     |                 |
| 14 |     | 7.2  |     | 3.45            |
| 15 |     | 7.5  |     | 3.58            |
| 16 |     | 8.0  |     | 3.40            |
| 17 |     | 8.7  |     | 2.93            |
| 18 |     | 8.8  |     | 3.26            |
| 19 |     | 9.1  |     | 3.32            |
| 20 |     | 9.4  |     | 3.33            |
| 21 |     | 10.0 |     | 2.96            |

10 35

October 28, 1919

Leopold Bk 38: 71

Scale Measure to determine magn. of c.s. for Nova

Ophiuchi No -

Scale M.

I 39689

1<sup>st</sup> 2<sup>nd</sup> Curve Magn.

5.8 0.1  
nova 5.6 5.75 5.7 3.83 9.58

A Br.

a 2.0<sup>2.2</sup>a' 2.0<sup>2.2</sup>a<sup>2</sup> 2.5<sup>2.7</sup>b 3.0<sup>3.2</sup>c 3.8<sup>4.0</sup> 4.00<sup>0 0</sup> 4.0d 4.5<sup>4.7</sup> 4.70<sup>0 0</sup> 4.7 4.10 8<sup>8</sup> 8.80e 4.5<sup>4.7</sup> 4.70<sup>0 0</sup> 4.7 4.10 8.80f 4.5<sup>4.7</sup> 4.70 4.7 4.10 8.80g 5.2<sup>5.4</sup> 5.60<sup>2 2</sup> 5.8 3.88 9.48h 5.8<sup>6.0</sup> 6.00<sup>0 0</sup> 6.0 3.79 9.79k 5.8<sup>6.6</sup> 6.00<sup>0 0</sup> 6.0 3.79 9.79l 6.5<sup>6.7</sup> 6.75<sup>1 0</sup> 6.8 3.65 10.40m 7.0<sup>7.2</sup> 7.15<sup>0 1</sup> 7.1 3.60 10.75

n 7.5 3.55 11.05

o 7.8 3.52 11.32

p 8.4 3.45 11.85

q 9.0 3.35 12.35

r 9.8 3.17 12.97

s

October 28, 1919

Mass. cont.

| Scale M. | I 39690            |                     |       |      |
|----------|--------------------|---------------------|-------|------|
|          | 1 <sup>st</sup>    | 2 <sup>nd</sup>     | Diff. |      |
| 5        | 1.5 <sup>1.7</sup> |                     | 4.79  |      |
| 6        | 2.8 <sup>3.0</sup> |                     | 4.11  |      |
| 8        | 4.0 <sup>4.2</sup> | 4.35 <sup>3.1</sup> | 4.5   | 3.88 |
| 9        | 4.4 <sup>4.6</sup> | 4.80 <sup>3.2</sup> | 5.0   | 4.03 |
| 10       | 4.5 <sup>4.7</sup> | 4.85 <sup>1.2</sup> | 5.0   | 4.17 |
| 11       | 5.2 <sup>5.4</sup> | 5.60 <sup>3.2</sup> | 5.8   | 3.95 |
| 12       | 6.0 <sup>6.2</sup> | 6.35 <sup>3.1</sup> | 6.5   | 3.51 |
| 13       | 6.4 <sup>6.6</sup> | 6.70 <sup>1.1</sup> | 6.8   | 3.60 |
| 14       | 6.9 <sup>7.1</sup> | 7.05 <sup>1.0</sup> | 7.0   | 3.60 |
| 15       | 7.0 <sup>7.2</sup> | 7.20 <sup>0.0</sup> | 7.2   | 3.88 |
| 16       |                    | 7.8                 |       | 3.60 |
| 17       |                    | 8.0                 |       | 3.63 |
| 18       |                    | 8.7                 |       | 3.36 |
| 19       |                    | 9.0                 |       | 3.42 |
| 20       |                    | 9.6                 |       | 3.13 |

October 28, 1919

Larimer Bk 38:71

Meas. to determine cont.

Scale M.

I 39691

|      | 1 <sup>st</sup> | 2 <sup>nd</sup> | Curv | Magn. |
|------|-----------------|-----------------|------|-------|
| nova | 5.6             | 5.80            | 5.8  | 3.82  |

A B<sub>1</sub>

a 2.5

a' 2.8

a<sup>2</sup> 3.2

b 3.0

c 4.0

d 4.8

e 4.0

f 4.2

g 5.2

h 5.8

K 6.0

L 6.5

m 7.0

n 7.6

o 7.8

p 8.2

q 9.2

r 9.8

s

2 25

November 4, 1919

12 30 Meas. to determine magn. c.s. for Nova Ophiuchi No. 4

| Scale M | AC 20149        |                 |      |                   |                 |
|---------|-----------------|-----------------|------|-------------------|-----------------|
| Bartle  | 1 <sup>st</sup> | 2 <sup>nd</sup> |      |                   | 2 <sup>nd</sup> |
|         |                 |                 |      | f                 | 8.5             |
| 1       |                 | 6.8             |      | g                 | 8.8             |
| 2       |                 | 6.8             |      | h                 | 9.5             |
| 3       |                 | 7.0             |      | k                 | 9.7             |
| 4       |                 | 7.5             |      | l                 | 9.2             |
| 5       |                 | 8.0             |      |                   |                 |
| 6       |                 | 8.6             |      | A 1 <sup>st</sup> | 6.0             |
| 7       |                 | 9.0             |      | a                 | 6.2             |
| 8       |                 | 8.9             |      | a'                | 7.0             |
| 9       |                 | 9.5             | nova | a <sup>2</sup>    | 7.1             |
| 10      |                 | 9.4             |      | b                 | 7.0             |
| 11      |                 |                 |      | c                 | 7.0             |
| 86 K    | L               | 7.0             |      | d                 | 7.8             |
|         | P               | 8.0             |      | e                 | 7.8             |
|         | 1               | 9.0             |      | f                 | 7.5             |
|         | 2               | 9.3             |      | g                 | 8.2             |
|         | 3               | 9.6             |      | h                 | 8.3             |
|         | 4               | 9.7             |      | k                 | 8.6             |
|         | 5               | 9.7             |      | l                 | 9.0             |
|         |                 |                 |      | m                 | 9.1             |
|         |                 |                 |      | n                 | 9.4             |
|         |                 |                 |      | o                 | 9.5             |
| RV      | a               | 6.0             |      |                   |                 |
|         | b               | 6.5             |      |                   |                 |
|         | c               | 6.9             |      |                   |                 |
|         | d               | 7.0             |      |                   |                 |
|         | d'              | 7.8             |      |                   |                 |
|         | e               | 7.0             |      |                   |                 |
|         | e'              | 7.3             |      |                   |                 |

cont. in next column

November 4, 1919

Scale VI.

Zone cont. C.S.

AC 20149 cont.

Z. Herculis.

|                | 1 <sup>st</sup> | 2 <sup>nd</sup> |
|----------------|-----------------|-----------------|
| a              |                 | 6.0             |
| b              |                 | 7.3             |
| b'             |                 | 7.3             |
| b <sup>2</sup> |                 | 7.8             |
| c              |                 | 7.5             |
| d              |                 | 8.2             |
| e              |                 | 8.2             |
| f              |                 | 8.2             |
| g              |                 | 9.5             |

November 4, 1919

Scale M

Nova cont. C. S.

| AC 21439 |                 |                 |                    |
|----------|-----------------|-----------------|--------------------|
| Bartu    | 1 <sup>st</sup> | 2 <sup>nd</sup> | 2 <sup>nd</sup>    |
|          | 1               | 6.8             | g 8.5              |
|          | 2               | 7.0             | h 8.8              |
|          | 3               | 7.6             | k 9.6              |
|          | 4               | 7.2             | l 9.4              |
|          | 5               | 8.2             |                    |
|          | 6               | 8.4             | A 6.0              |
|          | 7               | 8.7             | a 6.0              |
|          | 8               | 9.2             | a' 6.3             |
|          | 9               | 9.2             | a <sup>2</sup> 7.0 |
|          | 10              | 9.7             | b 7.0              |
|          | 11              | 9.9             | c 7.0              |
| 86 K     | $\alpha$        | 7.8             | d 7.5              |
|          | $\beta$         | 8.2             | e 7.7              |
|          | 1               | 8.8             | f 7.3              |
|          | 2               | 9.0             | g 8.2              |
|          | 3               | 9.6             | h 8.2              |
|          | 4               | 9.8             | k 8.3              |
|          | 5               | 10.0            | l 8.7              |
| RX 1400. | a               | 6.0             | m 9.0              |
|          | b               | 6.7             | n 9.2              |
|          | c               | 7.0             | o 9.3              |
|          | d               | 7.6             |                    |
|          | d'              | 7.9             |                    |
|          | e               | 7.0             |                    |
|          | e'              | 7.0             |                    |
|          | f               | 8.5             |                    |

November 4, 1919

Scale M

nova cont.

Z Herc.

AC21439 cont.

1<sup>st</sup>2<sup>nd</sup>

a 6.2

b 6.7

b' 7.5

b'' 7.6

c 6.8

d 8.0

e 8.0

f 8.4

g 9.2

h 9.8

November 4, 1919.

Scale M

Nova count.

AC 21486

Certe

|    |     |
|----|-----|
| 1  | 7.5 |
| 2  | 7.5 |
| 3  | 8.0 |
| 4  | 8.2 |
| 5  | 8.6 |
| 6  | 8.7 |
| 7  | 9.0 |
| 8  | 9.6 |
| 9  | 9.6 |
| 10 |     |
| 11 |     |

86 K

|          |      |
|----------|------|
| $\alpha$ | 8.4  |
| $\beta$  | 8.6  |
| 1        | 9.4  |
| 2        | 9.8  |
| 3        | 10.0 |
| 4        |      |
| 5        |      |

RX/hr.

|    |     |
|----|-----|
| a  | 6.4 |
| b  | 6.4 |
| c  | 6.7 |
| d  | 7.7 |
| d' | 8.0 |
| e  | 7.0 |
| e' | 7.2 |
| f  | 9.2 |

|                |      |
|----------------|------|
| g              | 9.2  |
| h              | -    |
| K              |      |
| l              |      |
| A              | 6.4  |
| a              | 6.5  |
| a'             | 6.5  |
| a <sup>2</sup> | 7.2  |
| b              | 7.2  |
| c              | 7.2  |
| d              | 7.8  |
| e              | 7.8  |
| f              | 7.8  |
| g              | 8.3  |
| h              | 8.6  |
| K              | 9.2  |
| l              | 9.2  |
| m              | 9.4  |
| n              | 10.0 |
| o              |      |

## Nova Ophiuchi No. 4.

QC 20149 MK 9:41  
 QC 21439 MK 9:43  
 QC 21486 MK 9:45  
 QC 21586 MK 9:47

Barth 18 +17.5 Mean Resid. Diff.

Scale M.

Z Herc.

a

b

b'

b''

c

d

e

f

g

|    |     |     |     |     |      |   |   |   |   |      |
|----|-----|-----|-----|-----|------|---|---|---|---|------|
| 1  | 6.8 | 6.8 | 7.5 | 6.9 | 7.00 | 2 | 2 | 5 | 1 | 0.79 |
| 2  | 6.8 | 7.0 | 7.5 | 7.0 | 7.08 | 3 | 1 | 4 | 1 | 0.73 |
| 3  | 7.0 | 7.6 | 8.0 | 7.7 | 7.58 | 6 | 0 | 4 | 1 | 1.00 |
| 4  | 7.5 | 7.2 | 8.2 | 7.8 | 7.68 | 2 | 5 | 5 | 1 | 1.07 |
| 5  | 8.0 | 8.2 | 8.6 | 8.7 | 8.38 | 4 | 2 | 2 | 3 | 1.18 |
| 6  | 8.6 | 8.4 | 8.7 | 9.0 | 8.68 | 1 | 3 | 0 | 3 | 1.28 |
| 7  | 9.0 | 8.7 | 9.0 | 9.2 | 8.98 | 0 | 3 | 0 | 2 | 1.22 |
| 8  | 8.9 | 9.2 | 9.6 | 9.5 | 9.38 | 3 | 0 | 4 | 1 | 1.17 |
| 9  | 9.5 | 9.2 | 9.6 | 9.8 | 9.52 | 0 | 3 | 1 | 2 | 1.15 |
| 10 | 9.4 | 9.7 | .   | .   | 9.55 | 2 | 1 | . | . | 1.27 |

Z Herculis

|     |     |     |     |     |      |   |   |   |        |
|-----|-----|-----|-----|-----|------|---|---|---|--------|
| a   | 6.0 | 6.2 | 6.0 | 6.0 | 6.05 | 0 | 2 | 0 | 0.89   |
| b   | 7.3 | 6.7 | 7.0 | 6.5 | 6.88 | 4 | 2 | 1 | 4 0.73 |
| b'  | 7.3 | 7.5 | 7.8 | 7.4 | 7.50 | 2 | 0 | 3 | 1 0.92 |
| b'' | 7.8 | 7.6 | 8.0 | 7.8 | 7.80 | 0 | 2 | 2 | 0 0.88 |
| c   | 7.5 | 6.8 | 7.2 | 6.5 | 7.00 | 5 | 2 | 2 | 5 0.10 |
| d   | 8.2 | 8.0 | 8.3 | 8.2 | 8.18 | 0 | 2 | 1 | 0 1.02 |
| e   | 8.2 | 8.0 | 8.6 | 8.4 | 8.30 | 1 | 3 | 3 | 1 1.20 |
| f   | 8.2 | 8.4 | 8.8 | 8.6 | 8.50 | 3 | 1 | 3 | 1 1.07 |
| g   | 9.5 | 9.2 | 9.8 | 9.8 | 9.58 | 1 | 4 | 2 | 2 1.24 |
| h   | .   | 9.8 | .   | .   | 9.8  | . | . | . | 0.84   |

as the families stars have not been measured for all plates, adopted means are given by taking average of first differences for incomplete stars.

Scale Readings  
 Use readings  
 corrected in green ink

QC 20149 MK 9:41  
 QC 21439 MK 9:43  
 QC 21486 MK 9:45  
 QC 21586 MK 9:47

R X Herculis

Mean Resid. Diff.

|    |     |     |     |     |      |   |   |   |   |      |
|----|-----|-----|-----|-----|------|---|---|---|---|------|
| a  | 6.0 | 6.0 | 6.4 | 6.5 | 6.22 | 2 | 2 | 2 | 3 | 0.85 |
| b  | 6.5 | 6.7 | 6.4 | 7.0 | 6.65 | 1 | 1 | 2 | 3 | 0.98 |
| c  | 6.9 | 7.0 | 6.7 | 7.0 | 6.90 | 0 | 1 | 2 | 1 | 0.85 |
| d  | 7.0 | 7.6 | 7.7 | 8.0 | 7.58 | 6 | 0 | 1 | 4 | 1.32 |
| d' | 7.8 | 7.9 | 8.0 | 8.2 | 7.98 | 2 | 1 | 0 | 2 | 1.08 |
| e  | 7.0 | 7.0 | 7.0 | 7.2 | 7.05 | 0 | 0 | 0 | 2 | 0.78 |
| e' | 7.3 | 7.0 | 7.2 | 7.5 | 7.25 | 1 | 2 | 0 | 3 | 0.84 |
| f  | 8.5 | 8.5 | 9.2 | 8.8 | 8.75 | 3 | 3 | 4 | 0 | 0.97 |
| g  | 8.8 | 8.5 | 9.2 | 9.0 | 8.88 | 1 | 4 | 3 | 1 | 1.11 |
| h  | 9.5 | 8.8 | .   | 9.7 | 9.33 | 2 | 5 | 4 | 1 | 1.04 |
| k  | 9.7 | 9.6 | .   | 9.8 | 9.70 | 0 | 1 | . | 1 | 0.96 |
| l  | 9.2 | 9.4 | .   | .   | 9.30 | 1 | 1 | . | . | 1.68 |

86 K

|   |     |      |      |     |      |   |   |   |   |      |
|---|-----|------|------|-----|------|---|---|---|---|------|
| α | 7.0 | 7.8  | 8.4  | 8.0 | 7.80 | 8 | 0 | 6 | 2 | 0.81 |
| β | 8.0 | 8.2  | 8.6  | 8.6 | 8.38 | 4 | 2 | 2 | 2 | 0.71 |
| 1 | 9.0 | 8.8  | 9.4  | 9.1 | 9.08 | 1 | 3 | 3 | 0 | 0.61 |
| 2 | 9.3 | 9.0  | 9.8  | 9.8 | 9.48 | 2 | 5 | 3 | 3 | 1.00 |
| 3 | 9.6 | 9.6  | 10.0 | .   | 9.73 | 1 | 1 | 3 | . | 0.81 |
| 4 | 9.7 | 9.8  | .    | .   | 9.75 | 1 | 0 | . | . | 0.70 |
| 5 | 9.7 | 10.0 | .    | .   | 9.85 | 1 | 2 | . | . | 0.98 |

November 4, 1919

Nova cont.

Scale M. AC 21486

Z Hore. 1<sup>st</sup> 2<sup>nd</sup>

a 6.0

b 7.0

b<sup>1</sup> 7.8b<sup>2</sup> 8.0

c 7.2

d 8.3

e 8.6

f 8.8

g 9.8

November 4, 1919

Hra cont

Scale M

AC21586

1<sup>st</sup>2<sup>nd</sup>

Larte

1

6.9

h

9.7

2

7.0

K

9.8

3

7.7

l

4

7.8

A

5.8

5

8.7

a

6.0

6

9.0

a'

6.8

7

9.2

a<sup>2</sup>

7.0

8

-

b

7.0

9

9.8

c

7.5

10

d

8.0

11

e

8.0

86

d

8.0

f

8.3

B

8.6

g

8.7

1

9.1

h

8.8

2

9.8

K

9.0

3

-

l

9.0

4

m

9.6

5

n

9.8

PRX Hra.

a

6.5

o

10.0

b

7.0

c

7.0

d

8.0

d'

8.2

e

7.2

e'

7.5

f

8.8

g

9.0

Scale M.

2 Hrs.

|                | QC 20149, MK 9:41 | QC 21439, MK 9:43 | QC 21486, MK 9:45 | QC 21586, MK 9:47 | Nova Ophiuchii No. 4 |        |      |      |      |      |      |      |      | 18    | 9     | +11   | 35    |
|----------------|-------------------|-------------------|-------------------|-------------------|----------------------|--------|------|------|------|------|------|------|------|-------|-------|-------|-------|
|                |                   |                   |                   |                   | Mean                 | Resid. | Curv | Curv | Curv | Curv | Curv | Curv | Curv | Magn. | Magn. | Magn. | Magn. |
| A              | 6.0               | 6.0               | 6.4               | 5.8               | 6.05                 | 0      | 0    | 4    | 2    | .    | 0.72 | 0.84 | .    | 6.77  | 6.77  | 6.89  | .     |
| a              | 6.2               | 6.0               | 6.5               | 6.0               | 6.18                 | 0      | 2    | 3    | 2    | .    | 0.75 | 0.85 | .    | .     | 6.93  | 7.03  | .     |
| a'             | 7.0               | 6.3               | 6.5               | 6.8               | 6.65                 | 4      | 3    | 1    | 2    | .    | 0.82 | 0.90 | .    | .     | 7.47  | 7.55  | .     |
| a <sup>2</sup> | 7.1               | 7.0               | 7.2               | 7.0               | 7.08                 | 0      | 1    | 1    | 1    | 0.69 | 0.88 | 0.92 | .    | 7.77  | 7.96  | 8.00  | .     |
| b              | 7.0               | 7.0               | 7.2               | 7.0               | 7.05                 | 0      | 0    | 2    | 0    | 0.65 | 0.87 | 0.92 | .    | 7.70  | 7.92  | 7.97  | .     |
| c              | 7.0               | 7.0               | 7.2               | 7.5               | 7.18                 | 2      | 2    | 0    | 3    | 0.73 | 0.89 | 0.92 | .    | 7.91  | 8.07  | 8.10  | .     |
| d              | 7.8               | 7.5               | 7.8               | 8.0               | 7.78                 | 0      | 3    | 0    | 2    | 1.07 | 0.99 | 0.99 | 0.68 | 8.85  | 8.77  | 8.77  | 8.46  |
| e              | 7.8               | 7.7               | 7.8               | 8.0               | 7.82                 | 0      | 1    | 0    | 2    | 1.09 | 1.00 | 0.99 | 0.69 | 8.91  | 8.82  | 8.81  | 8.51  |
| f              | 7.5               | 7.3               | 7.8               | 8.3               | 7.72                 | 2      | 4    | 1    | 6    | 1.04 | 0.98 | 0.99 | 0.68 | 8.76  | 8.80  | 8.71  | 8.50  |
| g              | 8.2               | 8.2               | 8.3               | 8.7               | 8.35                 | 2      | 2    | 1    | 3    | 1.20 | 1.07 | 1.01 | 0.73 | 9.55  | 9.42  | 9.36  | 9.08  |
| h              | 8.3               | 8.2               | 8.6               | 8.8               | 8.48                 | 2      | 3    | 1    | 3    | 1.21 | 1.08 | 1.02 | 0.75 | 9.69  | 9.56  | 9.50  | 9.23  |
| k              | 8.6               | 8.3               | 9.2               | 9.0               | 8.78                 | 2      | 5    | 4    | 2    | 1.22 | 1.12 | 1.02 | 0.78 | 10.00 | 9.90  | 9.80  | 9.56  |
| l              | 9.0               | 8.7               | 9.2               | 9.0               | 8.98                 | 0      | 3    | 2    | 0    | 1.22 | 1.12 | 1.03 | 0.80 | 10.20 | 10.10 | 10.01 | 9.78  |
| m              | 9.1               | 9.0               | 9.4               | 9.6               | 9.28                 | 2      | 3    | 1    | 3    | 1.20 | 1.13 | 1.03 | 0.81 | 10.48 | 10.41 | 10.31 | 10.09 |
| n              | 9.4               | 9.2               | 10.0              | 9.8               | 9.60                 | 2      | 4    | 4    | 2    | 1.17 | 1.10 | 1.03 | 0.85 | 10.77 | 10.70 | 10.63 | 10.45 |
| o              | 9.5               | 9.3               | .                 | 10.0              | 9.60                 | 1      | 3    | .    | 4    | 1.15 | 1.09 | 1.02 | 0.86 | 10.88 | 10.82 | 10.75 | 10.59 |

November 4, 1919

Nova cont.

Scale M. AC21586

Z Here.

1<sup>st</sup>2<sup>nd</sup>

a

6.0

b

6.5

b<sup>1</sup>

7.4

b<sup>2</sup>

7.8

c

6.5

d

8.2

e

8.4

f

8.6

g

9.8

2 00

November 5, 1919

Lepid. Bk. 38-73

Nova Ophiuchi No. 4

10 15

Scale M. MC 16332

|                                | 1 <sup>st</sup> | 2 <sup>nd</sup> | Diff. Curr Magn. | Diff. from Comp. Magn. | Diff. 1 <sup>st</sup> 2 <sup>nd</sup> | Diff. Curr Magn.    |
|--------------------------------|-----------------|-----------------|------------------|------------------------|---------------------------------------|---------------------|
| A B                            |                 |                 |                  |                        |                                       |                     |
| a B                            |                 |                 |                  |                        | 4.5 4.75 5.0                          | 2.08 0.98 6.98 6.88 |
| a' B                           |                 |                 |                  |                        | 6.0 6.00 6.0                          | 0.81 0.92 7.40 7.49 |
| a <sup>2</sup> 1.0 1.2         |                 |                 | 6.71 6.50 7.70   |                        | 6.7 6.70 6.7                          | 0.93 0.97 7.77 7.67 |
| b 1.5 1.7                      |                 |                 | 6.16 6.27 7.97   |                        | 6.8 6.90 7.0                          | 0.88 0.97 7.77 7.67 |
| c 2.0 2.2                      |                 |                 | 5.83 6.08 8.28   |                        | 7.6 7.80 8.0                          | 0.22 0.62 8.48 8.45 |
| d 2.6 2.8                      |                 |                 | 5.89 5.93 8.73   |                        | 8.2 8.20 8.2                          | 0.49 0.59 8.79 8.76 |
| e 2.5 2.7                      |                 |                 | 6.02 5.96 8.66   |                        | 8.0 8.00 8.0                          | 0.72 0.63 8.63 8.63 |
| Magnitudes from f 2.5 2.7      |                 |                 | 5.98 5.96 8.66   |                        | 8.0 8.15 8.3                          | 0.53 0.63 8.75 8.78 |
| g 3.2 3.4                      |                 |                 | 5.98 5.78 9.18   |                        | 8.8 8.90 9.0                          | 0.48 0.40 9.30      |
| Extended Cunn. h 4.0 4.2       |                 |                 | 5.42 5.60 9.80   |                        | 9.2 9.25 9.3                          | 0.37 0.30 9.55      |
| Cu magn. (Comp. i 3.5 4.25 4.5 |                 |                 | 5.59 5.58 9.83   |                        | 9.7 9.70 9.7                          | 0.14 0.17 9.87      |
| 5.48 9.73 k 4.3 4.5            |                 |                 |                  |                        | 9.8 9.80 9.8                          | 0.14 9.94           |
| 5.19 10.09 l 5.2 5.4           |                 |                 |                  |                        | 10.0 10.0 10.0                        |                     |
| 4.88 10.58 m                   |                 |                 |                  |                        |                                       |                     |
| 4.2 2.2 n                      |                 |                 |                  |                        |                                       |                     |
| 4.53 11.33 o                   |                 |                 |                  |                        |                                       |                     |
| 4.2 2.2 p                      |                 |                 |                  |                        |                                       |                     |
| 4.49 11.49 q                   |                 |                 |                  |                        |                                       |                     |
| 4.33 12.13 q'                  |                 |                 |                  |                        |                                       |                     |
| 4.14 12.94 r                   |                 |                 |                  |                        |                                       |                     |
| 4.14 12.94 s                   |                 |                 |                  |                        |                                       |                     |
| 4.12 13.12 t                   |                 |                 |                  |                        |                                       |                     |
| 4.01 13.71 u                   |                 |                 |                  |                        |                                       |                     |
| 3.98 13.98 u'                  |                 |                 |                  |                        |                                       |                     |
| 4.01 13.71 v                   |                 |                 |                  |                        |                                       |                     |
| Nova                           |                 |                 |                  |                        |                                       |                     |

Images from

November 5, 1919

Cepheid 38.73

Nova Ophiuchi No. 4

Scale M.

MC 16331

1<sup>st</sup>2<sup>nd</sup>

Diff. Curr Magn.

Diff. from

Group

Diff. a

Diff.

Curr Magn.

Diff.

Curr Magn.

Diff.

Curr Magn.

Diff.

Curr Magn.

A

a

a'

a<sup>2</sup>

b

c

d 2.0<sup>2.2</sup>e 2.0<sup>2.2</sup>f 2.0<sup>2.2</sup>g 3.0<sup>3.2</sup>h 3.2<sup>3.4</sup>K 3.0<sup>3.2</sup>L 4.0<sup>4.2</sup>M 4.4<sup>4.6</sup>

N 6.0

O 6.3

P 6.2

Q 7.2

Q'

R 8.2

S 8.5

S 8.5

T 9.2

U 9.6

U' 9.3

Nova. 3.3

2

4.2

5.5

6.0

6.5

6.5

7.0

7.0

7.8

7.8

7.8

8.5

8.7

9.0

9.5

9.8

10.0

A 6.0

a 6.5

a' 7.3

a<sup>2</sup> 8.0

b 7.8

c 8.0

d 8.8

e 8.9

f 8.8

g 9.6

h 9.7

i 9.8

j 9.8

k 9.8

l 9.8

m 9.8

4.35

5.5

6.0

6.5

6.5

7.0

7.0

7.8

7.8

7.8

8.5

8.7

9.0

9.5

9.8

10.0

A 6.0

a 6.5

a' 7.3

a<sup>2</sup> 8.0

b 7.8

c 8.0

d 8.8

e 8.9

f 8.8

g 9.6

h 9.7

i 9.8

j 9.8

k 9.8

l 9.8

m 9.8

4.5

5.5

6.0

6.5

6.5

7.0

7.0

7.8

7.8

7.8

8.5

8.7

9.0

9.5

9.8

10.0

A 6.0

a 6.5

a' 7.3

a<sup>2</sup> 8.0

b 7.8

c 8.0

d 8.8

e 8.9

f 8.8

g 9.6

h 9.7

i 9.8

j 9.8

k 9.8

l 9.8

m 9.8

2.48

1.33

1.36

1.23

1.03

0.99

1.08

1.09

0.92

0.98

0.93

0.87

0.79

0.5

0.8

10.0

A 6.0

a 6.5

a' 7.3

a<sup>2</sup> 8.0

b 7.8

c 8.0

d 8.8

e 8.9

f 8.8

g 9.6

h 9.7

i 9.8

j 9.8

k 9.8

l 9.8

m 9.8

2.48

1.33

1.36

1.23

1.03

0.99

1.08

1.09

0.92

0.98

0.93

0.87

0.79

0.5

0.8

10.0

A 6.0

a 6.5

a' 7.3

a<sup>2</sup> 8.0

b 7.8

c 8.0

d 8.8

e 8.9

f 8.8

g 9.6

h 9.7

i 9.8

j 9.8

k 9.8

l 9.8

m 9.8

2.48

1.33

1.36

1.23

1.03

0.99

1.08

1.09

0.92

0.98

0.93

0.87

0.79

0.5

0.8

10.0

A 6.0

a 6.5

a' 7.3

a<sup>2</sup> 8.0

b 7.8

c 8.0

d 8.8

e 8.9

f 8.8

g 9.6

h 9.7

i 9.8

j 9.8

k 9.8

l 9.8

m 9.8

2.48

1.33

1.36

1.23

1.03

0.99

1.08

1.09

0.92

0.98

0.93

0.87

0.79

0.5

0.8

10.0

A 6.0

a 6.5

a' 7.3

a<sup>2</sup> 8.0

b 7.8

c 8.0

d 8.8

e 8.9

f 8.8

g 9.6

h 9.7

i 9.8

j 9.8

k 9.8

l 9.8

m 9.8

2.48

1.33

1.36

1.23

1.03

0.99

1.08

1.09

0.92

0.98

0.93

0.87

0.79

0.5

0.8

10.0

A 6.0

a 6.5

a' 7.3

a<sup>2</sup> 8.0

b 7.8

c 8.0

d 8.8

e 8.9

f 8.8

g 9.6

h 9.7

i 9.8

j 9.8

k 9.8

l 9.8

m 9.8

2.48

1.33

1.36

1.23

1.03

0.99

1.08

1.09

0.92

0.98

0.93

0.87

0.79

0.5

0.8

10.0

A 6.0

a 6.5

a' 7.3

a<sup>2</sup> 8.0

b 7.8

c 8.0

d 8.8

e 8.9

f 8.8

g 9.6

h 9.7

i 9.8

j 9.8

k 9.8

l 9.8

m 9.8

2.48

1.33

1.36

1.23

1.03

0.99

1.08

1.09

0.92

0.98

0.93

0.87

0.79

0.5

0.8

10.0

A 6.0

a 6.5

a' 7.3

a<sup>2</sup> 8.0

b 7.8

November 13, 1919

Nova Ophiuchi No. 4

MC 16332 Oct. 20, 1919

9.3

AI 18745 Aug. 8, 1919

n.s. < 9.4

MC 10937 July 19, 1916

n.s. < 14.4

AI 18970 Oct. 18, 1919

n.s. < 8.0

MC 16331 Oct. 19, 1919

9.3

AI 18941 Oct. 8, 1919

n.s. < 8.0 poor.

AI 18923 Oct. 6, 1919

7.8

AI 18961 Oct. 17, 1919

8.7

AI 18931 Oct. 7, 1919

7.7

AI 18806 Aug. 25, 1919

n.s. < 7.7 poor.

AI 18756 Aug. 10, 1919

n.s. < 7.7 very poor.

AI 18846 Sept. 5, 1919

9.0

AI 18784 Aug. 21, 1919

n.s. < 7.7 very poor.

AI 18844 Sept. 5, 1919

9.3 poor.

AI 18749 Aug. 9, 1919

n.s. < 9.4

AI 18874 Sept. 24, 1919

to poor.

AI 19002 Oct. 28, 1919

n.s. < 7.7 very poor.

AI 18826 Aug. 28, 1919

n.s. < 8.0 poor.

November 13, 1919

Nova Ophiuchi No. 4

AI 18845 Sept. 5, 1919  
to p.m.AC 21798 Sept. 13, 1919  
7.5AI 18804 Aug. 25, 1919  
t pAC 21663 Aug. 4, 1919  
m.s. 9.4AI 18828 Aug. 28, 1919  
t pAC 20560 Oct. 3, 1918  
m.s. 10.5AI 18834 Sept. 4, 1919  
t p.AC 21710 Aug. 20, 1919  
9.2AI 18856 Sept. 13, 1919  
t p.AC 21886 Oct. 8, 1919  
7.5AI 18962 Oct. 17, 1919  
9.0AC 21635 July 27, 1919  
m.s. 9.8AI 18805 Aug. 25, 1919  
m.s. 8.0AC 21947 Oct. 28, 1919  
8.9AI 18834 Aug. 29, 1919  
m.s. 8.0AC 21962 Oct. 29, 1919  
8.9AI 18895 Sept. 27, 1919  
9.3AC 21830 Sept. 26, 1919  
8.9

November 13, 1919

Nova Ophiuchi m. 4

AC 21949 Oct. 28, 1919  
8.9I 39689 Oct. 24, 1919  
9.5AC 21724 Aug. 22, 1919  
9.0I 39684 Oct. 22, 1919  
9.4AC 21730 Aug. 23, 1919 1.00  
9.3AC 21818 Sept. 24, 1919  
t p.AC 21960 Oct. 29, 1919  
8.7AC 21860 Oct. 1, 1919  
8.7AC 21692 Aug. 11, 1919  
m. 5 L 9.4AC 21854 Sept. 29, 1919  
9.2I 39691 Oct. 24, 1919  
9.3I 39686 Oct. 22, 1919  
9.5

January 3, 1920

Nova Cygni

Meas. to determine pos.

1 20 I 39713

|               |    |    |      |     |      |     |
|---------------|----|----|------|-----|------|-----|
| a = +29° 3375 | 18 | 46 | 48.6 | +29 | 20.9 | 8.1 |
| b = +29° 3399 | 18 | 49 | 48.3 | +29 | 2.3  | 8.5 |
| c = +28° 3106 | 18 | 46 | 19.1 | +28 | 36.1 | 8.2 |

| $\frac{y}{x}$ | $\frac{x}{y}$ | $\frac{y}{x}$ | $\frac{x}{y}$ | Diff $y$ | Diff $x$ | Diff  | Diff   | mean diff.                     |
|---------------|---------------|---------------|---------------|----------|----------|-------|--------|--------------------------------|
| Nova cv       | 00            | -0.60         | +1.70         | 000      | 000      | x     | y      | x y                            |
| a +6.47       | -4.48         | +6.00         | -2.90         | +0.13    | +0.12    | -4.48 | +6.47  | -4.60 +6.60 -4.54 +6.54        |
| b -0.37       | +9.98         | -0.98         | +11.45        | +0.01    | -0.23    | +9.98 | -0.37  | +9.75 -0.38 +9.86 -0.38        |
| c -10.00      | -6.80         | -10.50        | -5.25         | +0.10    | +0.15    | -6.80 | -10.00 | -10.00 -6.95 -9.90 -6.88 -9.95 |

1 45

|          |                                   |                     |
|----------|-----------------------------------|---------------------|
|          | Diff $x \times \frac{163}{12.42}$ | Diff $y \times 163$ |
| a -56.4  | +17.8                             |                     |
| b +122.5 | -1.0                              |                     |
| c -85.4  | -27.0                             |                     |

|    |    |       |     |       |
|----|----|-------|-----|-------|
| 18 | 46 | 48.6  | +29 | 20.9  |
|    |    | -56.4 |     | +17.8 |

|    |    |      |     |     |
|----|----|------|-----|-----|
| 18 | 47 | 45.0 | +29 | 3.1 |
|----|----|------|-----|-----|

|    |    |       |     |       |
|----|----|-------|-----|-------|
| 18 | 46 | 19.1  | +28 | 36.1  |
|    |    | -85.4 |     | -27.0 |

|    |    |      |     |     |
|----|----|------|-----|-----|
| 18 | 47 | 44.5 | +29 | 3.1 |
|----|----|------|-----|-----|

|    |    |        |     |      |
|----|----|--------|-----|------|
| 18 | 49 | 48.3   | +29 | 2.3  |
|    |    | +122.5 |     | -1.0 |

|    |    |      |     |     |
|----|----|------|-----|-----|
| 18 | 47 | 45.8 | +29 | 3.3 |
|----|----|------|-----|-----|

Mean position 1855  
 Pos. 45 years  
 Position 1900

|    |    |       |     |      |
|----|----|-------|-----|------|
| 18 | 47 | 45.1  | +29 | 3.2  |
|    |    | 105.6 |     | +3.1 |
| 18 | 49 | 30.7  | +29 | 6.3  |

January 3, 1920

2 20 These magn. are only approx.

On AC 22132 Dec. 20, 1919 8.2

AC 22093 Dec. 10, " 7.8

AC 22113 Dec. 6, " 6.5

AI 19194 Dec. 17, " 6.0 and maybe br.

Have no magn. br. than 7.6 to estimate with; therefore only approx.

I 39713 Jan. 2, 1920 7.5

AC 22180 Jan 2 7.4

2 45

January 6, 1920.

10 50 Meas. to determine faint comp. stars for novae

Q 7857

|                       | $x$    | $y$    | $z$    | $y$ Diff. $x$ Diff. $y$ | Diff. $x$ x 4 me. S.                     |
|-----------------------|--------|--------|--------|-------------------------|------------------------------------------|
| $K = 1$               | -0.98  | +0.65  | +0.05  | +0.65                   |                                          |
| $M = 2$               | -0.25  | -0.25  | +0.80  | -0.45                   |                                          |
| Nov 3? = $\theta = 3$ | 0.00   | 0.00   | +1.05  | -0.05                   |                                          |
| $L = 4$               | +1.00  | +0.95  | +2.00  | +0.80                   |                                          |
| $W = 5$               | -6.45  | -7.45  | -5.30  | -7.80                   |                                          |
| $X = 6$               | -7.75  | -2.40  | -6.70  | -2.75                   |                                          |
| $Y = 7$               | +5.60  | +1.10  | +6.60  | +1.00                   |                                          |
| $Z = 8$               | +1.75  | -1.90  | +2.80  | -2.00                   |                                          |
| $\gamma = 9$          | -1.30  | +3.00  | -0.30  | +2.80                   |                                          |
| $\epsilon = 10$       | +1.00  | -0.30  | +2.05  | -0.50                   |                                          |
| $\delta = 11$         | -0.50  | +1.55  | +0.60  | +1.30                   |                                          |
| $a$                   | -12.10 | +18.25 | -11.15 | +18.00                  | -12.15 +18.15<br>+0.10 +0.20<br>-55.5498 |
| $b$                   | +27.05 | -0.75  | +28.10 | -0.85                   | +27.05 -0.78<br>+0.00 +0.05<br>+123.6726 |
| $c$                   | -19.10 | -26.98 | -17.90 | -27.25                  | -19.02 -27.09<br>-0.15 +0.22<br>-86.9594 |

11 35

|      |    |       |     |       |           |    |        |      |      |     |
|------|----|-------|-----|-------|-----------|----|--------|------|------|-----|
| 18   | 46 | 48.6  | +29 | 20.9  | 18        | 49 | 48.3   | +29  | 2.3  |     |
|      |    | -55.5 |     | +18.2 |           |    | +123.7 |      | -0.8 |     |
| 18   | 47 | 44.1  | +29 | 2.7   | 18        | 47 | 44.6   | +29  | 3.1  |     |
| 18   | 46 | 19.1  | +28 | 36.1  | Mean 1855 | 18 | 47     | 44.9 | +29  | 3.0 |
|      |    | -87.0 |     | -27.1 |           |    | 1      | 5.6  |      | 3.1 |
| 18   | 47 | 46.1  | +29 | 3.2   | (1900)    | 18 | 49     | 40.5 | +29  | 6.1 |
| Slav |    |       |     |       |           |    |        |      |      |     |

Measure stars

4

$w$   
 $x$   
 $y$   
 $z$

$K = \epsilon$   
 $L = \delta$

$H = \mu$   
 $I = K$   
 $J = \theta$   
 $K = \epsilon$

January 7, 1920

10 45

Scale R

MC 8796

Pole.

Bris. Comp. only

|    | Bris. Comp.<br>2nd | MC 8796 | Mean | Pos. | Diff.            |
|----|--------------------|---------|------|------|------------------|
| 5  | 9.7                | 9.45    | 3    | 4    | - 2.86           |
| 6  | 9.9                | 9.95    | 1    | 0    | - 2.84           |
| 8  | 11.8               | 11.70   | 1    | 1    | - 3.47<br>- 3.39 |
| 9  | 12.5               | 12.65   | 1    | 2    | - 3.82           |
| 10 | 12.7               | 12.80   | 1    | 1    | - 3.78           |
| 11 | 13.3               | 13.45   | 1    | 2    | - 3.90           |
| 12 | 13.6               | 13.70   | 1    | 1    | - 3.84           |
| 13 |                    |         |      |      |                  |

January 7, 1920

Alt. corr. +21

Scale R

MC 8800

R X Lyrae add, stars and few  
of Nova C.S.1<sup>st</sup>2<sup>nd</sup>P<sub>1</sub> Comp<sub>2</sub>

1

C<sub>1</sub> Magn.

a

10.0

b

10.2

c

9.9

d

10.8

e

11.0

f

11.2

g

11.4

h

h<sup>1</sup>h<sup>2</sup>

K

L

A

B

X

C

D

E

F

G

H

K

Nova C.S.

a

c

K

e

6.8 7.1  
7.0 7.3  
7.5 7.8Exp<sub>1</sub> 2.203

9.2 -2.76 6.44

10.0 -2.98 7.02

11.2 -3.32 7.88

11.7 -3.47 8.23

12.8 -3.78 9.02

-

7.0 7.3  
8.0 8.3Exp<sub>1</sub> 38.176

10.6 -3.15 7.46

9.8 -2.92 6.88

January 7, 1920

| Scale R | MC 8802         |                 | Pole | <u>Pris. Comp. only</u> |
|---------|-----------------|-----------------|------|-------------------------|
|         | 1 <sup>st</sup> | 2 <sup>nd</sup> |      |                         |
| 5       |                 | 9.0             |      |                         |
| 6       |                 | 10.0            |      |                         |
| 8       |                 | 11.6            |      |                         |
| 9       |                 | 12.8            |      |                         |
| 10      |                 | 12.9            |      |                         |
| 11      |                 | 13.6            |      |                         |
| 12      |                 | 13.8            |      |                         |

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January 7, 1920

Scale R MC 8856 Pole Pris. Comp. only

|    | 1 <sup>st</sup> | 2 <sup>nd</sup> | MC 8862 | Mean | Res.     | Diff. |
|----|-----------------|-----------------|---------|------|----------|-------|
| 5  | 8.5             | 7.6             | 8.05    | 5    | <u>4</u> | -1.56 |
| 6  | 9.5             | 8.5             | 9.00    | 5    | <u>5</u> | -1.89 |
| 8  | 11.2            | 10.8            | 11.00   | 2    | <u>2</u> | -2.77 |
| 9  | 12.4            | 11.7            | 12.05   | 4    | <u>3</u> | -3.22 |
| 10 | 12.9            | 12.0            | 12.45   | 5    | <u>4</u> | -3.03 |
| 11 | 13.4            | 13.0            | 13.20   | 2    | <u>2</u> | -3.65 |
| 12 | 13.6            | 13.0            | 13.30   | 3    | <u>3</u> | -3.44 |
| 13 | -               | 13.6            | 13.6    | .    | <u>0</u> | -3.30 |

January 7, 1920

Alt. corr. +22

| Scale R   | MC 8858         | RX Lyrae        | add. b. stars and c.s. of Nova on plate. |
|-----------|-----------------|-----------------|------------------------------------------|
|           | 1 <sup>st</sup> | 2 <sup>nd</sup> | 3 <sup>rd</sup>                          |
| a         |                 | 9.2             | 9.2                                      |
| b         |                 | 10.0            |                                          |
| c         |                 | 9.5             |                                          |
| d         |                 | 10.6            |                                          |
| e         |                 | 10.8            |                                          |
| f         |                 | 10.9            |                                          |
| g         |                 | 10.9            |                                          |
| A         |                 |                 | 5.8                                      |
| B         |                 |                 | 6.5                                      |
| C         |                 |                 | 6.0                                      |
| D         |                 |                 | 8.2                                      |
| E         |                 |                 | 8.5                                      |
| F         |                 |                 | 10.8-2.65                                |
| G         |                 |                 | 11.0-2.73                                |
| H         |                 |                 | 12.8-3.28                                |
| K         |                 |                 | 13.9 -                                   |
| <hr/>     |                 |                 |                                          |
| Nova c.s. |                 |                 |                                          |
| a         |                 |                 | 6.7                                      |
| c         |                 |                 | 7.5                                      |
| k         |                 |                 | 10.0-2.33                                |
| e         |                 |                 | 9.2-1.98                                 |

Pis. Comp.

Cume. mag.

log p 9:203

log p 38:77

January 7, 1920

| Scale R        | MC 8862            | Pole            | <u>Bis. Comp. only</u> |
|----------------|--------------------|-----------------|------------------------|
|                | 1 <sup>st</sup>    | 2 <sup>nd</sup> |                        |
| 5              | 7.6 <sup>2.9</sup> |                 |                        |
| 6              |                    | 8.5             |                        |
| 8              |                    | 10.8            |                        |
| 9              |                    | 11.7            |                        |
| 10             |                    | 12.0            |                        |
| 1 <sup>1</sup> |                    |                 |                        |
| 12             |                    | 13.0            |                        |
| 1 <sup>2</sup> |                    |                 |                        |
| 13             |                    | 13.0            |                        |
| 13             |                    | 13.6            |                        |

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January 7, 1920

Pole

Scale R

8772

Pris. Comp. only

|    | 1 <sup>st</sup>    | 2 <sup>nd</sup> | mc8777 | Mean  | Res. | Diff. |       |
|----|--------------------|-----------------|--------|-------|------|-------|-------|
| 5  | 7.5 <sup>7.8</sup> |                 | 7.3    | 7.40  | 1    | 1     | -0.91 |
| 6  |                    | 8.7             | 8.8    | 8.75  | 1    | 0     | -1.64 |
| 8  |                    | 10.6            | 10.8   | 10.70 | 1    | 1     | -2.47 |
| 9  |                    | 11.8            | 11.8   | 11.80 | 0    | 0     | -2.97 |
| 10 |                    | 11.9            | 12.0   | 11.95 | 1    | 0     | -2.93 |
| 11 |                    | 12.8            | 13.0   | 12.90 | 1    | 1     | -3.35 |
| 12 |                    | 13.2            | 13.2   | 13.20 | 0    | 0     | -3.34 |
| 13 |                    | 13.8            | 13.9   | 13.85 | 0    | 1     | -3.55 |

January 7, 1920

| Scale R   | MC 8775 | 63 K. | add. Br. stars  | + Nova sig.     | Alt. corr. +21  |
|-----------|---------|-------|-----------------|-----------------|-----------------|
|           |         |       | 1 <sup>st</sup> | 2 <sup>nd</sup> | 3 <sup>rd</sup> |
| A         |         |       | 11.0            | -2.59           | 8.41            |
| B         |         |       | 10.8            | -2.52           | 8.28            |
| C         |         |       | 10.0            | -2.15           | 7.85            |
| D         |         | 7.0   | 7.3             | -0.88           | 6.42            |
| 1         |         |       | 12.0            | -2.98           | 9.02            |
| 2         |         |       | 12.5            | -3.14           | 9.36            |
| 3         |         |       | 13.7            | -3.50           | 10.20           |
| 4         |         |       | 13.7            | -3.50           | 10.20           |
| 5         |         |       | -               |                 |                 |
| 6         |         |       |                 |                 |                 |
| Nova sig. |         |       |                 |                 | copied 38-77    |
| c         |         | 7.5   | 7.8             | -1.14           | 6.66            |
| d         |         | 6.5   | 6.8             | -               |                 |
| e         |         |       | 8.8             | -1.62           | 7.18            |
| K         |         |       | 9.8             | -2.07           | 7.73            |
| g         |         |       | 9.5             | -1.94           | 7.56            |
| l         |         |       | 10.5            | -2.37           | 8.13            |
| m         |         |       | 10.8            | -2.52           | 8.28            |
| n         |         |       | 11.2            | -2.68           | 8.52            |
| o         |         |       | 11.0            | -2.58           | 8.42            |
| p         |         |       | 11.8            | -2.91           | 8.89            |
| q         |         |       | 12.8            | -3.23           | 9.57            |

January 7, 1920

| Scale R | MC 8777            | Pole            | <u>Pole Comp. only</u> |
|---------|--------------------|-----------------|------------------------|
|         | 1 <sup>st</sup>    | 2 <sup>nd</sup> |                        |
| 5       | 7.3 <sup>7.6</sup> |                 |                        |
| 6       |                    | 8.8             |                        |
| 8       |                    | 10.8            |                        |
| 9       |                    | 11.8            |                        |
| 10      |                    | 12.0            |                        |
| 11      |                    | 13.0            |                        |
| 12      |                    | 13.2            |                        |
| 13      |                    | 13.9            | Copied on page 63      |

January 7, 1920

Scale R

MC 8753

Pole

Peris. Comp. only

|    | 1 <sup>st</sup>    | 2 <sup>nd</sup> | MC 8753 | Mean  | Res. | Diff.              |
|----|--------------------|-----------------|---------|-------|------|--------------------|
| 5  | 7.5 <sup>1.8</sup> |                 | 7.4     | 7.45  | 1.0  | -0.96              |
| 6  |                    | 8.8             | 8.2     | 8.50  | 3.3  | -1.39              |
| 8  |                    | 10.7            | 10.8    | 10.75 | 1.0  | -2.52              |
| 9  |                    | 11.8            | 12.0    | 11.90 | 1.1  | -3.07              |
| 10 |                    | 12.0            | 12.2    | 12.10 | 1.1  | -3.08              |
| 11 |                    | 13.0            | 13.2    | 13.10 | 1.1  | -3.55              |
| 12 |                    | 13.4            | 13.7    | 13.55 | 2.1  | -3.69              |
| 13 |                    | -               | 13.9    | 13.9  | 2.0  | -3.40 <sup>6</sup> |

January 7, 1920

alt. corr. +21

| Scale R   | MC 8754         |                 | 63 15 | add. stars         |                 | True C.S. seq.     |
|-----------|-----------------|-----------------|-------|--------------------|-----------------|--------------------|
|           | 1 <sup>st</sup> | 2 <sup>nd</sup> |       | 1 <sup>st</sup>    | 2 <sup>nd</sup> |                    |
|           |                 |                 |       | Polar Group        |                 |                    |
|           |                 |                 |       |                    |                 | Cum. Magn.         |
| A         |                 |                 |       |                    | 11.3            | -2.78 8.52         |
| B         |                 |                 |       |                    | 10.8            | -2.54 8.26         |
| C         |                 |                 |       |                    | 9.9             | -2.10 7.80         |
| D         |                 |                 |       | 7.7 <sup>8.0</sup> | <del>7</del>    | -1.18 6.82         |
| 1         |                 |                 |       |                    | 11.8            | -2.97 8.83         |
| 2         |                 |                 |       |                    | 12.0            | -3.06 8.94         |
| 3         |                 |                 |       |                    | 13.5            | -3.61 9.89         |
| 4         |                 |                 |       |                    | 14.0            | -3.68 <u>10.32</u> |
| True C.S. |                 |                 |       |                    |                 | equal 38:77        |
| c         |                 |                 |       | 7.5 <sup>7.8</sup> |                 | -1.08 6.72         |
| d         |                 |                 |       | 7.1 <sup>7.4</sup> | 8               | -0.88 6.52         |
| e         |                 |                 |       |                    | 8.2             | -1.27 6.93         |
| f         |                 |                 |       |                    | 9.2             | -1.77 7.43         |
| g         |                 |                 |       |                    | 9.0             | -1.67 7.33         |
| h         |                 |                 |       |                    | 10.0            | -2.14 7.86         |
| i         |                 |                 |       |                    | 10.3            | -2.28 8.02         |
| m         |                 |                 |       |                    | 10.7            | -2.50 8.20         |
| n         |                 |                 |       |                    | 11.3            | -2.77 8.53         |
| o         |                 |                 |       |                    | 11.2            | -2.73 8.47         |
| p         |                 |                 |       |                    | 12.1            | -3.10 9.00         |
| q         |                 |                 |       |                    | 13.0            | -3.49 9.51         |
| r         |                 |                 |       |                    | 13.0            | -3.49 9.51         |
| s         |                 |                 |       |                    | 13.7            | -3.64 10.06        |

January 7, 1920

Scale R

MC 8758

Pole

Puls. Comp. Only.

|    | 1 <sup>st</sup> | 2 <sup>nd</sup> |
|----|-----------------|-----------------|
| 5  | 7.4             |                 |
| 6  | 8.2             |                 |
| 8  |                 | 10.8            |
| 9  |                 | 12.0            |
| 10 |                 | 12.2            |
| 11 |                 | 13.2            |
| 12 |                 | 13.7            |
| 13 |                 | 13.9            |

12 20

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January 8, 1920

AC 18894

| 12       | 25    | Meas.           | to det. magn. of c.s for nova on AC Plates. |         |            |
|----------|-------|-----------------|---------------------------------------------|---------|------------|
| Scale M. |       | 1 <sup>st</sup> | 2 <sup>nd</sup>                             | Diff    | Cor. Magn  |
|          |       |                 |                                             | B1919/2 |            |
|          | 63 KA |                 | 6.8                                         | 1.88    | 2.04 8.84  |
|          | B     |                 | 6.4                                         | 2.08    | 2.11 8.51  |
|          | C     |                 | 5.8                                         | 2.24    | 2.20 8.00  |
|          | D     |                 | 4.5                                         | 2.33    | 2.36 6.86  |
|          | 1     |                 | 7.0                                         | 1.90    | 2.02 9.02  |
|          | 2     |                 | 7.0                                         | 2.15    | 2.02 9.02  |
|          | 3     |                 | 8.0                                         | 1.90    | 1.88 9.88  |
|          | 4     |                 | 8.5                                         | 1.50    | 1.80 10.30 |
|          | 5     |                 | 9.0                                         | 1.73    | 1.71 10.71 |
|          | 6     |                 | 9.2                                         | 1.65    | 1.66 10.86 |
|          | 7     |                 | 9.4                                         | 1.70    | 1.62 11.02 |
|          | 8     |                 | 10.0                                        | 1.49    | 1.49 11.49 |

|          |   |                    |     |                               |            |
|----------|---|--------------------|-----|-------------------------------|------------|
| RX Hydra | A | 3.0 <sup>3.2</sup> |     | Diff                          |            |
|          | B | 3.0 <sup>3.2</sup> |     | B19:203                       |            |
|          | C | 3.2 <sup>3.4</sup> |     |                               |            |
|          | D |                    | 4.8 | 2.00                          | 1.81 6.61  |
|          | E |                    | 5.7 | 1.49                          | 1.59 7.29  |
|          | F |                    | 6.7 | 1.53                          | 1.53 8.23  |
|          | G |                    | 7.0 | 1.46                          | 1.63 8.63  |
|          | H |                    | 7.5 | 1.98                          | 1.80 9.30  |
|          | K |                    | 8.2 | .                             | 2.04 10.24 |
|          | L |                    | 8.6 | .                             | 2.14 10.74 |
|          | a |                    | 9.0 | 2.22                          | 2.23 11.23 |
|          | b |                    | 9.2 | 2.3 <sup>2</sup> <sub>8</sub> | 2.25 11.45 |
|          | c |                    | 9.3 | 2.2 <sup>0</sup> <sub>2</sub> | 2.27 11.57 |
|          | d |                    | -   | .                             | .          |

Images on AC 18894 are decidedly elongated. No. 12.

January 8, 1920

meas. to det. magn. of c.s for nova

Scale M. AC 18894

nova c.s. 1<sup>st</sup>

|                      | 2 <sup>nd</sup> | Cu.<br>June<br>63K | Cu.<br>RX Lyman | 63K<br>Magn | RX<br>magn |
|----------------------|-----------------|--------------------|-----------------|-------------|------------|
| a 2.8 <sup>3.0</sup> | .               | .                  | .               | .           | .          |
| b 3.0 <sup>3.2</sup> | .               | .                  | .               | .           | .          |
| c                    | 4.2             | 2.39               | .               | 6.59        | .          |
| d                    | 4.2             | 2.39               | .               | 6.59        | .          |
| e                    | 4.8             | 2.33               | 1.81            | 7.13        | 6.61       |
| f                    | 5.0             | 2.31               | 1.75            | 7.31        | 6.75       |
| g                    | 5.0             | 2.31               | 1.75            | 7.31        | 6.75       |
| h                    | 5.0             | 2.31               | 1.75            | 7.31        | 6.75       |
| k                    | 5.8             | 2.20               | 1.57            | 8.00        | 7.37       |
| l                    | 6.0             | 2.16               | 1.54            | 8.16        | 7.54       |
| m                    | 6.5             | 2.09               | 1.52            | 8.59        | 8.02       |
| n                    | 6.8             | 2.05               | 1.56            | 8.85        | 8.36       |
| o                    | 6.8             | 2.05               | 1.56            | 8.85        | 8.36       |
| p                    | 7.0             | 2.02               | 1.63            | 9.02        | 8.63       |
| q                    | 7.7             | 1.92               | 1.88            | 9.62        | 9.58       |
| r                    | 7.9             | 1.90               | 1.91            | 9.80        | 9.81       |
| s                    | 8.0             | 1.88               | 1.98            | 9.88        | 9.98       |
| t                    | 8.2             | 1.84               | 2.04            | 10.04       | 10.24      |
| u                    | 8.8             | 1.75               | 2.19            | 10.55       | 10.99      |
| w                    | 9.0             | 1.71               | 2.22            | 10.71       | 11.22      |
| x                    | 9.4             | 1.62               | 2.29            | 11.02       | 11.69      |
| y                    | 9.7             | 1.55               | 2.32            | 11.25       | 12.02      |

January 8, 1920

| AC 17620                      |                      | Meas. to det. magn. of C.S. for Nova |                 |       |          |
|-------------------------------|----------------------|--------------------------------------|-----------------|-------|----------|
| Scale M.                      |                      | 1 <sup>st</sup>                      | 2 <sup>nd</sup> | Diff. | Cor Magn |
| 63K                           | A                    | 6.7                                  | 1.98            | 2.00  | 8.70     |
|                               | B                    | 6.5                                  | 1.98            | 2.02  | 8.52     |
|                               | C                    | 6.0                                  | 2.04            | 2.07  | 8.07     |
|                               | D                    | 4.5                                  | 2.33            | 2.26  | 6.76     |
|                               | 1                    | 7.0                                  | 1.99            | 1.98  | 8.98     |
|                               | 2                    | 7.2                                  | 1.95            | 1.97  | 9.17     |
|                               | 3                    | 8.0                                  | 1.90            | 1.91  | 9.91     |
|                               | 4                    | 8.0                                  | 2.00            | 1.91  | 9.91     |
|                               | 5                    | 8.8                                  | 1.93            | 1.80  | 10.60    |
|                               | 6                    | 8.7 (d.f.)                           |                 | -1.81 |          |
|                               | 7                    | 9.6                                  | 1.50            | 1.69  | 11.29    |
|                               | 8                    | 9.8                                  | 1.69            | 1.67  | 11.47    |
| R Hydrae A 3.0 <sup>3.2</sup> |                      |                                      |                 |       |          |
|                               | B 3.0 <sup>3.2</sup> |                                      |                 |       |          |
|                               | C 3.2 <sup>3.4</sup> |                                      |                 |       |          |
|                               | D                    | 5.0                                  | 1.80            | 1.79  | 6.79     |
|                               | E                    | 5.2                                  | 1.99            | 1.84  | 7.04     |
|                               | F                    | 6.6                                  | 1.63            | 2.11  | 8.71     |
|                               | G                    | 7.2                                  | 1.26            | 2.20  | 9.40     |
|                               | H                    | 7.2                                  | 2.28            | 2.20  | 9.40     |
|                               | K                    | 8.0                                  |                 | -2.32 |          |
|                               | L                    | 8.7                                  |                 |       |          |
|                               | a                    | 8.8                                  | 2.42            |       |          |
|                               | b                    | 9.0                                  | 2.52            | 2.42  | 11.42    |
|                               | c                    | 9.0                                  | 2.50            | 2.42  | 11.42    |
|                               | d                    | 9.8                                  | 2.32            | 2.40  | 12.20    |

\* Error of limit. see - exam. April 27, 1920. J.B.M.

January 8, 1920

Mass. to det. magn. of c.s. for nova.

Scale M. AC 17620

|   | 1 <sup>st</sup>    | 2 <sup>nd</sup> | Cu<br>63K | RX Lynae | 63K<br>Magn | RX<br>Magn |
|---|--------------------|-----------------|-----------|----------|-------------|------------|
| a | 3.0 <sup>3.2</sup> |                 |           |          |             |            |
| b | 3.5 <sup>3.7</sup> |                 |           |          |             |            |
| c |                    | 4.0             |           |          |             |            |
| d |                    | 5.0             | 220       | 180      | 7.20        | 6.80       |
| e |                    | 5.4             | 215       | 188      | 7.55        | 7.28       |
| f |                    | 5.7             | 211       | 194      | 7.81        | 7.64       |
| g |                    | 5.6             | 212       | 192      | 7.72        | 7.52       |
| h |                    | 5.7             | 211       | 194      | 7.81        | 7.64       |
| k |                    | 6.0             | 207       | 200      | 8.07        | 8.00       |
| l |                    | 6.5             | 202       | 210      | 8.52        | 8.60       |
| m |                    | 6.8             | 200       | 214      | 8.80        | 8.94       |
| n |                    | 7.0             | 198       | 218      | 8.98        | 9.18       |
| o |                    | 7.3             | 196       | 222      | 9.26        | 9.52       |
| p |                    | 7.5             | 195       | 225      | 9.45        | 9.75       |
| q |                    | 7.7             | 194       | 228      | 9.64        | 9.98       |
| r |                    | 7.8             | 193       | 230      | 9.73        | 10.10      |
| s |                    | 7.8             | 193       | 230      | 9.73        | 10.10      |
| t |                    | 8.5             | 184       | 237      | 10.34       | 10.87      |
| u |                    | 8.6             | 182       | 239      | 10.42       | 10.99      |
| w |                    | 8.7             | 181       | 240      | 10.51       | 11.10      |
| x |                    | 9.0             | 177       | 242      | 10.77       | 11.42      |
| y |                    | 9.8             | 166       | 240      | 11.46       | 12.20      |

1. 30

January 9, 1920

1 55 MC 8754 2 nels Curv. magn.

[illegible]

|   | $\frac{1}{2}$ sec | $\frac{1}{2}$ sec | diff. | Orim. mag. |
|---|-------------------|-------------------|-------|------------|
| c |                   |                   |       |            |
| d |                   |                   |       |            |
| e |                   |                   |       |            |
| f |                   |                   |       |            |
| g |                   |                   |       |            |
| h |                   |                   |       |            |
| i |                   |                   |       |            |
| j |                   |                   |       |            |
| k |                   |                   |       |            |
| l |                   |                   |       |            |
| m |                   |                   |       |            |
| n |                   |                   |       |            |
| o |                   |                   |       |            |
| p |                   |                   |       |            |
| q |                   |                   |       |            |
| r |                   |                   |       |            |
| s |                   |                   |       |            |
| t |                   |                   |       |            |
| u |                   |                   |       |            |
| v |                   |                   |       |            |
| w |                   |                   |       |            |
| x |                   |                   |       |            |
| y |                   |                   |       |            |
| z |                   |                   |       |            |
| a |                   |                   |       |            |
| b |                   |                   |       |            |
| c |                   |                   |       |            |
| d |                   |                   |       |            |
| e |                   |                   |       |            |
| f |                   |                   |       |            |
| g |                   |                   |       |            |
| h |                   |                   |       |            |
| i |                   |                   |       |            |
| j |                   |                   |       |            |
| k |                   |                   |       |            |
| l |                   |                   |       |            |
| m |                   |                   |       |            |
| n |                   |                   |       |            |
| o |                   |                   |       |            |
| p |                   |                   |       |            |
| q |                   |                   |       |            |
| r |                   |                   |       |            |
| s |                   |                   |       |            |
| t |                   |                   |       |            |
| u |                   |                   |       |            |
| v |                   |                   |       |            |
| w |                   |                   |       |            |
| x |                   |                   |       |            |
| y |                   |                   |       |            |
| z |                   |                   |       |            |
| a |                   |                   |       |            |
| b |                   |                   |       |            |
| c |                   |                   |       |            |
| d |                   |                   |       |            |
| e |                   |                   |       |            |
| f |                   |                   |       |            |
| g |                   |                   |       |            |
| h |                   |                   |       |            |
| i |                   |                   |       |            |
| j |                   |                   |       |            |
| k |                   |                   |       |            |
| l |                   |                   |       |            |
| m |                   |                   |       |            |
| n |                   |                   |       |            |
| o |                   |                   |       |            |
| p |                   |                   |       |            |
| q |                   |                   |       |            |
| r |                   |                   |       |            |
| s |                   |                   |       |            |
| t |                   |                   |       |            |
| u |                   |                   |       |            |
| v |                   |                   |       |            |
| w |                   |                   |       |            |
| x |                   |                   |       |            |
| y |                   |                   |       |            |
| z |                   |                   |       |            |
| a |                   |                   |       |            |
| b |                   |                   |       |            |
| c |                   |                   |       |            |
| d |                   |                   |       |            |
| e |                   |                   |       |            |
| f |                   |                   |       |            |
| g |                   |                   |       |            |
| h |                   |                   |       |            |
| i |                   |                   |       |            |
| j |                   |                   |       |            |
| k |                   |                   |       |            |
| l |                   |                   |       |            |
| m |                   |                   |       |            |
| n |                   |                   |       |            |
| o |                   |                   |       |            |
| p |                   |                   |       |            |
| q |                   |                   |       |            |
| r |                   |                   |       |            |
| s |                   |                   |       |            |
| t |                   |                   |       |            |
| u |                   |                   |       |            |
| v |                   |                   |       |            |
| w |                   |                   |       |            |
| x |                   |                   |       |            |
| y |                   |                   |       |            |
| z |                   |                   |       |            |
| a |                   |                   |       |            |
| b |                   |                   |       |            |
| c |                   |                   |       |            |
| d |                   |                   |       |            |
| e |                   |                   |       |            |
| f |                   |                   |       |            |
| g |                   |                   |       |            |
| h |                   |                   |       |            |
| i |                   |                   |       |            |
| j |                   |                   |       |            |
| k |                   |                   |       |            |
| l |                   |                   |       |            |
| m |                   |                   |       |            |
| n |                   |                   |       |            |
| o |                   |                   |       |            |
| p |                   |                   |       |            |
| q |                   |                   |       |            |
| r |                   |                   |       |            |
| s |                   |                   |       |            |

B<sub>1</sub> stars diff. + uncertain

January 9, 1920

Scale R

Mess. to det. magn. of C.S. for Nova Lyrae.

|   | MC 8775         | Curv Magn.      | diff.           | 2 <sup>nd</sup> diff. | 3 <sup>rd</sup> diff. | Primary magn. |
|---|-----------------|-----------------|-----------------|-----------------------|-----------------------|---------------|
|   | 1 <sup>st</sup> | 2 <sup>nd</sup> | 1 <sup>st</sup> | 2 <sup>nd</sup>       | 3 <sup>rd</sup>       | Diff.         |
| K |                 |                 |                 |                       |                       |               |
| L |                 |                 | 10.0            | 9.55                  | 9.5                   | -1.31         |
| m |                 |                 | 10.0            | 10.00                 | 10.0                  | -1.48         |
| n | 5.0             | 5.3             | 10.8            | 10.75                 | 10.7                  | -1.96         |
|   |                 |                 |                 |                       |                       | 3.49          |
| o |                 |                 | 12.0            | 11.25                 | 11.5                  | -2.43         |
| p | 5.7             | 6.0             | 11.5            | 11.50                 | 11.5                  | -2.32         |
|   |                 |                 |                 |                       |                       | 2.58          |
| q | 5.6             | 5.9             | 13.2            | 12.85                 | 12.5                  | -3.13         |
|   |                 |                 |                 |                       |                       | 3.82          |
| r | 5.7             | 6.0             | 13.5            | 13.25                 | 13.0                  | -3.46         |
|   |                 |                 |                 |                       |                       | 3.79          |
| s | 6.5             | 6.8             | 13.0            | 13.00                 | 13.0                  | -2.90         |
|   |                 |                 |                 |                       |                       | 3.30          |
| t | 7.7             | 8.0             | 13.8            | 13.70                 | 13.6                  | -3.33         |
|   |                 |                 |                 |                       |                       | 2.37          |
| u | 7.9             | 8.2             | 14.0            |                       |                       | -3.26         |
|   |                 |                 |                 |                       |                       | 2.54          |
| w | 8.0             | 8.3             |                 |                       |                       |               |
|   |                 | 8.40            |                 |                       |                       | 2.48          |
| x | 9.0             |                 |                 |                       |                       |               |
|   |                 | 9.0             |                 |                       |                       | 2.22          |
| y | 9.0             |                 |                 |                       |                       |               |
|   |                 | 9.0             |                 |                       |                       |               |
| z |                 |                 | 10.8            | -2.02                 | 8.78                  |               |
| α |                 |                 | 11.0            | -2.14                 | 8.86                  |               |
| β |                 |                 | 12.2            | -2.79                 | 9.41                  |               |
| γ |                 |                 | 12.2            | -2.79                 | 9.41                  |               |
| δ |                 |                 | 13.0            | -3.11                 | 9.89                  |               |
| ε |                 |                 | 12.8            | -3.02                 | 9.78                  |               |
| ζ |                 |                 | 13.4            | -3.25                 | 10.15                 |               |
| η |                 |                 | 13.7            | -3.33                 | 10.37                 |               |
| θ |                 |                 |                 |                       |                       |               |

May 3, 1920

Measures to determine magn. of Nova Lyrae -  
 2 40 Dir. est. c.s. on I 25194.

↓ Ab 22132 Dec. 20, 1919 ✓  
 8.6

↓ Ab 22113 Dec. 16, 1919  
 7.1

↓ Ab 22190 Jan. 2, 1920  
 8.2

↓ Ab 22211 Jan. 5, 1920  
 7.5 very poor, used c.s. g<sup>th</sup>

↓ Ab 22093 Dec. 10, 1919  
 8.0

↓ Ab 22379 Feb. 10, 1920  
 8.8

↓ Ab 22331 Jan. 30, 1920  
 8.8

↓ Ab 22471 Mar. 1, 1920  
 9.6

↓ Ab 22274 Jan. 15, 1920  
 8.2

↓ AI 19194 Dec. 17, 1919 19 + 30  
 6.9

↓ Ab 22305 Jan. 21, 1920  
 8.3

↓ AI 19338 Jan. 14, 1920  
 8.5

↓ Ab 22262 Jan. 14, 1920  
 8.1

↓ AI 19399 Jan. 28, 1920  
 9.2

↓ Ab 22360 Feb. 7, 1920  
 8.5

↓ AI 19545 Mar. 1, 1920  
 9.4

↓ Ab 22490 March 6, 1920  
 9.6

↓ AI 19567 Mar. 7, 1920  
 9.5

Meas. to det. magn. for nova Lyrae cont.

↓ AI 19269 Jan. 3, 1920  
m.s. < 7.5

↓ AI 19289 Jan. 5, 1920  
7.5? very poor plate.

↓ AI 19407 Jan. 30, 1920  
9.2

↓ AI 19448 Feb. 9, 1920  
9.0

↓ AI 19505 Feb. 20, 1920  
9.6

↓ AI 19528 Feb. 26, 1920  
9.4

↓ AI 19603 Mar. 23, 1920  
m.s. < 8.8 for plate.

↓ AI 19650 April 9, 1920  
gone on plate showing stars ft than. etc

AI 19258 Jan. 2, 1920  
extreme edge; t. p.

4.05

May 5, 1920

11 15 meas. to det. magn. for nova Lyrae cont.

✓ I 39714 Jan. 3, 1920  
8.3

✓ A I 19488 Feb. 16, 1920  
9.3?

✓ I 39712 Jan. 2, 1920  
8.1 Spectrum.

✓ A I 19562 Mar. 6, 1920  
t. p.

✓ I 39713 Jan. 2, 1920  
8.1

✓ A I 19640 April 8, 1920  
t. p.

✓ A B 22132<sup>80</sup> Jan. 2, 1920  
~~Dec. 20, 1919~~  
7.7

✓ A I 19658 April 10, 1920  
t. p.

✓ A I 19365<sup>80</sup> Jan. 18, 1920  
~~A I 19194 Dec. 17, 1919~~  
8.3

✓ A I 19147 Dec. 4, 1919

✓ A I 19382 Jan. 2, 1920  
8.0? images distorted

(11.55) m.s. < 8.2 exceedingly faint  
and on edge.

✓ A I 19406 Jan. 30, 1920  
8.6? very near edge

✓ A I 19055 Nov. 14, 1919  
m.s. < 9.2. from plate.

✓ A I 19418 Jan. 31, 1920  
t. p.

✓ A I 19086 Nov. 18, 1919  
m.s. < 9.2 from plate.

✓ A I 19436 Feb. 7, 1920  
8.7?

1.03 ✓ A C 21977 Oct. 7, 1919  
m.s. < 10.1



Ophiuchi



9.  $\frac{20}{11}$

Ophiuchi

7.5  
9.4  
8.2

20

Sept. 7.5

Oct 8.2

9.4











