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January 27, 1904

J Persei cont. from Book VI

I 3308, March 25, 1891
h' 4 v
v 0 θ'
v 1 θ'

Edge of plate. Image very faint and poor
I 4975, Dec. 2, 1891
θ' 2 v
v 0 K'
v 1 K

Edge of plate. Image very poor. Obs. diff.
I 3262, March 10, 1891
h' 3 v
v 1 θ

I 7628, Dec. 5, 1892
K 1 v
v 2 L

I 2853, Jan. 16, 1891
θ' 1 v
v 0 K'
v 1 K

Near edge
I 7585, Nov. 23, 1892
θ' 1 v
v 0 K'
v 1 K

Edge of plate
I 2561, Dec. 22, 1890
θ 1 v
v 0 θ'
v 1 K'

Near edge
I 7823, Jan. 3, 1893
θ' 1 v
v 0 K'
v 1 K

J Persei cont.

I 3228, March 2, 1891
θ 1 v
v 0 θ'
v 1 K'

I 13672, Oct. 6, 1895
h' 2 v
v 1 θ

I 4814, Nov. 20, 1891

I 7772, Dec. 29, 1892
θ 1 v
v 0 θ'
v 1 K'

2 stems edge of plate
I 13583, Oct. 1, 1895
h' 3 v
v 1 θ

I 4267, Sept. 19, 1891
h' 2 v
v 1 θ

Near edge of plate
I 12187, Jan. 2, 1895
h' 3 v
v 0 θ
v 1 θ'

I 13185, Aug. 5, 1895
h' 3 v
v 0 θ
v 1 θ'

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January 27, 1904

γ Persei Ant.

Edge of γ plate

I 11766, Oct. 20, 1894
h' 4 V
V 0 θ
V 2 θ'

I 10351, Jan. 1, 1894
θ 1 V
V 0 θ'
V 2 K'

Edge of plate. Images very poor

I 9456, Sept. 21, 1893
θ 1 V
V 1 θ'

I 11822, Nov. 7, 1894
h' 4 V
V 0 θ
V 1 θ'

Edge of edge of γ plate

I 9803, Oct. 29, 1893
h' 3 V
V 0 θ
V 1 θ'

I 13612, Oct. 2, 1895
h' 4 V
V 0 θ
V 1 θ'

Near edge

I 8187, March 9, 1893
θ 1 V
V 1 K'

I 10352 Jan 1, 1894
h' 4 V
V 0 θ
V 1 θ'

January 27, 1904

γ Persei Ant.

Near edge

I 4814, Nov. 20, 1891
θ 1 V
V 0 θ'
V 1 K'

Near edge of γ plate

I 13574, Sept. 30, 1895
h' 4 V
V 0 θ
V 1 θ'
~~I 6882~~

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January 29, 1904

T Pisc. nuncupus ant.

C 6583, July 3, 1894
L' 4 V
V 0 θ
V 1 θ'

C 4151, Nov. 4, 1891
θ 1 V
V 0 θ'
V 1 K'

C 6485, Jan. 19, 1894
θ 1 V
V 0 θ'
V 1 K'

C 3919, Sept. 1, 1891
L' 4 V
V 1 θ
Focus very sharp. Companion difficult

C 5365, Feb. 12, 1893
θ' 1 V
V 0 K'
V 1 K

C 6369, Dec. 29, 1893
L' 2 V
V 1 θ

C 3419, Feb. 6, 1891
L' 4 V
V 0 θ,
V 1 θ'

January 29, 1904

T Pisc ant

C 6664, March 27, 1894
L' 4 V
V 1 θ

C 5426, March 12, 1893
θ' 1 V
V 1 K'

C 5243, Dec. 20, 1892
K' 1 V
V 0 K
V 3 L
Comp. with K and L not easy matter of distance

AC 6356, Dec. 18, 1892
L' 3 V
V 1 θ

C 7069, Sept. 29, 1894
Too poor

C 3418, Feb. 6, 1891
θ 1 V
V 0 θ'
V 1 K'

C 3985, Sept. 20, 1891
L' 3 V
V 1 θ

C 5871, Aug. 13, 1893
θ' 1 V
V 1 K'

Images faint and poor

C 8860, Feb. 17, 1896
L' 4 V
V 1 θ

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January 25, 1904

T Persei cont.

C 8695, Dec. 31, 1895
θ 1V
v1K
C 3347, Jan. 24, 1891
θ 1V
v0θ
v1K
C 5896, Aug. 21, 1893
θ 1V
v1K
C 6192, Oct. 16, 1893
h 4V
v0θ
v1θ
C 7593, March 5, 1895
θ 1V
v1K
Images very faint and poor
C 3367, Feb. 1, 1891
θ 1V
v0θ
v1K
Images very bright and irregular. Comp. difficult.
C 8744, Jan. 11, 1896
θ 1V
v0K
v2K
Comp. with K difficult on account of dist.

January 25, 1904

T Persei cont.

C 8470, Nov. 11, 1895
θ 2V
v0K
v3K
C 5897, Aug. 21, 1893
θ 2V
v0K
v3K
C 3393, Feb. 4, 1891
θ 1V
v1K
Images bright and irregular. Comp. diff.
C 8466, Nov. 6, 1895
h 4V
v1θ
C 8283, Sept. 15, 1895
θ 1V
v1K
Frame from C 3394, Feb. 4, 1891
θ 1V
v0θ
v2K

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January 28, 1904

I Pasci measures of plates omitted

C 9078
Not in key

C 919, April 27, 1896
k 4 v
v 10

C 6643, March 27, 1894
k 4 v
v 10

January 28, 1904

S Pasci meas. of plates omitted

C 3347, Jan. 24, 1891
m 3 v
v 2 m

C 8245, Sept. 5, 1895
m 1 v
v 4 m

C 9119, April 27, 1896
k 1 v
v 1 l

C 3333, Jan. 16, 1891
m 2 v
v 3 m

C 8087, Aug. 2, 1895
m 2 v
v 3 m

C 5903
Broken into fragments too small to measure

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January 28, 1904

S Persei - remarkable for reason Bk III p. 217

C6589, Feb. 16, 1894
θ2 V
v1K

C6370, Dec. 20, 1893
K1V
v2L

C3351, Jan. 26, 1891
L4V
v0m
v5m

C6588, Feb. 16, 1894
θ3V
v1K

C8696, Dec. 31, 1895
K4V
v3m

Image 7 L defective

C7822, May 7, 1895
K3V
v1L

Images faint and poor

C6766, May 7, 1894
v1K

Images very faint - brighter stars to distant to compare

C6439, Jan. 7, 1894
K1V
v2L

Jan. 28, 1904

S Persei Cont

C6004 Sept. 20, 1893
L1V
v3m

C6883, July 3, 1894
θ4V
v0K
v4L

C3556, March 14, 1891
L4V
v0m
v5m

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January 29, 1904

Examination of plates to confirm certain of Variables in Nebula of Orion announced by Wolf

Apparent pos. of 80, 81, 82, 83, 84, 85, 86, 87, 88, 89 (1901) marked on plate B 8891 (Cent H

Plate I 24349 - Dec. 29, 1899 (24h 62m)
Region 7 (70) not on plate

81 Two objects, one on each plate, near indicated pos. are prismatic components. No other star near pos. shows var. from B 8891

82. Find no star on plate near pos. On B 8891, reg. is fogged but one or two stars are faintly visible - It shows fainter stars than I 24349 although brighter ones not on I 24349 as prism. Comp

83 A star in the position indicated is brighter on I 24349 than on B 8891 (marked on I 24349)

84 Can see no variation in stars near this position

85 Can see no variation in stars near this position

86 A faint star on B 8891 (pos. marked) is brighter than one following and a little ~~south~~ south of it. On I 24349 it does not appear, although the preceding star is plainly seen

87 No variation seen

88 No variation seen

89 No variation seen

Jan. 29, 1904

Exam. of Plates for Wolf's Variable Cont.

Plate I 27815 Oct. 19, 1901 15m Exp

80 None of the stars seen show

Variation - fainter stars of reg. n.s.

81 - No ~~variation~~ variation - Fainter stars not seen

82 " " " " " "

83 The star marked on I 24349 is probably still brighter than on the latter plate.

84 No variation - faintest stars not seen

85 " " " " " "

86 Susp. var. n.s. No fainter stars seen

87 No variation " " " "

88 " " " " "

89 " " " " " "

Plate I 23664	Exp.	10
23665		10
B 26639		10
B 18133		14
B 10261		10
B 10259		-

None of the above plates show stars sufficiently faint for this investigation

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January 30, 1908

Examination of Plates for Wolf's Variables in the Nebula of Orion cont.

Plate I 19335, Oct. 22, 1897 Exp. 17
Compared with B 8891

80 No variation in neg. faintest stars not seen
81 No variation seen
82 " " "
83 Suspected star bright, though stars which are brighter on B 8891 are scarcely seen
84 No variation seen
85 " " "
86 The star on this pos. seen on B 8891 is not present, though the fainter star near it is plainly seen
87 No variation seen - faintest stars not seen
88 ? " " " " " " "
89 " " " " " " " "

As B 8891 is slightly fogged the regions cannot conveniently be studied by superposition. Plate I 1935 and I 24349 have, however, been superposed with no further results.

January 30, 1908

Exam. for Wolf's Variables in Orion cont.

Plate B 25710, Nov. 13, 1900 Exp. 10 m.
80 A rather hazy image on B 8891 does not appear on this plate, though a star image apparently fainter on B 8891 is clearly seen - Image too poor for me to be certain. Plates so far examined have not shown stars sufficiently faint for comparison
81 No variation seen
82 " " "
83 Susp. star faint. This star seems certainly to be identified and confirmed
84 No variation seen
85 " " "
86
87 Suspected star n.s. No sufficiently faint stars shown unless it were much brighter than on B 8891
88 No variation. Faint stars not seen - near edge
89 " " " " " " " "

Plate B 14677 Sept. 19, 1895
83 seen bright
Other regions do not show sufficiently bright stars to make close comparison advisable. Rapid survey by means of superposition shows that no stars of those seen are noticeably brighter or fainter

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January 30, 1904

Exam. of Plates for Wolf's Variables in Orion Cont.

Plate A 3429, Dec. 17, 1898 Exp. 60

80 Region not on Plate

24 81d Nr variation seen in stars also on B8891
A number of fainter stars appear

82. Nr variation in stars also on B8891

83. Somewhat fainter than on B8891

84 Nr var. in stars also on B8891

85 " " " " " " "

86 Susp. star present and certainly fainter than the comparison star mentioned on page 16 Comparison with other stars shows that the one mentioned certainly varies, though the variation seen is small

87 A star which ought to appear faintly on B8891 but is not there seen, is marked on this plate

Near edge 88 Nr variation seen in stars also on B8891

" " 89 " " " " " " "

January 30, 1904

Exam. of Plates for Wolf's Variables in Orion Cont.

Plate A 2865, Oct. 29, 1897 1mm 3rd Comp. with A 3429

80 Not on plate

81 2 No variation seen - Fainter stars not seen

82 1 " " " " " " " "

83 faint

84 Nr. var. seen - Fainter stars not seen

85 " " " " " " "

86 Susp. star not seen nor any of the fainter stars

87 Susp. star not seen - None of the fainter stars seen

88 Near edge - too faint

89 " " " "

A 5731, Dec. 4, 1901 Exp. 420m

80 not on plate

24 81d A star (marked on A 3429) and faint on that plate is conspicuously bright on this.

82 Nr variation seen

83 Much brighter than on A 3429

84 A star (marked on A 3429) is about three grades brighter on this plate

85 Nr certain var. 3 susp. stars marked on 3429

86 About as on 3429

87 " " " " but much fainter stars seen

Near edge 88 " " " " " " " " "

" " 89 " " " " " " "

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February 1, 1904

Examination of Plates for Wolf's Variables in Omon cat

Plate A 2156, Nov. 10, 1896 Exp. 265m

80 Not on plate The star suspected on B 26570 81 is double, and both components are fainter than the following star, seen on that plate. See no reason at present to suspect either of variation - None of the stars visible on B 8891 show variation on this plate. But there are very many fainter stars on this plate

24 81 d Faint - about as on A 5731

82.5 A star (marked on A ~~21 56~~ 34 29) is about .4 mag. brighter on this plate. It is also bright (about the same) on A 5731. Another star marked (?) on ~~21 56~~ 34 29 appears to be suddenly faint on this plate, but the film is not in the best condition (These two referred to as susp. pair on page A 5731

83 ~~faint~~ bright.

84 Susp. star about as on A 5731. Other stars show no variation

85.3 No variation seen -

86 There appears to be some change in sequence of brightness, but I am not yet sure which star is affected.

87 No change seen

88 No variation seen

89 A star (marked on 5731) should appear distinctly on this plate, but is scarcely seen. The field is very near the edge and the image poor, so the is uncertain

Near edge

" "

Wolf's Variables cont.

Plate A 153, Jan. 8, 1894 Exp. 60

80 Extreme edge - No var. seen

24 81 d Not seen, though stars much fainter than (81) are seen on A 5731

82 No variation - faintest stars not seen

83 rather faint

~~83m~~ A star south of this and following is very faint on this plate (marked 3 on A ~~21 56~~ 34 29) It is faint on B 5731 2

Bright on B 8891 Very faint on A 2156

Noticably bright on A ~~21 56~~ 34 29

84.5 Fainter stars not seen. No var. seen

86 No definite difference

87 Film scratched near pos. of susp. star No change seen on these. Faintest stars not seen

88 Reg. not on plate

89 " " " "

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February 2, 1904

Wolf's Variables Continued

Plate A 192, Jan. 25, 1894 Expo. 60m

80 Reg. not on plate

24 81d Not seen, though star much fainter on 5731 as clearly seen

82 No var. seen. Fainter stars not seen

83 Medium

1 ~~83a~~ Adjacent star (preceding) faint

84 Faintest stars not seen. But if comp. star were as bright as on plate 5731, it should be visible

85 Fainter stars not seen

86 Condition of film not perfect in this region. No definite conclusion possible. No noticeable variation

87 No var. seen. Faintest stars not seen

88 Reg. not on plate

89 " " " "

Plate A 1271, Jan. 27, 1895 Expo. 150m

80 No var. compared with A 2156

24 81d Faint

2 ~~81a~~ A star about 6 mm north and 4 mm following, scarcely seen on plate A 3429 (marked on that plate) as bright on this plate and noticeably bright on A 2156, on which it is also marked faint and hazy on A 5731. Range perhaps half a magnitude. Probably one of Wolf's stars

82 No var. Ground 2 Star marked with arrow on 3429 except faint

83 bright

~~85~~ 1 Adjacent star fairly bright

84 2 images poor. No satisfactory estimate

February 2, 1904

Wolf's Variables in Orion cont.

Plate A 1271 cont

75 2 images poor — no satisfactory estimate

86 No certain variation. 2 images very poor

87 " " " " " "

88 Reg. not on plate

89 " " " "

Plate A 2119, October 6, 1896 Expo. 180

80 Extreme edge of plate. No var. seen

24 81d Faint

2 ~~81a~~ Star near it brighter. Var. app. about mag. 13

82 No var. seen

83 Very bright

1 ~~83a~~ Star near it rather bright. Var. app. about mag. 13

84 The suspected star shows no marked change; another star, however, in nearly the same declination as (83) and following the latter about 3 mm is very faint on this plate. It is about equal in brightness to a very faint star closely adjoining and following. It is marked (~~74a~~ 23) on Plate 3429. It is also faint on A 2156. It is bright on A 3429 and very bright on A 5731. Can it be Wolf's (74)? It is rather far from his position

85 The field appears about as usual but the film is not in perfect condition

86 The suspected star appears fainter than usual. But most of the faint stars of the region appear to be [illegible] in light. I find nothing definite.

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February 2, 1904

Wolf's Variables in Orion Continued

Plate A 2119 Continued

87 No definite star found, but a star marked on A 3429 appears to be brighter than usual. It is not the star mentioned on page 20 and marked ? on plate, but one following. I think that this star was probably bright on B 8891, instead of the other one being faint, as I supposed. The variation seen is less than half a magnitude.

88 No star seen. Near edge. Image from Faintest stars n.g.

89 " " " " " " " "

Note. I find that the position of 81 was not rightly marked on the plate. The star I have noted as 81 appears to be Wolf's "7, 1903"

The right position = 81d = 24

2 / 24a The variable found near 81 does not appear to be in the list of Wolf's stars.

Also the stars 24a and 23 / 24a do not appear to be in his list.

Note February 19. Star 2 is noticeably faint on plate 5731 and unquestionably bright on 2156. Other plates are not sufficiently clear for reliance to be placed upon their testimony. There is little doubt that there is a real variation of half a magnitude.

February 4, 1904

Wolf's Variables in Orion Continued.

"81, 1901"

About 6' north 7 and 3m preceding the two, grown, I find two stars less than 1' apart, both of which vary noticeably. They do not appear to be noted in Prof. Wolf's list.

The northern of the two is bright on plates A 2156

A 2156	Northern	3 / 6 star	bright	Southern	4 / 2 medium
A 3429	"	"	medium rather bright	"	"
A 5731	"	"	very faint	"	very bright
A 2119	"	"	medium		medium

Nearly as on 3429

On this plate another star preceding by about 2 mins appears faint, but the film is not in perfect condition. On the three plates mentioned above the star is always the same. It is marked on this plate.

A 1271 Northern 3 / 6 star very bright Southern 24 / 7 medium

Dup. star normal

A 192 Northern star medium Southern medium

Dup. star normal

A 153 Northern star Bright faint Southern star faint

Dup. star normal

The variation of each appears to be about a magnitude and a half, but the range of the southern is less than that of the northern.

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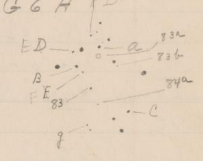
February 4, 1904
Wolf's Variables Continued

~~83 b~~ 5
A 3429 rather faint
A 153 bright
2156 rather bright
2119 as on 2156
192 bright
1271 medium
5731 medium
Range about half a mag.

February 6, 1904
Variables 83 (Wolf) ~~83a~~, ~~83b~~, 84a 23

Comparison stars on Plate A 2119
A 2 B
B 3 C
C 4 D
D 4 E
E 5 F
F 4 G
Hm.?
Plate A 3429
A 1 B
B 2 C
C 5 D
D 4 E
E 6 F
F 3 G
G 4 H
G 6 H
Plate A 5731 Exp. 420m

Plate A 2156 Exp. 265m
A 1 B
B 3 C
C 4 D
D 4 E
E 5 F
F 5 G
G 6 H FD



		Bond No.	Δα	Δδ	Magn	Pg Mag Ad 32
A 1 B						
B 0 C	A	794	+0m 27.73	+971.9	12.5	12
C 4 D	B	730	0 13.58	+1150.4	13.1	13.1
D 4 E	C	874	0 47.14	+1432.6	11.5	13.
E 5 F	D	772	0 22.30	+862.2	13.9	13.9
F 5 G	E	718	0 11.68	+1038.7	13.9	13
G 2 H'	F	749	0 16.38	+1188.6	14.5	15
G 5 H*	G	766	0 20.93	+1562.9	14.8	16

H' ?Planetary
Bright. Var?

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Feb. 6, 1904

Variables in Orion Cont.

Plate A 2119, Oct. 6, 196 Exp. 180

12.0 A 2 83 12.20 12.12 11.94

83 0 B 12.12

11.94 83 4 C 12.34

F 4 83a

83a 1 G

D 4 83b

83b 0 E

83b 5 F

G D 6 84a

84a 0 H

84a 1 K

K is not marked on plate but is the star closely adjoining 84a and somewhat south of and following it

Plate A 2156 Nov. 10, 1896, Exp. 265

C 2 (83)

(83) 3 D

(83a) n.s.

H = .2

(G H) about as usual

D 1 (83b)

(83b) 3 E

D (84a)

(84a) 0 H

(84a) 1 K

Feb. 6, 1904

Variables in Orion cont.

Plate A 3429, Dec. 17, 1898 Exp. 60m

E 5 (83)

(83) 1 F

E 4 (83a)

(83a) 2 F

D 4 (83b)

(83b) 0 E

(83b) 5 F

F 4 (84a)

(84a) 1 G

Plate A 5731, Dec. 4, 1901 Exp. 420m

D 1 83

(83) 4 E

F 5 (83a)

(83a) 0 G

(83a) 5 H

F G 5 (84a)

(84a) 0 G

(84a) 5 H

(84a) 6 K

Obs. difficult

D 2 (83b)

(83a) 2 E

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Feb. 6, 1903

Variables in Orion Cont.

Plate A 192, Jan. 25, 1894, Exp. 60

C 2 (83)
(83) 3 D

F 5 (~~83a~~ 83a')
(83a) 0 G
H n.s.

C 2 (~~83b~~ 83b')
(83b) 3 D

F (~~83a~~ 23a') n.s.
G = .2

Plate A 1271, Jan. 27, 1895

C 1 (83)
(83) 4 D
F 1 (~~83a~~ 83a')
(83a) 5 G

C 5 (83b)
(~~83b~~ 83b') 0 D
(83b) 2 E

F 6 (84a)
(~~84a~~ 23a') 1 G
(84a) 3 K
H very faint
D is faint on this plate

Feb. 6, 1903

Variables in Orion Cont.

Plate A 153 Jan 8, 1894 Exp. 60m

C bright a little brighter than B — C 7 (83)
(83) 0 D
(83) 5 E

F 6 (~~83a~~ 83a')
(83a) 0 G
H n.s.

B 4 (~~83b~~ 83b')
(83b) 6 D

F 4 (~~84a~~ 23a')
(84a) 2 G

Plate A 2154, Nov. 9, 1896 Exp 123m

D faint — B 3 (83)
(83) 0 C
(83) 6 D

G = .3
(~~83a~~ 83a') n.s.
H n.s.
F 4 g

Faintness greatly increased Feb. 9. Some days from — E 3 (~~83b~~ 83b')
(83b) 3 F

(~~84a~~ 23a') n.s.

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Feb. 6, 1904

Variables in Orion Cont.

Plate A 164, Jan. 13, 1904 Expo. 20m
Trails.

D faint Plate A 5730, Dec. 3, 1901 Expo. 60m
B 2(83)
(83) 1 C

F 1(83a)
(83a) 4 G

E 1(83b)
(83b) 4 F

F 4(84a)
(84a) 2 G
K is badly marked.
82

Plate A 1270, Jan. 25, 1895 Expo. 25m
A 1(83)
(83) 1 B
Images very faint. No others of the variables can be recognized. Plate not in best condition.

Feb. 6, 1904

Variables in Orion Cont.

Plate A 205, Jan. 31, 1894
C 2(83)
(83) 1 D
Images very faint. Obs. not easy.
Other variables cannot be detected.

Plate A 166, Jan. 19, 1894 Expo. 20m
Trails.

Plate B 8891 Expo. 60m
D 2(83)
E Nil.

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Feb. 9, 1904

Search for Wolf's Variables 39, 40, 41, 42, 44, 36, 1903
in the Nebula of Orion.

Plate A 5731, Dec. 4, 1901. Compared with 2156 3429
36 Reg. about as on 2156 3429
39 Star marked on 2156 3429 considerably fainter on this plate
Another star marked a is also fainter
40 Star marked with arrow considerably brighter than on 3429
Several stars appear to show variation

Examination of X plates for Variable in Orion

None of the plates of short exposure 10m show stars sufficiently faint.

Plate X 5255, Sept. 18, 1893 Exp. 480m
Most of the faintest stars thus far observed can be seen on this plate, though not as clearly as on the A plate

Plate X 5242 Sept. 15, 1893 Exp. 180m
The faintest star of seq. seen is k. Only the brighter of the variables can be observed

Plate X 5503, Dec. 5, 1893 Exp. 151 m
The faintest star seen is E. Only the two brightest variables seen, so could be seen

Plate X 7351, March 9, 1896 Exp. 15m
Star B of sequence is seen

Plate X 7352, March 9, 1896 Exp. 15
Stars A and B not seen

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February 10, 1904

Examination of short exp. A Plates for Variables in Orion

Plates A 2863, 2864, 2865, 3422, 3423, 3424,
Each of these plates was exposed for ten minutes and is of quality 4. On all of them "83, 1901" could be seen, and usually "83 b". The faintest star of the sequence seen is E on the best plates, usually C or D.
None of the fainter variables could be observed

Examination of B and I plates for Variables in Orion

Plate I 28271, Jan. 17, 1902 Exp. 28 m
Companion star D just seen. "83, 1901" appears to be present, and possibly a grade fainter than D. This plate is of excellent quality. Yet the images of stars A and B are very faint and comparison of 83 would not be entirely safe, even if it were bright.
Plate I 19338, Oct. 22, 97 Exp. 17 m
Companion star E seen
Brighter variables can be observed
Plate I 24349, Dec. 29, 1899 - Exp. 62 m
Companion star E still the brightest seen. All images, however are much clearer - Some of the fainter stars might possibly be found at maximum.
Plate B 14677, Sept. 9, 1895 Exp. 10 -
Stars A and B just seen - too faint to use easily in any comparison.
Plate B 16570, Nov. 13, 1900 Exp. 10 m
Star E seen fairly clearly - Could be used for brightest variables.
Plate B 7891 - E faintest of seq. Exp. 384 m
2312 " just seen Exp. 90 m
2335 " " " Exp. 127 m
2325 " " " Exp. 187 m
On the above 4 plates the brighter stars can be well observed. The faint ones cannot be seen

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Feb. 10, 1904

Examination of B and I plates ant.

Plate B 20667 Exp. 25^m
Faint stars seen distinctly

Plate B 10249 Exp. 24^m
A and B not seen

Plate B 10250 Exp. 80^m
7 just seen ?
There is a slope each side of 83, one preceding, the other following, and south and north which I have not seen before. What are they ? (Marked on plate)

Examination of Plates for Wolf's 49, 1903 and 41, 1903

Plates compared with A 3429

X 5255
10 ~~40c~~ 40 Faint as on 3429 (for Identif. see p. 36
11 ~~40f~~ 41 Fainter than on 3429
Marked on X5255 40 R " " " "
" " " 6 ~~40a~~ R Brighter " " "
7 ~~40b~~ R Much brighter than on 3429

X 5503, Dec. 5, 1893
Too faint

X 5242 Sept. 15, 1893 Exp. 18^m
~~40c, f~~ 40, 41 too faint
40 R as on 3429
6 ~~40a~~ R much brighter than on 3429 Probably. Feb. 19
7 ~~40b~~ R Brighter " " "

A 5731
10 ~~40c~~ 40 bright
11 ~~40f~~ 41 bright
40 R rather faint
6 ~~40a~~ R bright Not conf. Feb. 19
7 ~~40b~~ C rather faint

A 2156
10 ~~40c~~ 40 faint as on 3429
11 ~~40f~~ 41 medium
40 R as on 3429
6 ~~40a~~ R " " " "
7 ~~40b~~ R rather brighter
Marked on X5255 8 40c R intensely faint

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Feb. 10, 1904

Orion Variables cont.

Also A 5730

40c as on 3429

11 40f 4f not seen. The nebulosity seems to have blotted out all the faint stars in this reg.

40 x very faint - probably Wolf's 40

6 40a x brighter than on 3429 Not conf. Feb. 19

7 40b x as on 3429

8 40c x " " "

A 2119 Oct. 6, 1896

10 40e 40 as on 3429

11 f 4f faint

40 x faint - Dam quite convinced that this is 40

6 a x As on 3429

7 b x rather bright

8 c x decidedly bright

A 2154, Nov. 9, 1896

40e ~~bright~~ normal

11 40f 4f rather bright

40 x very faint

Not Feb. 19 6 40a x bright This is clearly seen

7 40b x as on 3429

8 40c x As on 3429, or a little fainter

A 153

40e normal

11 40f 4f too faint to estimate

40 x bright

6 40a x rather bright Not conf. Feb. 19

7 40b x as on 3429

8 40c x very faint

Mentioned on X 5255 9 x x bright?

Orion Variables continued

Variable 12 36a = Bond 288

A 5731	faint	A 2154 faint
A 3429	bright	
A 2156	faint	
X 5255	bright	
X 5503	bright	
X 5542	very faint	
A 5730	faint	

Variable 36, 1903

A 3429	faint
A 2156	bright
A 5731	rather bright
X 5255	faint
A 5730	rather bright

Variable 39, 1903

A 3429	faint
A 2156	bright
X 5255	faint
A 5731	rather bright
A 2119	decidedly bright
A 5730	rather faint

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February 12, 1904

Orion Variables continued

Variable 42, 1903

Plate I 5255 very bright
a 3429 faint
a 2119 medium
a 2156 medium
a 5731 very faint
a 5730 faint

Variable ~~42a~~ 13

Plate I 5255 faint
a 3429 bright confirmed Feb. 19
a 2119 faint
a 2156 medium
a 5731 medium
I 5242 faint
a 2154 faint about as on 2156 ~~also~~ Feb. 19

Variation about a magnitude or less

Variable ~~42b~~ 14

Plate a 2156 ~~very~~ bright
a 3429 rather faint
I 5255 rather bright
a 2119 faint
a 5731 rather faint comp. diff
a 2154 faint
a 192 bright
a 5730 faint

The variation of this star is not great, but appears on the whole to be certain

February 12, 1904

Orion Variables continued

Variable 44, 1903 (?)

Plate 3429 faint
a 2119 bright - noticeable
a 192 faint
I 5255 faint
a 5730 very faint - not seen
a 2156 medium
a 2154 very faint
a 5731 extremely faint

Variation about a magnitude

Variable ~~44a~~ 15

Plate a 3429 faint
a 2119 faint
a 5730 bright
I 5225 medium
a 192 faint
a 2156 faint
a 2154 faint
a 5731 bright

The variation of this star appears to be about ½ magn

Variables ~~4~~ 13, 42b, 14, 44, 44a 15 are difficult to observe because they are involved in shiny nebulosity. Most of the stars show fluctuations, and other variables are likely to be found in the region.

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February 16, 1903

Examination of plates for Wolf's Variables 38, 45, 46, and search for 50, 82, 43, 16 38a Also Examination of 46a, 17 and 46a. All in Nebula of Orion Also star D of reg of Plates compared with A 3429

A 2156.

38 Very bright

45(?) Of two faint stars the southern is brighter in this plate

46 Decidedly brighter

50 No change seen in reg.

82 A star scarcely seen on 3429 and marked on that plate is here very plainly seen. It is very faint and may not be variable

No 18 shows Halved

18 83c 43a Star marked on this plate is apparently fainter than on 3429. The segment adjoins that of 83 and apparently would form the pinnacle of Variables

D as on 3429

16 38a faint

46a faint

19 83d 43c 43(?) As on 3429

A 1271

38 brighter than on 3429

45(?) Northern star the brighter - very faint

46 Rather brighter

50 No change seen

82 " " "

18 83c 43a As on 3429

19 83d 43c 43(?) medium

Variables in Orion Continued

Plate A 1271 Continued

16 38a faint

17 46a faint

D no change seen

Plate A 5731

38 faint

45(?) southern star the brighter

46 very faint

50 No Change seen

82 The star noted on 2156 as 3. fainter than seen

18 83c 43a No change seen 19 83d 43? 46a bright

16 38a faint

17 46a faint

D No change seen

Plate A 5730

38 faint

45(?) not seen - too faint in reg

46 faint

50 very faint - image poor

82 Not seen - too poor

16 38a " "

17 46a " "

D

18 83c 43a fainter than on 3429

19 83d 43c A star near by, marked (?) is noticeably bright and fits Wolf's 43

D somewhat fainter than on 3429

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February 16, 1903

Variables in Orion continued

A 2154

38 very bright
45(?) Too poor
46 rather bright (not nearly as bright as on 2156
50 faint (in comparison with 2156
82 Too faint
18 ~~43a~~ 43a Very faint (about as on 2156
19 ~~43b~~ 43b 43(?) No change seen (as on 2156
D As usual
16 ~~38a~~ 38a Too faint
17 ~~46a~~ 46a " "
4

A 153 Jan. 5, 1894

38 very faint
45(?) Too poor
46 bright
50 faint
82 Too faint
18 ~~43a~~ 43a Bright
19 ~~43b~~ 43b 43(?) No change seen
D rather bright?
16 ~~38a~~ Too poor
17 ~~46a~~ " "

A 1270 Too poor

X 5503

18 ~~43a~~ 43a medium
19 ~~43b~~ 43b 43(?) bright
D as usual

Variables in Orion continued

A 192 - Jan. 25, 1894

38 medium (much fainter than on 153
45(?) Northern star decidedly bright - southern not seen. The image is faint, but comparison with other images on this plate and on 3429 seem to show real variation
46 bright
50 very faint
82 Too faint
18 ~~43b~~ 43a rather faint?
19 ~~43b~~ 43b 43(?) rather bright?
D As usual
16 ~~38a~~ Too poor
17 ~~46a~~ " "

The images on this plate are fair. Difficult on account of observations on 43 and 43(?) The differences between all the stars of the region are smaller than usual.

X 5225

Region 1. 38, 45, 46, 50, 38a, 46a not on plate
18 ~~43c~~ ~~43a~~ bright (as on 3429)
19 ~~43b~~ 43b 43(?) As on 3429
D As usual

X 5242

18 ~~43c~~ ~~43a~~ very bright
19 ~~43d~~ ~~43b~~ 43(?) very faint
D as usual

For A 2119 see page 52

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Feb. 16 1903

Variables in Orion continued

The variation in 35 and 46 is very marked. 45 is the only star near Wolf's position which shows any variation. It is very faint, so that the reality of variation may be open to some question. The appearance is of genuine variation, however.

The variation of ~~22c~~ 18 ~~43~~ is considerable, being especially well seen on the I plate. So also ~~23d~~ 19 ~~40a~~

52 is a very faint star, but there appears to be a real variation not to exceed half a magnitude.

~~16~~ ~~41~~ is faint and the variation doubtful

~~17~~ ~~42~~ is probably variable but appears bright only on one plate. It is difficult to observe

82 is the only star near Wolf's position which shows any sign of variation. It is extremely faint and no satisfactory observation has been made

D appears to fluctuate in brightness but observation is difficult on account of nebulous surrounding.

There is a bright star near 38 which is not on Bond's map. It appears on all the plates and has not changed its position during the past two years. I find no variation.

Coordinates about $-0^m\ 54^s\ -76°$

February 17, 1903

Examination of Plates for Wolf's Var: 43, 1903. Also re-examination for 46

Plates compared with A 3429

Plate A 1271

No var. seen in pos. of 43 - Two stars near by show variation as follows

Wolf's 48 ~~20~~ ~~43a~~ much brighter than on 37 27

21 ~~43b~~ greatly brighter - a striking degree of variation

41 Star marked 41(?) appears fainter on this but the images are not very good

Plate A 2154

~~20~~ 43 ~~43a~~ slightly brighter than on 3429

21 ~~43b~~ slightly brighter than on 3429

41 No variation seen in star marked var any other

43(?) as on 3429 (see remark next page on I 5255)

Plate A 5730

~~20~~ 43 ~~43a~~ bright

21 ~~43b~~ very faint

22 ~~43c~~ very faint

41 Little if any difference seen

43(?) as on 3429

Plate I 5255

~~20~~ 43 ~~43a~~ very bright

21 ~~43b~~ very faint

22 ~~43c~~ " "

41 No variation seen

Plate A 5731

~~20~~ 43 ~~43a~~ bright

21 ~~43b~~ very faint

22 ~~43c~~ " "

41 No var seen

Pos of 43 is much burnt out for obs.

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Feb. 17, 1903

Variables in Orion Continued

X 5255 (see also prev. progs)
I find a star near pos. of Wolf's 43 which appears unduly bright. Is it 43?

Plate A 2119

43? No certain change. The nebulosity makes observation difficult

~~43a~~ As on 3429

~~43b~~ very faint

~~43c~~ As on 3429

41 No certain change

Plate A 2119 - Exam for 38, 45, 46, 50, 82, 16 38a, 17 46a, 18 53c, 19 53d

38 very bright

45(?) Northern star very bright

46 Bright

50 Faint - unquestionably

82 No variation seen

16 ~~34a~~ Faint. I doubt the real variation of this star

17 ~~46a~~ Not seen. This star is quantly brighter on A 3429 than on A 5731. On the latter it is barely seen as an extremely faint star. I find it bright on two Orion plates taken 3429.

18 ~~53c~~ Bright

19 ~~53d~~ Bright

Variables in Orion Continued
Examination for 43, 43a, 43b, 43c, 41 Continued

Plate A 192

43 No certain var. seen

20 ~~43a~~ medium

21 ~~43b~~ very faint

22 ~~43c~~ " "

41 No certain change

The images on this plate are poor and comparison difficult.

Plate A 2156

43 No variation seen

20 ~~43a~~ faint

21 ~~43b~~ faint

22 ~~43c~~ rather bright (fainter than on 3429

41 No change seen

Plate A 153

43 No variation seen

20 ~~43a~~ medium

21 ~~43b~~ very faint

22 ~~43c~~ " "

41 No certain change

Plate I 5242

43 No Variation

20 ~~43a~~ medium

21 ~~43b~~ very faint

22 ~~43c~~ " " not seen

41 [illegible]

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February 19, 1904

Variable Stars in the Nebula of Orion

Search for Wolf's variables 33 34, 35, 47, 53, 54, 48, 87

Plates compared with A 2156

A 3429 53a bright

34 Star near this pos. faint ?

35 No change seen. A very faint star is missing, but the field is near the edge of the plate and images are poor

47 No variation seen near position

53 " " " " "

54 Reg. not on plate

48 " " " "

87 No variation seen near position

47b faint bright as on 2156

A 2119

34 As on plate 2156 53a as on 2156

35 " " " " 53b Remark

33 " " " "

47 " " " "

54 Reg. not on plate

48 " " " "

87 As on plate 2156

47a brighter than on 2156

47b faint

A 5730

33 No change observed

34 Region of 34 and 35 is on the edge

35 of the plate. No variation is seen but the images are poor and fainter stars not on plate

47 See Remarks on 34 and 35

With the preceding 2 very faint stars near pos. of 47 appear bright, but the images have an appearance of being affected

Variables in Orion continued

Plate A 5730 continued

53 A star considerably north of this position is markedly faint on this plate. Not a very faint star

Pos. from DM chart is $5^h\ 33^m - 6°\ 21'$ (app. 1904)

Wolf's pos. is $5^h 35^s.7 - 6° 29' (1903) = 5\ 37^m.4 - 6°\ 35''$ (1855)

Can this be Wolf's star

54, 48 region not on plate

87 The condition of a pair of stars near this position appears unduly faint. The images are poor. The difference, if real, is very slight. No other change seen in region

Plate A 1271

34 and 35 no variation found in region

33 No variation observed

47 " " "

47a A star following the position and 47 north of it by fully 15" is bright on this plate

25 47b Another star preceding the latter is rather faint

20 53a faint

53b Another star preceding appears to be faint, but the images are poor

54, 48 No change found. Images poor. Field on plate 2156 is close to edge of plate

87 No certain change seen.

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February 20, 1904

Variable Stars in the Nebula of Orion

Search for Wolf's Variables 33, 34, 35, 53, 54, 48, 87, 47 and 53

Plate A 5731

33 No change seen from 2156

34 and 35 No change in immediate region

54 and 48 Region not on plate

53

47a bright

Continued page 72

Examination of plates for Wolf's stars 37, 1903, 41, 1903, 85, 1901, 81, 1901, not yet completed. Also noticing position of 84, 1901 and 84, 1901 (the latter sup. with 3429 ~~3456~~

41, 1901 Comp. stars Bond 473 (−0 27.3 − 25 30.1)
444 (−0 34.2 − 22 0.4)
465 (−0 27.6 − 28 4.2)

85, 1901 Comp. Stars Bond 957 (+1 23.2 +9 39.0)
(+1 20 +12.6

81, 1901 Comp. stars Bond ~~404~~ (−2 ~~19~~ 2.0 +6
84 (−2m 8.2 + 46′ 7.″4)
~~78~~ (−2 10.5 +
77 (−2m 10.3 + 48′ 27.″0

84, 1901 Comp. Stars Bond 718 and Bond 749

Plate A 2156

(473) 5 (41)
(41) 3 (444)

(957) 6 (85)
(85) 4 (01201L)

(Bond 84) 4 (81)
(81) 2 (77)

37

This page is superseded as some changes were made in Comparison stars.

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February 24, 1904

Examination of plates for Wolf's Variable

37, 1903; 41, 1903; 81, 1901; 82, 1901; 84, 1901; 85, 1901

37, 1903 Comp. Stars Bond ~~87~~	206, 219
41, 1903	444, 473
81, 1901	84, 77
82, 1901	444, 578
84, 1901	718, 749
85, 1901	794, 824 (730)

37a 37 (=37, 1903

Plate A 5429

(206) 1 (37a)
(37a) 1 (219)
37, 1903 37 + n.s.

(473) 3 (41)
(41) 4 (444)

(84) 2 (81)
(81) 3 (77)

(444) 2 (82)
(82) 4 (578)

(718) 4 (84)
(84) 1 (749

(824) 3 (85)
(85) 1 (794)

Feb. 24, 1904

Wolf's Variable continued

Plate A 5731

(37a) 1 (219)
Image of 206 defective
(37a) 3 (37b)

(473) 2 (41)
(41) 3 (444

(84) 1 (81)
(81) 4 (77)

(444) 4 (82)
(82) 5 (578)
(444) appears rather brighter than usual
(718) 2 (84)
(84) 2 (749)

(824) 2 (85)
(85) 2 (794)

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February 24, 1904

Wolf's Variables continued

Plate A 219

(206) 1 37a

37, 1903 (37a) 1 219 See chart page 58

37, 1903 (37b) 0 (206)

(37b) 2 219

This star, 37b occupies almost the exact position of Wolf's 37 - The difference between this plate and 5731 is marked. Doubtless this is Wolf's variable

(473) 6 (41)

m 1 (41)

(41) 3 (444)

41?

m

(34) 3 (81)

(81) 3 (77)

(444) 2 (82)

(82) 3 (578)

(718) 3 (84)

(84) 2 (749)

824 5 (85)

(794) 1 (85)

(85) 0 730

February 24, 1904

Wolf's Variables continued

Plate A 2156

(206) 2 (37a)

(37a) 0 (219)

(37a) 3 (37b)

(473) 5 (41)

(41) 4 (444

(41) 0 m

(84) 2 (81)

(81) 4 (77)

(444) 2 (82)

(82) 5 (578)

A star a marked on 3429 appears much brighter than on ~~3429~~ 2156

Another star (b) appears much fainter than on 3429. It is involved in very strong nebulosity, but comparison with stars equally involved seems to make a considerable degree of variation probable

(718) 3 (84)

(84) 2 749

(824) 1 (85)

(85) 3 (794)

This star (85) is certainly brighter on this plate than on plate 3429

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Wolf's Variables continued

Plate A 1271

37a and 37b are to faint for estimate, but appear to be in about the usual relation to each other, i.e. as on plate 5731

(473) 6 (41)
(41) 2 444)
m 1 (41)

Comparison is difficult as the images are poor. 41 looks very faint

84 2 (81)
(81) 2 77

(444) 2 (82)
(82) 3 (578)

(a) noticeably faint
(b) as on 2156

(718) 4 (84)
(84) 1 (749)

(624) 7 (85)
~~84~~ (794) 1 (85)
(85) 0 (730)

Wolf's Variables continued

Plate A 192

(84) 1 (37b)
37.1903 (37b) 4 (77)

Wolf's 37 is found! This plate does not show the faintest stars and was not before examined for this star. The stars with which it was compared before are too faint to appear on this plate. 37a is not seen

(473) 6 (41)
(41) 2 444
m 1 41

(84) 1 (81)
(81) 4 (77)

(444) 2 (82)
(82) 4 (578)

a faint?
b as on 2156

(718) 4 (84)
(84) 1 749.

(794) 1 85
(85) (0 730)

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February 24, 1904

Wolf's Variables in Orion continued

Plate A 2154

37 not seen

$47^3 = .2$

(473) 6(41)
(41) 2(444)
41 1 m
The star appears more than usually bright

(84) 3(81)
(81) 3(77)

(444) 1(82)
(578) too faint for comparison

a too faint
b as on 2156

(718) 4(84)
(84) 1(749)

(824) 3(85)
(85) 2(794)

February 24, 1904

Wolf's Variables in Orion continued

Plate A 5730

37 too faint

(473) 4(41)
(41) 3 444
41 1 m
This star is surely bright

(84) 4(81)
81 2(77)

(444) 1(82)
(82) 3(578)

a as on 2156
b " " "
c A star near b is unduly bright
84 as on Ellis plate

(824) 3(85)
85 2(794)

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February 24, 1904

Wolf's Variables continued

Plate A 153

37 too faint

(473) 4 (41)
(41) 3 444
(41) 2 m

(81) 0 (84)
(81) 5 (77)

Images very fine. Do not attach much weight to this observation

(444) 4 82
(82) 2 (578)

Obs. not satisfactory

a faint?
b as on 2156
c " "
d bright.

(Probably d is the variable rather than 1a, or both may vary. These four suspected stars are all marked on this plate

84 as usual

(824) 5 (85)
(85) 0 (794)
(85) 2 (730)

Wolf's Variables continued

Plate X 5255

37 too faint

(473) 1 (41)
(41) 6 (444)
(41) 2 m

81 0 (84)
(81) 5 (77)

(444) 2 (82)
(82) 7 (578)

a usual
b as on 2156
c bright
d faint

(718) 4 (84)
(84) 2 (749)

(794) 1 (85)
(85) 0 (730)

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February 24, 1904

Wolf's Variables continued

Plate I 5242

37 too faint

(473) 2 (41)
(41) 5 (444)
41 473 2 m

71 too faint

(444) 4 (72)
(52) 3 (578)

a image extremely faint: normal?
b as on 2152
c " " "
d bright (otherwise it could not be seen;
it is clearly seen, brighter than 578

79 as well

(794) 2 (85)
85 0 (730)

Feb. 24, 1904

Wolf's Variables cont.

Plate I 5503

37 too faint

(473) 1 (41)
(41) - (444) Enlarged too great to est.
(41) 3 m

71 too faint
&
72 too faint
a and d too faint
b and c normal

84 too faint

(794) 3 (85)
(730) 1 (85) Images poor

February 27. Remark on 85, 1901. This star shows minor fluctuations on the A plates. It would be difficult from their testimony to confirm absolutely the variability of the star. Comparing the three I plates, however, the variation is clear. On plate I 5503 it is unmistakeably and markedly faint

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February 25, 1904

Measures to determine positions of variables near Hilf's variables 47, 1903 and 53, 1903

Position of 47 b = 25,

						1 =	-6° 12'.9	5h 32m 42s	-6° 11'.0	
(Diff x) x 4		X	Y	Diff x	Diff y	2 =	-6° 12'.8	41.5	38.1	
- 54.40		+13.95 5.580	+15.90							
		+14.15 -3.44	+15.95	-14.85	-5.75	3 =	-6° 12'.8	33 28.8	15.0	
		+ 0.10 +6.40	+10.15							
	4	+ 0.50 = 2.02	+10.20			4 =	-7° 11'.5	29 57.7	-7° 9'.4	
+44.80	5	+25.15 = 10.060	+36.60	+11.20	+20.70	5 =	-6° 12'.6	31 38.2	-6° 43'.0	
+60.00	6	+28.95 = 11.580	+ 0.80	+15.00	-15.10	6 =	-7° 11'.2	57.9	-7° 18'.3	
Sum, Regular Mean Diff										
		+13.95 = 5.580	+15.90							

Position of 53a = 20,

		X	Y	Diff x	Diff y	(X) x 4
				-14.65		
		+16.25 6.500	+18.00	-15.35	+10.80	- 58.60
	1	+1.60 6.4	+28.00	- 6.20	-17.05	- 20.80
	2	+11.05 4.420	+ 0.95			
	3	+23.55 9.420	+24.30	+ 7.30	+6.30	+ 29.20
		+16.25 6.500	+18.80			

(47b)

(4) 5h 29m 57.7 -7° 9' 4

(5) -54.4 - 5.75

5 30 52.1 -7 3.65

(5) 5h 31m 38s.2 -6° 43'.0

+ 44.8 + 20.7

5 30 53.4 -7 3.7

(6) 5h 31m 57s.9 -7° 18'.3

+60.00 - 15.10

5 30 57.9 -7° 3.2

(53a)

(1) 5h 32m 4s.8 -6° 11'.0

-58.6 +10.0

-54.4 -5.75

5 32 57.2 -6 5.25

5 33 3.4 -6 21.8

(2) 5 32 41.5 -6° 38'.1

- 20.8 -17.05

+44.8 +20.7

5 31 56.7 -6 +7.4

5 33 2.3 21.05

(3) 5 33 28.8 -6° 15'.0

+29.20 +6.30

+60.0 -15.1

5 32 28.8 -6° 59.9 -6° 21.3

February 25, 1903

Mean position 47 b = 5h 30m 52.4s -7° 3'.5 (1855)

" " 53a = 5 33 1.8 -6° 21.1 (")

Corr. prec. in α = 2s.91 Corr. prec. in δ = +2".54 for 47 b; +2.35 for 53a

14 55	12 70	11 75
11 6 4	10 1 6	9 4 0
145 5	2 7 0	11 75
5 m s	1 1 4.30	105.75
+ 1600.5 = 2 42	2 3 9.70	+2 9.25
+ 130.95 = 2 10.9	+ 3' 19'.7	+ 3' 9".25

Position of 47 b = 5h 33m 3.4s -7° 9'.2 (1903)

" " 53a = 5 35 13 -6 18.9 (")

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February 25, 1904

Continuation (from page 54) of search for Wolf's Variables in Orion, 33, 34, 35, 47, 53, 48, 87, 1903, 54 87, 1904

Plate compared with A 2156

Plate A 153

33 No variation seen in mag.

34 Star nearest the pos. appears faint. Images of the plate are poor and have uncertain

35 No variation seen

47 Too poor and faint in mag

Images too poor for comparison 7.h.37

53 The star nearest the position is certainly faint on this plate. Images poor

47b medium

25, 47a nomade probably not variable

20, 53a medium

48 and 54 not on plate

87 No diff. in mag. fainter stars near.

Plate A 192

33 No change seen

34 Again the star seems to be faint, but the images are too faint and poor to trust

35 Too poor

47 " "

53 faint

25, 47b bright

20, 53a medium

48 and 54 Reg. not on plate

87 The pair of stars noted appear equal, while on 2156 the southern is brighter; difference small

Variables in Orion continued

Plate A 2154

33 No variation seen

34 " " "

35 " " "

47 " " "

25, 47b bright

53 No good obs. possible images poor

20, 53a rather faint certainly fainter than on A 2156 (March 1, 1904

48 } Of two stars near this position, the

54 } northern is fainter than on 2156

87 Of the two stars the southern is the brighter. No star near shows change

Exam on A 1271, 3429, 5730, 2119, 7 8 5731 (33, 34, 35, 53) because stars near these positions have been suspected on later plates

A 1271

33 No variation observed

34, 35 " " "

53 Fainter than on 2156 Obs conf. Feb. 25

A 3429

33 appears brighter than usual 3 grades

34 Fainter than on 2156 Obs Conf. Feb. 27

35 No var. seen

53 As on 2156

A 5730

33 as usual

34, 35 No var. seen

53 faint?

A bright object near this is probably a defect

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February 26, 1903

Variables in Orion Continued

Plate A 5731 . Exam. for 33, 34, 35, 47, 47½, 53, 53a, 54, 48, 87 (see p. 86)

33 No variation seen no region

34 and 35 No Variation seen in reg.

47 " " " " "

25, 47½ bright

53 As on 2156

20, 53a faint

54 and 48 As on 2156 - Extreme edge of plate

87 Southern star the brighter

Star d (see page 66) bright

Plate A 2119 . Exam. for 33, 34, 35, 53, 87

33 No variation found

34, 35 " " "

53 As on plate 2156

87 Southern star brighter

Afrid a very faint star about 30° following the position given for 47 which is certainly bright on plate A 1271 and probably bright on ~~2119~~ 5731. On 5731 it is very faint.

153 Too few

192 " "

2156 faint

2154 faint

3429 very faint

5730 too few

See page 82

Feb 26, 1903

Variables in Orion continued

Exam. for Variables of preceding page on B plates

Plate B 2325

33 No var. seen

34 and 35 No change seen - Too faint for 34

47 Too faint in reg

25, 47½ " " " "

53 No var. seen

20, 53a faint

54 and 48 No certain variation. Images very faint

87 Images too faint for observation

B 2312

33 Probably no variation. Images of faint stars too poor for good estimate

34 and 35 No change seen - same remarks as above

47 " " " "

25, 47½ bright?

20, 53a faint

53 faint?

54 Images too faint and poor for estimate

48 to be made

87 Southern star much the brighter

B 2325

33 No variation seen

34, 35, 47, 48, 54 not on plate

47½, 53, 53a, 87 too faint to be seen

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February 26, 1903

Variables in Orion continued

Plate B 8891

33 No variation seen

34 and 35 Images too poor and faint

47 " " " " "

53 No certain change Images poor

20, 53a bright?

25, 47b - Images too poor

54 The two stars of which the northern is usually brighter appear to be equal. I cannot distinguish which of either has varied

87 ~~Northern Southern star the brighter~~
Two stars equal? Images very poor

Plate B 8895

Too poor

Plate B 20667

33 No var. seen

34, 35 No var. seen

47 " " "

25, 47b Medium

53 No var. found

20, 53a bright

54 ~~B and V~~ Northern star the brighter

87 Southern star the brighter

Examination of Plates for Wolf's Variables,

32, 51, 52 in (1903) and 80, 86, 88, 89 (1900) and 49, 1908

Plates compared with A 8156

Plate A 153

49 rather faint

32 A faint star rather near pos. may be too faint. Images poor

51 No variation seen

52 " " "

80 " " " Coherent edge. Im. very poor

86 " " " Very bright

88, 89 Region not on plate

Plate A 192

49 faint

32 A faint star nearly at the same pos. as 153) is not seen. It would seem as if it ought to be visible Images poor and faint

51 No variation seen

52 " " "

80 Reg. not on plate

86 ~~The star seen. Near edge. Images poor~~ faint

88, 89 Reg. not on plate

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Feb. 24, 1903

Wolf's Variables Continued

Plate A 1271

49 Extremely faint
32 Star noticed on 153 seems rather faint
Images very poor
51 No variation seen
52 A faint star close to this position is not seen, and probably should be seen. Images poor
86 No variation seen. Near edge. Images poor & faint
88, 89 Region not on Plate
90 No variation seen

A 2119

49 Medium
32 No variation seen
51 A star near por. is perhaps faint (numbered on this plate). Estimate uncertain
52 No certain variation seen
90 Region not on plate
86 A star near this position is evidently faint
88 No variation seen
89 " " "

88 and 89 are on the edge of the plate. The images are too poor and faint for any satisfactory comparison to be made. The fainter stars are not seen at all

February 27, 1903

Wolf's Variables in Orion Continued

Plate A 2154

49 Bright
32 No variation seen. Too poor for observation of faintest stars
51 No variation seen. Images faint & poor.
52 " " " " " "
86 Star comp. on plate 21.19 is decidedly brighter than on A 2156
88 A star rather near por. appears to be faint but the images are too poor for safe estimate. Edge of plate
89 No change seen, but faint stars do not appear. Edge of plate.
90 No var. seen

Plate A 3429

49 Medium
32 No variation seen.
51 " " "
52 " " "
86 faint
88 No var. seen. Star comp. dimmed
89 " "
Near edge. Images poor
90 reg. not on plate

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February 26, 1903

Wolf's Variables in Orion continued

Plate A 5731

49 medium
32 No change seen
57 " " "
52 The star nearest this position seems to be bright. Shapley noticed this star before but have not been sure that there was real fluctuation. The star indicated sometimes appears equal to star one directly south of it, and sometimes, as on this plate, brighter. Comparison with other stars seems to show real fluctuation not to exceed 3 tenths of a magn.
80 neg. not on plate
86 bright
58 No var. seen Edge of plate
89 " " " " "

February 26, 1903

Wolf's Variables in Orion continued

Plate A 5730

49 faint
32 No variation observed
51 " "
86 faint
88 No var. obs. Image very from edge of plate
89 Neg. not on plate
80 " " " "
52 rather bright

Star 52 Around on plate earlier Plate 5730
A 2119 faint
2156 bright
3429 medium
1271 "
2154 faint
192 faint? Image very poor
153 faint - suspected variable

There appears to be a real variation in this star, amounting about half a magnitude on the plates examined

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February 27, 1904

Wolf's Variables in Draco continued

Reexamination of plates for 34, 52, 53, 47, 1901 and 87, 1902 in which I have suspected Variation

Plate 153

34 

34 unquestionably very faint
52 certainly faint
53 no certain variation - images poor
47 Star nearest pos. south of and preceding another star of about the same magnitude, faint? Images poor
87 southern star brighter

Plate 192

34 faint?
52 medium
53 appears faint, but the images are poor
47 Two stars mentioned above appear equal
87 Southern star brighter

Plate 1271

34 bright
52 faint?
53 faint? images very poor
47 Two star images equal. The star mentioned on page 74 is certainly bright - Images poor
87 Southern star brighter

Wolf's Variables in Draco Cont.

Plate 2119

34 bright as on 2156
52 medium
53 as on 2156 (bright)
47 The two stars are equal
Star preceding faint
87 Southern star brighter

Plate 2154

34 As on 2156
52 On this plate the Southern of the two stars (chart page 70) seems to be bright). The two stars appear equal Images very poor
53 As on 2156
47 The two stars are equal Star following faint
87 Two stars equal

Plate 2156

34 bright
52 southern star bright
53 bright
47 Two stars equal Following star fr.
87 Southern star much brighter

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February 27, 1904.

Wolf's Variables in Orion cont.

Plate 3429

34 rather faint
52 Wolf's star bright
53 as on 2156
47 Spreading and neither of the two stars very faint
37 Southern also brighter

Plate 5930

34 too poor
52 Wolf's star the brighter
53 faint? image very poor
47 Two stars equal
37 Two stars equal?

Plate 5731

34 bright
52 Wolf's star decidedly bright
53 bright
47 Two stars equal Star preceding slightly faint
37 Southern star brighter

Plate K 5225

52 Wolf's star bright

Variable Stars in Orion.

Examination for variables near Wolf's 27, 1904.

Plates compared with A 3429

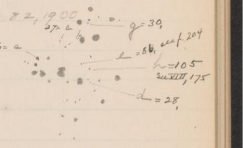


Plate 2756

26 a faint - decidedly
b ~~faint~~ bright
27 c as on 3429 (faint)
28 d faint ?

Plate A 5731

a medium
b faint? nebulosity too strong for safe comparison
c bright - decidedly
d faint (not sure)

Plate A 2119

a faint than on 3429
b as on ~~2156~~ 3429
c faint than on 3429
d not sure - too poor image
86, e faint (about 3 tenths of a magn

Plate A 153

a bright
b probably as on 3429 - but very poor
c certainly bright
d too poor
e images too poor for satisfactory ?

Found by Prof. Pickering 29 f faint
105 h & i nominal
30, d faint

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February 29, 1903

Variables in Orion nebula

Plate A 193

a bright
b normal
c bright
d too poor
e faint
f (found by Professor Pickering near this date 1903)
bright

Plate A 1271

a faint
b brighter than on 3429
c bright
d too poor
e bright

Plate A 2154

a faint
b nebulosity strong - no good stars possible
c probably faint
d too poor
e normal
f faint
g bright
h normal? nebulosity strong

Plate A 5730 certainly brighter than on A 5731 (March 1, 1904)

a bright
b faint
c faint?
d too poor
e bright
f faint
g rather faint
h normal

February 29, 1903

Variables in Orion nebula

X 5525

a very faint
b as on 3429
c bright
d as on 3429
e " " "
f faint
g mistiness
h normal

X 5242

a extremely faint. Striking variation
b probably normal - magn poor
c bright
d too poor
e normal
f not seen - certainly faint
g bright
h normal

X 5503

a faint.
Too poor for the 8 other stars

Variation of $\frac{26}{a}$ marked

b just seen on plates A 2154 and A 3429
Difficult to observe - Descp:
$\frac{27}{a}$ seen well on A 5731 (bright) 2119, 3429 faint
range $\frac{1}{2}$ magn
$\frac{28}{a}$ probably varies, but there is not sufficient
material to confirm it. $\frac{a\ 2154}{b}$ A 3429 - A 5731 (?)
c probably varies $\frac{3}{10}$ of a magn.
$\frac{29}{a}$ - certainly is bright on A 193
$\frac{30}{a}$ certainly variable - well seen on 2156 (bright and 3429 (faint)

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Feb. 29, 1903

Variables in Orion cont.

Examination for c, f, g^h on plates not yet examined for them

Plate H 2156

c bright (bright than on 3429?)
f faint
g bright

Plate A 5731

c normal
f extremely faint
g faint? (nebulosity strong)
h appears very faint on this plate. The nebulosity is strong and there is a slight scratch, but even after making allowances for this, the image seems to be very faint

105

A 2117

c normal (as on 3429)
f faint
g bright
h normal

A 1978

g rather bright
h less faint

A 1271

f faint
g rather bright
h normal

February 29, 1903

Variables in Orion Continued

I Photograph taken by Dr. Roberts. Dec. 17, 1886
Engraved on Celestial Photographs Vol. 1 p. 55
This engraving does not show ~~bright~~ faint as compared with

II Ditto taken Dec. 24, 1888 Celestial Photographs p. 57

a bright
b nr. the faint for cat.
c appears to be rather bright image to faint
d, e less faint
f probably faint
g " "
h less faint

On this plate, Wolf's 83 is g medium brightness

No 12 medium
5 faint?
18 medium
19 very faint
7 medium
8 bright
41 very faint. If the engraving can be trusted it is much fainter than Orion 44 H
40 faint
42 faint
13 faint
15 faint

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February 29, 1908

Variables in Orion

Pickering's photograph p. 59 taken Feb. 4, 1889

a very bright
c bright
e normal
f faint
g faint
k normal

March 1, 1904

Variables in Orion.

Examination for 31 (HH) and surrounding region
~~31 bright~~ Plates compared with A 3429

A 2156
31 bright
No other change in reg.

A 2119
31 bright
No other change in reg.

A 5731
31 bright? nebulosity along
38, a decidedly faint

A 1271
31 bright? nebulosity interferes with est.
a bright as on 3429
No other change in region

A 192
31 Plate too poor certainly not bright
a rather faint? no other change seen

A 153
31 probably faint
a rather faint

A 5730
31 rather faint
a bright as usual

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March 1, 1904

Variables in Orion continued

Plate A 2154

31 rather bright

a bright as usual

Plate A 5225

31 rather faint

a as usual

Plate A 5242

31 - too from

a usual

Plate A 5503

31 - too from

a usual

No other variation in region

Note March 12. The evidence of variation in this star is not clear. Probably variable

Star 31 certainly varies but is difficult to estimate on most plates. The variation is probably less than a half magnitude. It is fairly well seen on plates A 2156 and A 3429. Star 32, 38, is certainly decidedly faint on one plate, A 5731, though usually like 31. On Mr. Pickering's plate taken Feb. 4, 1889 (Vol. 1 p. 59) it is bright. Also on his plate taken Jan. 15, 1896 it appears to be bright. On the plate taken Dec. 24, 1888 it is as usual on the Bruce plates.

Note March 12. The evidence does not now appear certain. This star had better go on the suspected list.

March 1, 1904

Variables in Orion continued

Nine Region compared with A 3429

Plate A 2156 - No variation seen in region 1904

" A 5225 " " "

Examination of the twelve plates shows some but small fluctuations in light of stars in this region.



Region adjoining

Plate compared with A 3429

Plate A 2119

32, faint (not seen) Faint on this plate

33, faint

34, bright

35, bright

36, faint.

There is so much fluctuation of light, apparently, that it is difficult at this stage to decide fully which stars vary.

37, bright

Plate A 153

33, 32, bright as on 3429

31, too from

34, bright

35, very faint

36, faint

37, bright

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March 4, 1904

Variables in Orion continued

Plate A 2156

32_1 extremely faint
33_1 bright as on 3429
34_1 bright
35_1 faint
36_1 as on 3429
37_1 bright

Examination of the rest of the twelve plates confirms the variability of all the above stars with the exception of 33_{11} if Wolfe Dodo not feel certain.

Later. Another examination of Plate A 2119 shows that 33_1 is unquestionably faint on that plate, to the extent of not less than half a magnitude.

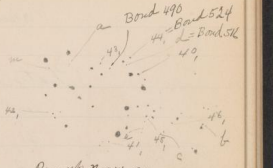
38_1 This is markedly bright on A 5730 & A 5731
Rather faint on A 2119, 2156

32_1 Compare any good plate with A 3429 on which it is bright
33_1 Will seem on A 3429 (bright) and A 2119 (faint) $\frac{1}{3}$ mag.
34_1 Faint on A 3429 - C. A 2119, A 2156 $\frac{1}{2}$ mag.
35_1 Bright on 2119. Comp. with A 3429 & also 2156
36_1 Faint on A 2119 Compare with A 2156 - A 3429 $\frac{1}{2}$ mag.
37_1 Compare 3429 (faint with) A 2156 (bright)
39_1 Bright on A 3429 Decidedly bright on A 5731
See also Dr. Roberts plate Vol. 2, p. 163

Note March 9 1904. The evidence for 33_1 and 39_1 seem to me to be not conclusive. They are probably variable, but to be put on the computed list

March 2, 1904

Variables in Orion continued



Remark Nov. 14, 1917
Bond 490 and Bond 516 omitted in N.S.L. Book 41 page

Plates compared with A 3429

Plate A 2119

40_1 faint
41_1 faint
42_1 as on 3429
43_1 bright
44_1 bright
45_1 faint
46_1 faint c faint
b bright
a as bright as on. not seen on 3429 though on to destroyed

Plate A 1271

40_1 a little fainter than on plate 3429
41_1 bright
42_1 faint? always very poor
43_1 faint
44_1 faint
a too poor
45_1 bright
46_1 faint as on 2429
b too poor
c bright - unusually

Plate A 2156

40_1 faint - decidedly even though nebulosity makes the rather difficult. Not due to nebulosity
41_1 very bright
42_1 very faint
43_1 faint (brighter than on 2119, fainter than on 3429)
44_1 bright
45_1 faint
46_1 bright
b faint
c rather bright
a very faint on seen doubtfully

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March 2, 1904

Variables in Draco continued

Plate A 153

40, as on 3429
41, bright
42, bright
43, faint as on 3429
44, bright " " "
45, rather bright
46, faint
a not seen
on clearly seen
b faint - certainly variable
c bright " "

Plate A 192

40, as on plate 3429
41, bright
42, too poor
43, faint
44, bright
45, too poor
46, " "
a not seen
b bright
c too poor

Variables in Draco Cont.

Plate A 2154

40, as on plate 3429
41, faint
42, faint & images poor
43, faint
44, as on 3429 or a little fainter
45, faint - Images very poor
46, faint " " "
a not seen - no seen distinctly
b too poor
c " "

Plate A 5730

40, As on 3429
41, bright
42, rather bright
43, very faint compare with plate 3429
44, faint
45, rather faint
46, " "
a faintly seen - a little fainter than on 2
b too poor
c too poor
d - bright - the only time I have so seen it.
Var. not more than 2/70 of a magn. but evident

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March 2, 1904

Variables in Orion cont.

Plate A 5731

40, nebulosity too strong
41, rather bright
42, rather bright
43, nebulosity too strong
44, " " "
45, rather faint
46, nebulosity too strong
a, b, c " " "

Plate I 5525

40, as on 3429
41, rather faint
42, bright - decidedly
43, faint -
44, faint
45, bright
46, rather bright
a seen very faint - much fainter than on
b rather bright
c bright
d as usual

Plate I 5503

40, normal
The plate is too fine for observing the fiber stars

March 2, 1904

Variables in Orion cont.

Plate A 5242

40, normal
41, faint (not seen)
42, bright
43, medium
44, bright
45, rather faint?
46, rather bright
a faint
b faint
c faint
d normal

40, is best seen on plates A 3429 and A 2156 (faint) also faint on A 2119 - Var. 3/4 magn? Difficult to observe on account of nebulosity.

41, is well seen on plates A 2119 (faint) and A 2156 (bright) A faint star, but easily traced. Variation marked

42, faint on A 2156 - contrast with A 153 and A 3429 Var. 3/4 magn

43, seen on A 3429 (bright) A 2119, A 5730 (faint) Var. 1/2 magn

44, seen on A 2119 (bright) A 5730, 3429 (faint)
But seen on I 5255 (faint) and 5242 (bright)

45, seen bright on A 1271 faint usually on A 2156
Bright also on I 5225 - rather faint on I 5242 Var. 1/2 magn

46, seen bright on A 2156 - Comp with A 3429 - Var. small

a is unmistakably bright on A 2119 - Shall it be included or not

b shows slight irregular contrast on A 2119 (bright) and 3429 (faint)
Not plate A 153 at so unquestionably faint. Var. 1/2 magn.

c Contrast A 2119 (faint) and A 1271 or 153 (bright) There is surely a variable

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March 3, 1904

Variables in Orion continued

Examination for 47, and 48,

Plate compared with A 3429

Plate A 2156

47, faint - Good contrast with 3429 . 0.4 magn.

48, bright 49, bright

Plate A 153

47, as on Plate 3429 . b as on 3429

48, faint as on 3429

a faintly than on 3429

Plate A 192

47, bright as on 3429

(38, faint)

48, probably faint. Images very poor + faint

a faint (not sure

b bright

Plate A 1271

47, faint

48, bright

a as on 3429

b too poor

Plate A 2119

47, faint

48, bright

a as on 3429

b a little brighter than on 3429

Variables in Orion continued

Plate A 2154

47, bright as on 3429

48, bright - images very poor

Not conf. Harv. 64 ~~47.~~ faint - Contrast with 3429 + 2156. Rapid increase of light

a rather faint

b rather bright

Plate A 5730

47, as on 3429

48, probably ~~faint~~ bright - images poor

~~47.~~ bright as on 3429

a probably faint

b as on 3429

Plate A 5731

47, as on 3429

48, bright

~~47.~~ bright as on 3429

a and b nebulosity too strong

c seems to be rather brighter on this plate - certainly nearer before

Plate B 5225

47, faint

48, bright

~~47.~~ bright

a rather fainter than on 3429

b as on 3429

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March 3, 1904

Variables in Draco cont

I 52 42

47, faint

49, normal

47, a, b, c too faint

The variation of 47, amounts to less than half a magnitude, but is well seen.
Compare A 2156 and A 3429

48, is a faint star the variation probably is more than half a magnitude of A 2156 & 3429

49, This probably does not vary. More than ½ a magnitude. It is apparently rather faint on plate 2156, but the change is small.

The changes in a, b, c, seem to be real but small

Remark March 12. Another examination of plates leads me to believe that there is not a real variation in 47. Later. I find, however, that I examined A 2119 instead of A 3429. The latter shows it unmistakably bright. Refer to Mrs. Fleming.

Variables in Draco continued

Examination of Plates for 49 and 50,
Plates compared with A 3429

Plate A 2119

49, faint — 53, as usual
50, [illegible] — 54, " "
a fa[illegible] — 55, " "
52, [illegible]

Plate A [illegible]

49, [illegible] with A 3429
50, fa[illegible] faint as usual
51, fa[illegible] faint as usual
a [illegible] 55, as usual
52 & [illegible]

	38	56	83		
Feb.	6		8		
Feb.	1	1	1	18 4	71
Feb	2	3	4	23 2	73
	4	3	7	31 1	74
	10	3	10		
	12	3	13		
	16	3	16		
	17	2	18		
	18	1	19		
	29	5	24		
Mar.	1	8	32		
	2	7	39		
	3 4	6	45		
	4 5	15	60		
	9	7	67		

Plate A [illegible]

[illegible] faint as usual
49, [illegible] rather bright
50, [illegible] bright
[illegible]

Plate A 1271

49, rather bright
50, rather faint
plate too fog

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March 3, 1904

Variables in Draco cont

I 5242

47, faint

49, normal

48, a, b, c too far

The variation of 47, amounts to less than half a magnitude, but is well seen.

Compare A 2156 and A 3429

48, is a faint star the variation probably is more than half a magnitude of A 2156 + 3429

a 49, This probably does not vary. More than ½ a magnitude. It is apparently rather faint on plate 2156, but the change is small.

The changes in a, b, c, seem to be real but small

Remark March 12. Another examination of plates leaves me to believe that there is not a real variation in 47. Later. Find, however, that I examined A 2119 instead of A 3429. The latter shows it unmistakably bright. Refer to Mrs. Fleming.

Variables in Draco continued

Examination of Plates for 49 and 50,

Plates compared with A 3429

Plate A 2119

49, faint	53, as usual
50, very faint (not seen)	54, " "
a faint ?	55, " "
52, medium	

Plate A 2156

49, bright - good contrast with A 3429	
50, faint	53, faint as usual
51, faint	54, faint as usual
a rounded (probably not variable)	55, as usual
52, ? bright (this is surely variable)	

Plate A 5873/71

49, bright	53, faint as usual
50, rather bright	54, rather bright
51, very faint	55, bright
52, bright	

Plate A 1271

49, rather bright
50, rather faint
plate too fine

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March 3, 1904

Variables in Orion Cont.

Plate A 5730

49, bright
52, faint
51, too poor
52, pretty bright - margin poor
53, bright
54, bright.
55, normal

49, is well seen on 3429 (2119) (faint) and 2156 (bright)
Star faint - but variation marked
50, Bright on A 3429 faint on 2156, 2119 (just seen) 3 mags
51, Bright normal on 3429. Faint on 2156 Bright on 2119 - 2 mags (5731)
52, This may not be variable. It is faint (just seen) only on plate A 3429, and the film is not in good condition in its portion
53, Markedly bright on plate A 5730. On 3429, 2156 etc Probably about normal as it is normal on A 5721
54, Bright on A 5730, 5721, A 3429, 2156 (faint on)
55, Markedly bright on A 5721. The image does not appear to be absolutely perfect, however, and the star had better go on the suspect list

March 4, 1904

Variables in Orion continued

Plates examined for 56, 57, 58 (compared with A 3429)

Plate A 2156

56 faint good contrast
~~57 normal~~ as on A 3429
57/8 slightly brighter than on A 3429

Plate A 153

56 faint
~~57 normal~~
57/8 faint

Plate A 192

56 faint
~~57 normal~~
57/8 rather faint

Plate A 1271

56 very faint
~~57 normal~~
57/8 bright

Plate A 2154

56 faint
~~57 normal~~
57/8 rather faint

Plate A 5730

56 faint
~~57 normal~~
57/8 faint

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March 4, 1904

Variables in Orion continued

Plate A 5731
56 faint
~~57 expunged~~
58 bright (about pur?) cf. 5730

Plate A 2119
56 faint
58 faint
57 evidently is not variable

Plate X 5525
56 faint
58 bright

56 Will show on A 3429 (bright) and A 2156 (faint)
Varies 1/2 I magn
57 Bright on A 3429 faint on 2119, 5730 - 3/4 magn

March 4, 1904

Variables in Orion continued
Examination for 58 Plates compared with A 3429

Plate A 5731
58 faint
59a bright

Plate A 1271
58 faint
59a too poor

Plate A 5730
58 faint
59a bright? (margin poor)

A 2119
58 rather bright
59a faint

A 2156
58 bright
59a bright

A 2154 Too poor

A 192
58 bright
59a too poor

A 153
58 medium
59a too poor

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March 4, 1902

Variables in Orion continued

Plate X 5245
58 bright
59 faint

Plate X 5242
58 faint (good contrast with X 5255

Plate X 5925
58 bright - very bright

58 Variation best seen on X 5242 (faint) and 5255 (bright
Range over a magnitude

59 Bright on plate A 2156, A 5731. Faint on 2119, 3429
This is a very faint star. The variation is not
less than half a magnitude

March 4, 1902

Variables in Orion continued

Plate examined for 60 and 61 - Comp. with A 2429
A 2119
60 faint
61 faint
62 faint
63 faint
Plate A 2156
60 bright
61 bright
62 bright
63 bright
Plate A 5731
60 very faint
61 bright
62 faint
63 faint. Compare with A 2156

Plate A 153
60 faint
61 bright
62 faint
63 too poor

Plate A 192
60 faint
61 bright
62 faint
63 too poor

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March 4, 1903

Variables in Orion continued

Plate A 3154

60 v.s. faint
61 rather faint
62 bright?
63 v.s. faint

Plate A 5730

64 very bright
60 faint (not seen)
62 faint
63 faint

Plate A 1271

60 v.s. faint
61 bright
62 faint
63 v.s. faint

Plate X 5255

60 faint
61 bright
62 faint
63 faint

Star 60 is well seen bright on 3429 and 2156 faint on 5731 2119
Varies a magnitude

61 Compare 3429 or 2156 (bright) with 2119 (faint) $\frac{3}{4}$ magn
62 Compare 3429 or 2119 (faint) with 2156 (bright) $\frac{1}{2}$ magn
63 " 2156 (bright) with 5731 (faint) $\frac{1}{2}$ magn

Star is in a faint diam, but variable is well defined

Variables in Orion continued

Examination of central parts of the Nebula

Plates confirmed with A 316 (41 my bright other plates)

Plate A 3433

64 bright as on A 316
65 faint as seen on A 316

Plate A 192

64 fainter than on A 316 0.m3
65 faint
66 faint
67 faint
Trapezium clearly seen on this plate
68 faint

Plate A 1271

64 faint
65 faint
66 faint
67 faint
68 faint
70 faint

Plate A 128 v.s. faint

Plate A 61

64 faint
65 v.s. faint
66 faint
67 faint
68 faint
70 extremely faint
69 faint ?

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March 5, 1903

Variables in Orion cont.

Plate A 153

64 very faint
65 faint
66 faint
67 faint
68 faint
69 faint ?
70 faint
71 probably normal

Plate A 144

64 rather faint
65 ~~60~~ prob
66 faint
67 faint
68 faint
69 ?
70 medium
71 normal

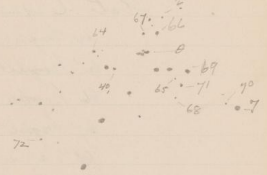
Plate A 2863

64 bright
65 bright
66 bright
67 bright
68 bright
69 normal
70 very bright
71 normal

March 5, 1903

Variables in Orion continued

Plate A 142



64 bright
65 bright
~~66~~ bright
~~67~~ bright
68 bright
69 normal
70 bright
~~71~~ normal
~~72~~ normal

Plate A 2865

64 rather bright
65 bright as on 214
66 bright
67 bright
68 bright
69 normal
70 bright
~~71~~ normal
~~72~~ faint ?

Plate A 2814

64 bright
65 faint
66 bright
67 bright
68 as on A 216
69 normal
70 bright
~~71~~ normal
~~72~~ faint ?

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March 5, 1904

Variables in Orion continued

Plate R 3422
64 bright
65 bright
66 bright
67 bright
68 rather bright
69 normal
70 rather bright
~~71~~ normal
~~72~~ faint?

Plate I 5230
64 bright
65 bright
66 bright
67 bright
68 very bright
69 normal
70 faint
~~71~~ normal
~~72~~ 65 prm

Plate I 6367
64 bright
65 ~~bright~~ faint
66 and 67 bright
68 bright
70 bright
~~71~~ 65 prm

Variables in Orion cont

Plate I 5225
64 bright?
65 rather faint?
68 rather faint?
670 faint
~~71~~ normal
Nebulosity too strong for good intensities

Plate 5242
64 bright
65 faint
66 and 67 bright
68 rather faint
70 rather faint

Observation of these stars is difficult on account of the nebulosity and the resulting fogging. On some plates, apparently the nebulosity increases the apparent brightness of the images, while in other cases it diminishes it. On any one plate, the action seems to be uniform. Of the class above, I do not feel convinced of the real change in brightness of ~~any~~ any save 65 and 70, although in the case of 64, 68 and 72 the suspicion of variability is strong.

65 and 70 may both be well seen on plates I 5230 and I 6367. They are not easy to see at first on account of the short exposures, but for that reason they are but little affected by the nebulosity. The images are clear and sharp.

Star 40, is spectr the same suspicion and is to be [illegible] Class [illegible] stars certainly variable

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March 8, 1904

Variables in Orion continued

Examination of plates for 71

The region has been examined on all the plates; none show variation save this star, which can be observed to advantage only on the following plates.

A 2119 faint
A 2156 brighter than on 2119
A 3429 brighter than on A 2119
A 5730 decidedly bright. The focus is poor but the image is clear. Comparison has been made with a large number of stars
A 5731 rather faint. about as on 2156

Comparison of A 2119 and A 5730 certainly shows a variation of at least a half a magnitude

Variables in Orion continued

Examination of Plates for 72, 73, 74, 75, 76

Plates compared with A 3429

Plate A 1271
72 very faint
73 bright
74 very faint
75 bright
76 as on A 3429

Plate A 153
72 very faint
73 too poor
74 very faint
75 bright
76 decidedly bright

Plate A 192
72 bright
73 probably very bright · image poor
74 very faint
75 bright
76 probably rather bright · image very poor

Plate A 2154
72 faint
73 bright
74 bright as on A 3429
75 faint as on A 3429
76 brighter than on A 3429

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March 9, 1904

Variables in Orion cont

Plate A 2119

72 faint
73 faint as in 3429
74 bright
75 as in 3429
76 as in 3429
77 bright (this is a very faint star

Plate A 2156

72 very faint (least contrast with 3429)
73 bright (contrast with A 2119 & A 3429)
74 bright
75 as in A 3429
76 as in A 3429
77 faint as in 3429 (contrast with 2119)

Plate A 5736

72 very faint
73 rather bright
74 bright
75 very faint (contrast with A 1271 (bright) & 3429
76 76 rather bright
77 rather bright (I doubt the variability)

Plate A 5730

72 very faint
73 bright
74 bright
75 faint
76 as in 3429
77 too few

Variables in Orion continued

Star 72 varies in a doubtful degree of A 2156 (B) A 3429 (B)
73 variation a magnitude? Bright on A 2156 faint on 2119
74 faint on the earlier plates - seems to have grown brighter - On plate I 3143 (Feb 8, 1904 Exp 120) it is well seen, brown, and appears faint -
75 Variation more than a magnitude - Well seen on A 1271 (bright) and A 5731 (faint) Also seen
76 Variation fully a magnitude - Seen bright on A 153 contrast with A 2156 & 3429
Contrast also B 2312 faint
and B 2323 bright
Is it a short period variable?
77 This star is certainly to be suspected - but evidence of variability is not clear

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March 9, 1904

Variables in Orion Continued

Examination of plates for = 32,

Plate A 3429 bright
5731 faint
2119 faint
2156 faint
2154 v.s faint
153 " "
192 " "
1271 " "
5731 " "
I 5255 faint? Images very poor

This star is unmistakably bright on A 3429 though faint on all other plates.
Found that this is the same as 32,

Remarks on 36, - This star does not show marked variation. It is certainly faint on plate A 2119 but not to the extent of half a magnitude. The images are poor. Put it on list of suspected variables.

March 9, 1904

Re-examination on I plates of variables in Orion
39, 33, 36,

Plate I 2759
39, normal
33, bright
36, v.s poor

Plate I 2925
39, normal
33, bright
36, v.s poor

Plate I 2917
39, normal
33, bright
36, sky not on plate

Plate I 5242
39, normal
33, faint - stickingly
36, images poor - probably normal

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March 10, 1904

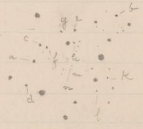
Assume Scale P

Measures of comparison stars for Variables in Orion

This sequence marked on Ref. Plate MC 67-37

Measured in Series. (Sept. 25, 1919)

	Plate A 2156		Diff. Cu. mag.			
	6.6					
18	4.9	5.3	5.45			
	6.1					
19	6.4	5.8	6.95			
	6.0					
a	6.3	5.7	5.85	6.72	6.76	12.61
	6.3					
b	6.6	6.0	6.15	6.85	6.84	12.99
	6.6					
c	6.9	6.4	6.50	6.84	6.88	13.38
	6.7					
d	7.0	6.9	6.80	6.91	6.87	13.67
e		7.2		6.75	6.76	13.96
f		7.8		6.82	6.69	14.39
g		8.4		6.45	6.41	14.81
h		9.0		6.24	6.27	15.27
k		9.2		6.27	6.23	15.43
l		9.6		6.19	6.20	15.80
m		10.0		~~6.17~~	6.17[e]	16.17[e]
n	m 3 m					



Film side up

Stars 18 and 19, are 18 and 19 of Prof. W.H. Pickering's sequence in Volume XXXIII of the Annals

Plate A 2156 has double, elongated images which are difficult to measure

Measures of Comparison Stars continued

	Plate A 3429		Diff. Cu.	Mag.	a 2156	a 2119	a 5731	Mean	
	6.0								
18	6.3	5.8	5.90						
	6.4								
19	6.7	6.3	6.35						
	6.3								
a	6.6	6.2	6.25	6.32	6.42	12.67	12.61	12.59	12.63 04 02 04 02
	6.6								
b	6.9	6.4	6.50	6.50	6.42	12.92	12.99	13.03	12.95 12.97 05 02 06 03
c		7.0		6.34	6.41	13.41	13.38	13.28	13.40 13.37 04 01 09 03
d		7.2		6.51	6.40	13.60	13.67	13.68	13.62 13.64 04 03 04 02
e		7.7		6.25	6.35	14.05	13.96	13.91	13.98 13.98 07 02 07 00
f		8.0		6.32	6.30	14.80	14.39	14.44	14.38 14.38 08 01 06 00
g		8.7		6.15	6.18	14.88	14.81	14.73	14.76 14.79 09 02 06 03
h		9.0		6.24	6.13	16.13	15.27	15.30	15.29 15.25 12 02 05 04
k		9.5		5.97	6.03	15.63	15.43	15.43	15.44 15.46 07 03 03 02
l		9.8		5.99	5.97	16.77	15.80	15.80	15.81 15.80 15.80 03 00 00 01
					5.74	16.04[e]	16.17[e]	·	16.25[e]
m		10.1							16.15[e] 11 02 · 10

	Plate A 2119		Diff. Cu. Mag.	
	5.9			
18	6.2	5.8	5.85	
	6.4			
19	6.7	6.2	6.30	
	6.3			
a	6.6	6.1	6.20	6.37 6.39 12.69
	6.7			
b	7.0	6.7	6.70	6.30 6.33 13.03
c		7.0		6.34 6.28 13.28
d		7.6		6.11 6.08 13.68
e		8.0		5.95 5.91 13.91
f		8.8		6.52 5.64 14.44
g		9.1		6.75 6.68 14.73
h		9.6		6.64 6.70 15.30
k		9.7		5.77 5.73 15.43
l		10.0		5.79 5.80 15.80
m		l 4 m		

(m recently seen

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March 10, 1904

Measures of comparison stars continued

Plate A 5731 Diff. Cu. Mag.

18	4.1 4.8	4.8	4.80			
19	5.8 5.5	5.4	5.45			
a	5.9 5.6	5.5	5.55	7.02	7.10	12.65
b	6.1 5.8	5.7	5.75	7.25	7.20	12.96
c	6.4 6.1	6.0	6.05	7.29	7.35	13.40
d	6.6 6.3	6.1	6.20	7.51	7.42	13.62
e	6.8 6.5	6.4	6.45	7.50	7.63	13.98
f	7.0 6.7	6.8	6.75	7.57	7.63	14.38
g		7.1		7.75	7.66	14.76
h		7.7		7.84	7.79	15.29
k		7.9		7.87	7.54	15.44
l		8.4		7.39	7.41	15.81
m		9.1			7.18 8c	16.28 5m
n		9.8 7				

Plate A 5730

18	6.0	5.5	
19	6.4	5.9	The images on this plate are
a	6.3	5.7	good as far as b. Then they
b	6.7	6.1	fade out rapidly and are
c	7.0	6.5	difficult to measure. It
d		7.0	may be best to omit this
e		7.4	plate. It is the poorest of
f		8.1	three measured
g		8.8	
h		9.6	
k		9.8	
l		10.0	
m		b 3 m	
n			

March 10, 1904

Estimates of brightness of Variables in Orion

Southern group (76 and three south of it)

Plate A 2156

62	72	15m.5	Wolf 34	15m.0 near edge diff
56	73	14.8	Wolf 47(?)	15.1
66	74	12.6		
64	75	14.3		
60	76	14.4		
	77	15.3		
Wolf	45	15.3		
Wolf	46	13.5		
Wolf	50	14.3		
	16	15.5		
	17	not seen < 15.9		
Wolf	38	11.9		
	57	13.6		
	25	14.2		
	20	12.8 7		

South central group. north from 56) Plate A 2156 cont.

	56	15m.0	
	28	15.6	
24	26	13.3	
	37	15.4	
	29	16.0	
	30	14.3	nebulosity rather strong
	31	14.7	
52	38,	14.6	
	47,	14.5	

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Estimates of Brightness of Orion Variables cont.

Plate 2156 - South Central group cont.

Wolf	40	13.8	
Wolf	41	13.2	
	6	14.5	
	7	13.9	Very difficult, owing to pos. between 2 stars
36	8	14.2	
Comp	9	I am sure this is not variable	
Comp	10	15.2	
Comp.	11	I do not think this is variable	
	20	15.0	nebulosity strong. Compare again with 2d exp.
31	21	15.2	" " " " " " "
	32,	< 16.0	
	33,	13.4	nebulosity rather strong
	34,	14.7	" " "
	35,	14.6	" " "
Comp.	36,	14.2	
	37,	15.1	On enlarged scale
comp.	39,	14.3	
Wolf comp.	82(?)	13.9	
	41,	14.6	
	42,		nebulosity to strong - use 2d exp.
	71	14.6	

Estimates of Brightness cont.

Plate 2156 - North Central Group. (From 49, and 59, north)

	49,	15.0	
	59,	15.1	
comp.	52,	15.4	
Wolf	36	14.9	
	12	14.1	nebulosity strong. Compare with 2d exp.
	51,	15.5	
	18	14.0	
	19	13.7	nebulosity rather strong. Comp with 2d exp
	1	not seen	< 15.7
	5	13.4	
	23	15.5	
Wolf	83	12.9	
	50,	15.5	
	53,	14.8	
	54	14.7	
Comp.	55,	14.6	
Wolf	85	12.1	

Plate 2156 - Northern Group. (From 61 north)

60	14.5	nebulosity strong. Comp. with 2d exp.
61	14.5	
62	14.7	
63	15.0	nebulosity strong. Comp with 2d. exp
24	15.7	
3	14.5	
4	15.1	
2	15.4	
42	13.5	
44	15.0	

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March 11, 1904

Estimates of brightness cont

Plate A 2156 northern group cont

Wolf	39	14.5	
	13	14.5	nebulosity strong. Comp. with 2d sequence
Wolf	49	11.0 (approx.)	too bright and disk. for grd estimate
Wolf	86	14.0?	Near edge. Image poor. Neg. very distant
Wolf comp.	81?	14.2	
Wolf comp.	84?	14.3	
Wolf comp.	52?	14.5	
	15	15.3	
Wolf	37	15.9	

Plate A 2156 Central group meas. with second seq

Wolf	43	13.3	On 1st seq. 14.5 - Easier comp of the two
comp.	40,	12.5	more strongly nebulous than comp. star
	43,	12.7	nebulosity about as that of c
	44,	13.1	" stronger than that of c
	45,	13.5?	Extremely uncertain - Q seen strong nebulosity. Use mean 2 on this comp result
	46,	13.2	Nebulosity similar to that of f'
Bond	801	Nebulosity too dense	
	48,	13.4	
	58	13.2	On 1st seq. 13.5 - Easier comp.
	65	nebulosity too strong	
	70	11.0	
	78	13.6	
See page 127	12	13.0	The first comp in the north center
" " 127	19	12.7	" " " " " " "
" " 127	60	13.4	
" " 107	63	13.5	
" - 128	13	13.2	42 13m.6
" " 126	21	13.5	37, 13.4
" " 126	22	13.6	

Measures of second sequence of comparison stars for Variables in Orion. Sequence in central part of nebula

Plate A 2865 Exp. 10m

18	8.0
19	8.7
a'	8.1
b'	8.6
c'	5.8
d'	9.1
e'	9.6
f'	10.1
g'	n.s.
g	n.s.



The original g' is surrounded in the strong nebulosity. This g' is in a region similar to f' in nebulosity, though slightly more open.

Plate A 3422 Exp. 10m

18	7.7
19	8.8
a'	7.9
b'	8.3
d & i'	8.8
c' & h'	8.7
e'	9.6?
f'	10.2
g'	10.2 g' n.s.

Measurements very difficult

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March 11, 1904

Means of 2d seq. for Orion Variables cont

Plate A 3431 Exp. 10m

17	7.8
18	8.7
a	8.0
b	8.3
c	8.8
d	9.0
e	9.6
f	9.9
g	~~10.3~~ n.s.

Plate A 3433 Exp. 10m

17	8.0
18	8.7
a	8.0
b	8.4
c	8.9
d	9.1
e	9.6
f	9.9
g	not seen

Means. cont.

Plate A 2156 Exp. 180m

17	5.9	5.4
18	6.6	6.1
a	6.6	6.2
b	7.0	6.8
c		7.6
d		7.9
e		8.8
f		9.2
g		~~9.8~~ g 9.8

Measures extremely difficult on account of nebulosity and also because the images are double

Plate A 2119

17	6.1	5.8
18	6.7	6.6
a	6.7	6.1
b	7.0	6.7
c		7.1
d		7.8
e		8.7
f		9.4
g		~~10.0~~
g		10.0

Image of 18 poor

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March 11, 1904

Mess. Cont.

Plate A 3429 Expo. 60m

17	6.8	6.0
18	6.9	6.6
a'	7.0	7.0
b'		7.2
c'		7.9
d'		8.0
e'		9.0
f'		9.4
g'		10.0
g'		9.8

Plate A 5730 Expo. 60m

17	6.0	5.5
18	6.7	6.0
a'	6.7	6.0
b'	7.0	6.4
c'		7.1
d'		7.3
e'		9.0
f'		9.6
g'		10.0
g'		10.0

These scale measures of the second sequence on the last four plates on which the nebulosity is strong are hardly better than guess work. Measurement is extremely difficult

Estimates of Brightness of Variables in Orion

Plate A 3429. Southern group (7 and those south of it

62	7.2	14.2m
56	7.3	14.6
66	7.4	12.6
64	7.5	14.2
60	7.6	14.3
	7.7	15.1
Nbf	45	15.6
Nbf	46	15.3
Nbf	50	13.9
	16	14.9
	17	14.9
Nbf	38	14.7
	57	13.6
	25	14.5
	20	12.9 Image from. Meas. diff.
Nbf	34	15.0? Near edge. Image from. Comp. very uncertain
Nbf	47?	15.5? Filmy in from condition. Comp. uncertain

Plate A 3429 South central group (south from 56)

	56	13.9
	28	not seen < 15.6
24	26	12.5 nebulosity well in along
	27	14.9 nebulosity along. Are very difficult uncertain
	29	15.4
	30	15.1 nebulosity strong Dv second scale 13.6
52	33,	14.0 nebulosity troublesome Dv 2d scale 13.2
	47,	13.6 nebulosity troublesome Dv 2d scale 13.0

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March 12, 1904

Variables in Orion continued

Plate A 3429 cont. South central group cont.

Wolf	40	13.7	nebulosity troublesome
Wolf	41	13.0	" "
	6	14.47	" "
	7	14.5	" "
36	8	13.6	" "
susp.	9		
susp.	10	15.0	" "
susp.	11		
31	21	15.2	nebulosity extremely troublesome On 2d scale 13.6
	22	14.6	" " " " " " 13.3
	32,	14.6	
	33,	13.2	
	34,	15.0	
	35,	13.9	
Susp.	36,	14.2	
	37,	15.2	nebulosity troublesome. On second scale 13.7
susp.	39,	14.2	
Wolf susp.	32(?)	14.2	
	41,	14.5	On second seq. 13.2
	42,	14.6	" " " 13.4
	41	15.0	

Plate A 3429 cont. North central group (from 49 and 59 north)

	49,	15.2
	59,	not seen < 15.5
susp.	52,	15.4? faint in poor condition
Wolf	36	15.4

March 12, 1904

Variables in Orion cont.

Plate A 3429 cont.

	12	13.4	On 2d seq. 12.7
	51,	15.3	
	18	12.5	
	19	13.7	On 2d seq 13.0? faint comp. seen
	1	14.5	
	5	13.8	
	23	14.9	
Wolf	83	14.7	
	50,	14.8	
	53,	14.7	
	54,	14.6	
susp.	55,	14.7	
Wolf	85	12.2	

Plate A 3429 cont. Northern group (from 61 north)

	60	14.6 nebulosity too strong On 2d seq. 13.2
	61	14.5 nebulosity rather strong
	62	15.4
	63	< 13.7 on 2d seq.
	24	< 15.6 scarcely seen
	3	15.0
	4	15.0
	2	15.6? extremely faint
Wolf	42	14.2 nebulosity rather strong On 2d seq. 13.0? diff.
Wolf	44	15.0? Image imperfect
Wolf	39	15.1
	13	14.1 Nebulosity rather strong On 2d seq. 12.9
Wolf	49	13.0 Image from bad dist. - need exp. for good comp.

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March 12, 1904

Variables in Orion Continued

Plate A 3429 Northern group cont.

Wolf	86	14.8?	difficult. distant and poor focus
Wolf emp.	81?	14.2	
Wolf emp.	84?	14.2	
Wolf emp.	52?	14.6	
	15	15.0	
Wolf	37	15.7?	just seen

Plate A 3429 - Central group

Wolf emp.	43	14.2?	Neb. strong second reg. 13.2
emp.	40,	~~14.6~~	" " 11.6
	42,		" " 12.6
	44,		" " 13.2
	45,		" " 13.6
	46,		" " 13.6
Rond	801		not seen? < 13.7
	48,		" " 13.7 Extremely faint
	58	13.6?	difficult " " 11.8?
	65		nebulosity too strong
	70		" " 11.5
	78		" " < 13.7

March 12, 1904

Variables in Orion Continued

Plate A 2119 - Stars bright or faint Southern group

	25,	14.9	
	73	15.2	
		S. Central group	
Wolf	41	13.3	
	3	13.2	
	34	14.2	
	35,	13.7	
	27 44,	15.4	
	30,	< 15.4	not seen
	33,	13.5	
	36,	14.5	
	39,	14.3	
	41,	15.1	
	71	15.1	
Wolf	40	14.4	
		N. Central group	
	23	15.5	49, < 15.6 - not seen
	50,	< 15.5 not seen	51, 14.7
Wolf	73	12.1	
		Northern group	
	13	14.6	nebulosity rather strong Second reg. 13.5
	62	14.1	
Wolf	39	14.5	
Wolf	44	13.8	
Wolf	86	14.5	
		Central group	
	40,	13.1	Second reg. 12.2 ~~13.1~~
Wolf	49	13.1	
	44,		Second reg. 12.9

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March 12, 1904

Variables in Orion cont.

Plate A 5730. Stars bright and faint

	20	14.3	
	26	12.7 3	
	57	14.5	
Wolf	41	12.6	
Wolf	43	13.4	Nebulosity strong. On 2d exp. 12.4? Firebrand comes
	53	13.8	
	54	13.8	
	71	14.0	
	19	12.7	Nebulosity troublesome On 2d exp. 13.4 (First exp. comes)
	15	14.5	
Wolf	86	14.9	
	44	13.4	
	61	13.7	

Plate A 1271

28	14.4	
20	13.7	Comparison difficult. Image of 20 poor
31	13.4	
26	13.4	
74	13.8	
45	14.6	Nebulosity strong On 2d exp. 13.7
3	14.3	
41	13.5	
43	13.5	
49	< 15.3	not seen

March 15, 1904 Remarks on Wolf's 86. I do not trust the measures on A 5730 and A 5731. The star is too distant from the sequence, and near the edge. All the images on A 5730 are too faint in this region. Direct comparison shows the star really slightly brighter on A 5731

Variables in Orion cont.

Plate A 5731

	25	15m.0 13.4	
	20	13.1	
	16	15.4	
	17	15.7	
Wolf	38	14.6	
Wolf	45	15.9	
Wolf	46	15.4	

South Central

39	+	14.1	On 2d exp 13.2 (First star of little)
28	<	16.1	(not seen)
38		15.3	
43 Wolf		13.5	On 2d exp. 11.9 Nebulosity dense

N. Central

23	15.4	
19	13.8	? Nebulosity troublesome. On 2d exp. 12.0
54	14.4	
59	15.4	
53	15.1	

Northern

2	14.0	Image rather large
3	15.5	
4	14.4	
15	15.0	
60		13.7 2d exp. Nebulosity dense
63	<	< 13.8 " " " "
37	~~15.4~~	15.7 (Wing star first exp.
44	< 15.5	Nebulosity rather strong Very faint
86	13.6	Measurement difficult
24	15.0	

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March 13, 1904

Variables in Orion cont

Plate A 153

	76	13.3
Wolf	40	13.6
"	50	15.0
"	34	15.2? Near edge. Image poor. Est difficult
"	47?	45 poor
"	52?	14.0? Equal to star south of it

Plate A 192

	76	~~13.6~~ 13.3
	36	~~14.7~~ 12.7
	29	14.7
	5	13.2
Wolf	37	14.3
"	45	15.0
	50	15.1
Wolf 39, 1903 (Sept 6, 1904)	38	13.8
	27	14.7

Plate X 5255

	19	
	~~26~~	not on plate 13.7
	33,	13.4
	45,	14.3
	58	13.5
	7	13.2 Obs. diff. as star in between two stars, Mercury bright
	12	~~12.4~~ 13.4
	18	12.4
	44,	Denied reg. 13.3
Wolf	85	12.0
	70	11.8

Variables in Orion continued

Plate X 5242

	7	13.6
	12	14.7
	33,	14.5
	58	14.1
	44,	7 ——— Scarcely reg. 12.7
Wolf	85	12.6 Compared with c and e, as the nim age of d appears to be imperfect
	19	13.5
	18	11.6

X 5503

	18	12.3
	19	12.3
Wolf	85	13.4

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March 14, 1904

Variables in Orion continued

Plate A 3429

31, 15.0

Bnd 801 Second veg. 13.6? Nebulosity my dense

Plate A 2119

60 15.2 Second veg. 13.6 Nebulosity troublesome

61 14.8

48, " " 13.5

20 13.0

Bnd 801 ons. Veg < 13.7

73 13.7? nebulosity strong

42, 14.4 13.5

43, 13.1

37, 14.9 13.6

Plate A 5731

51, 16.0

20 " 13.2

27 15.2 Nebulosity troublesome

Plate A 2154

6 13.9

41, 15.1

70 " Second veg. 13.1 ?

43, 12.7

20 12.9

Variables in Orion continued

Plate A 153

5 12.8

41, 14.5

42, 14.0

43, ~~15.2~~ Second veg. 13.2

70 " " 11.1

Plate A 1276

75 13.5

~~20~~ 27 14.6

Plate A 2156

20 12.7

42, 15.3

A 5730

20

X 5230

65 2d veg. 11.8

70 " " 10.8 ? (brighter than "8" veg)

X 7367

65 11.2

70 11.5

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March 16, 1904

Variables in Orion -

Measures of position of 57 (H.H.) with reference to Bond 585 and 586

	x	y	x	y	Diff x	Diff y	Σ x 4
57	~~3.62 3.60~~ ~~4.75~~	~~11.70 11.35~~	-3.65	+11.20	+35		
585	7.25	+20.80	-0.05	+22.80	+357	+9.60	+14.28
586	±0.0	+1.30	±0.0	+1.30	+362	-9.90	+14.48

	dα	dδ		dα	dδ
Bond 585	-0m 4.58	-51.0 + 0	Bond 586	-0m 4.35	-70.53 + 7
	+0 14.28	+ 9.6		+0 14.48	- 9.9
	-0 18.86	-60.6		-0 18.83	-60.6

9 Orionis	5h 30m 21s.3		-5° 27'.3	(1900)
	- 0 18.8		- 0 60.6	
57	5 29 2.5		-6° 27.9	(1900

March 16, 1904

Variables in Orion

Examination of plates for 79 and 80

Magnitudes below are corrected



Plate A 2156 15.5?

Extremely faint - appears equal to Comp. star in which is just seen

80 < 15.5 just seen?

Plate A 2119 < 15 (not seen)

80 < 15 " "

Plate A 5731 79 13.2 Measurement difficult on account of the brightness of the nebula and the strong fogging of the plate. The variation is very striking.

80 < 15.5 Extremely faint

Plate A 1912 79 14.6 Images extremely faint

80 < 14.4 not seen

Plate A 1273 < 15 Scarcely visible

80 < 15 not seen

Plate A 153 < 14.4 Not seen

The star marked 80 on chart is very bright 13.7

Plate A 5730

79 = 14m.4

80 n.s. < 14.8

The images are rather poor. All appear rather faint as compared with the images on Plate A 2156. An object of about 13m.2 marked ✱ on chart is probably a defect in the film.

Plate A 3657 79 < 14.8 not seen

80 < 14.8 " "

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March 16, 1904

Variables in Orion Cnst.

Plate A 3429

79 < 15.0 (barely seen)
80 < 15.0 not seen

March 17, 1904

Variables in Orion.
Examination of Plates for 81

Plate A 2156
81 = 12.9 / 13.4

Plate A 3429
81 11.9

Plate A 153
81 < 14.6 (not seen)

Plate A 192 81 < 14.8 (not seen)

Plate A 5730
81 13.2

Plate A 5731
81 12.7

Plate A 2154
81 12.4

Plate A 1271
81 12.0

Plate A 2119
81 = 11.5

The above are corrected magnitudes

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March 18, 1904

Variables in Orion - Measures of 82

Plate A 2156

82 = 15m.1

Plate A 1271

82 = 12.5

Plate A 2119

82 = < 15.0 n.s.? I think there is a faint trace

Plate A 158

82 = 15.0? (just seen)

Plate A 192

82 = 14.6 Images very faint

Plate A 5730

82 = < 15.0 not seen

Plate A 5731

82 = 15.8? Fainter than faintest comp. star - just seen

Plate A 2156 < 14.6 (not seen)

Plate A 3429 < 15.0 (not seen)

Plate A 61

82 = 13.7

March 19, 1904

Variables in Orion - Examination for Variables 1h 45m

Star 82 (marked on A 5730) appears nearly a magnitude too bright on that plate. Usually about 14m.5 it is, on that plate, about 14.1 by measurement with sequence. The latter result, however, is too faint, as all the stars in the region appear fainter than in A 2156 or A 3429. Observers times had my attention called to the rapid fading out of images on this plate as the distance from the center increases. As the images are poor, I do not feel certain that there is true variation, though the apparent increase in brightness is noticeable.

84 (Marked on A ~~2156~~ 3429)

Plate A 3429. 14.5

Plate A 2156 < 15.5 (not seen)

Plate A 2154 too poor

Plate A 5730 < 14.5 (not seen) Observers allowed half a magnitude for fading of images on this plate. The faintest comp. star is 15.0

Plate A 1271 < 14.8 (not seen)

Plate A 5731 < 15.5. No trace on the plate

Plate A 158 < ~~15.0~~ 14.5 (not seen)

Plate A 192 < ~~15.0~~ 14.5 (not seen)

Plate A 2119 < 15.0 (not seen)

As this object has been seen only on 3429, it is possibly a defect, though closely resembling a genuine star image. These magnitudes are corrected

Stopped at 5h 15m after examining 298 stars

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March 21, 1904

Variables in Orion.

Looked up the position of Bond 178. In the notes he states that the catalogue position is wrong - In the position as corrected, i.e. $\alpha - \alpha_0 = -1^m 43^s.05$ $\delta - \delta_0 = -634''.6$ I find a star, evidently Bond 178. How officially disposed of the question whether Wolf's 36, 1903 is Bond 178. In volume XXXII it is stated that Bond 178 could not be found (Table II page 42) - In table II, if stars not contained in Bond, no. 69a (page 44) has coordinates $\alpha - \alpha_0 = -1^m 44^s.0$ and $\delta - \delta_0 = -646''$. The latter position is not claimed to be closely accurate, and as there is no neighboring star, it is safe to assume that it is Bond's star.

Also looked up position of two stars wrongly charted, near my variable 57. They are, Bond 528 $\alpha - \alpha_0 = -0^m 15^s.67$ $\delta - \delta_0 = -331''.3$ and Bond 537 $-0\ 13.66$ $-350''.6$

Each of these is charted six seconds of time following the true position.

Variables in Orion - Search for Variables in the North Central part of Bond's Map.

$3^h.45^m$

Measures of 83

Plate A 2156

83 = 12.2

Plate A 3429

83 = 12.7

Plate A 2119

83 = ~~15+~~ 14.6 (corrected)

Plate A 5731

83 12.8

Plate A 153

83 = 12.8

Plate A 5730

83 12.8

Plate A 1271

83 14.4

Plate A 192

83 = 13.0

Plate A 2156

83 12.7

Stopped 4h 35

The above measures are of provisional only. Star declined from ... All are corrected.

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March 23, 1904

$9^h\ 30^m$

Variables in Orion

Measures on A 1271 of brightness of no. 22

22 = 15.0 (Corrected)

Examination for Variables - Northern part of reg of Bond's map

Measures of Number 84 - var?

Plate A 3429 This number not used

84 = 14.4

Plate A 2156

84 = 14.2

Plate A 5730

84 = 14.4

Plate A 1271

84 = 14.2

Plate A 153

84 = 14.2

Plate A 5731 14.2

Plate A 2154 14.2

Other plates show no variation - The light seems to fluctuate very slightly

$10^h\ 45^m$

March 23, 1904

Variables in Orion

Examination for Variables.

$1^h\ 30^m$

Measures of Number 84a

Charted Aug 29, 1904

Plate A 3429

84a 84 = 14.5

Plate A 2119

84a = 14.7

Plate A 2156

84a = 14.5

This star is so faint and distant from the sequence to measure satisfactorily It appears about 0m.4 brighter on Plate A 2156 than on A 2119. It is apparently rather bright on A 1271 (image poor) - Bright unmistakably on A 2154, although it is badly scratched and the images are poor Faint on all other plates.

$2^h\ 30^m$ Finished examining reg of Bond's map

Measures of Bond 801

I 2925

801 = 12.8 (?) g'm.s.

I 2917

801 = 12.6

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March 24, 1904

Variables in Orion

Number of star images examined during the investigation, and distribution of Variables.

In that part of Bond's region north of -4° 44' (1910), 724 star images were counted. Large portions of this region were examined before the count was begun. Two independent estimates gave about 175 as the number in these portions, making the total number in the northern portion about 900. In the south preceding portion, 360 images were counted. These two sections cover about $\frac{2}{3}$ of the region of Bond's map. It is estimated that the stars in the remainder are only $\frac{2}{3}$ as dense. On this supposition, there should be about 1700 images which have been definitely examined making a total of about 3000. In addition to these, a large number of images on plates A 2156 and A 5731 were not specifically examined, but would have attracted attention by any material increase in light; an increase of 0m.3 would certainly have been noticed.

Out of 900 stars in the northern section, one variable was found and one star suspected of variability. Both the variable is near the southern boundary and and only slightly preceds θ Orionis.

Out of 360 stars in the S. preceding portion, one variable was found, and that is on the extreme edge of the region, near the central axis.

portion of this

Following

Preceding the position of 74(7484) there has

Variables in Orion continued

been found only one variable within the limits of Bond's map. There are two beyond these limits.

Preceding the position of 49(7484) only one variable has been found, and one star suspected of variation. The region remaining is here

There remains less than $\frac{1}{3}$ of the original remainder in which 1700 images are supposed to have been examined. It may therefore be roughly estimated that 1100 star images have been examined in this region, which contains the great majority of the variables found. A direct estimate of the same region, independently made, gives the same number.



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March 24, 1904

Examination of plates for star at
$6^h\ 55^m\ 7^s.0$ $+17°\ 36'.4$ (1855), Comparison star for Dris. susp. var. by Mr. O.C. Wendell

I 3140 Feb. 22, '91. Exp. 10m
I 5050 Dec. 10, '91 " 12m
I 8024 Feb. 5, 1893 " 12m
I 10,894 Mar. 24, 1894 " 10m
I 13968 Nov. 30, 1895 " 14m
I 14418 Feb. 2, 1896 " 10m
I 20058 Jan. 17, 1898 " 13m
I 24906 March 21, 1900 " 15m
I 25237 April 26, 1900 " 18m
I 29318 Oct. 6, 1902 " 68m
I 31324 Dec. 23, 1903 " 15m
I 31376 Jan. 14, 1904 " 40m

I 22102 Jan. 1, 1899. " 19m

The above plates have been examined. The star in the position given is always about four grades fainter than DM +17° 1483, 9m.4, about equal to DM +17° 1485, 9m.5 and two grades brighter than DM +17° 1484, 9m.5 A star a magnitude fainter, slightly preceding and south of it, is also constant in brightness

March 25, 1904

Examination of Plates in the Photographic Map of the entire Sky (Circular No. 71) for nebulous regions possibly favoring the presence of variables.

Plate 12. An extension region below the centre and extending approximately east and west has noticeably few stars. Near the Pleiades.

Plate 13. The above region is continued on the preceding portion of the plate. Following it is the nebula and cluster which are seen on the plates taken for Uranus with the Bruce telescope (3)

Plate 31. There are several clusters of singular appearance on this plate. - large collections of loosely scattered stars of about the same magnitude. Between and near them, are regions with very few stars

Plate 42. A lane curving southward from about [70, 150] has very few stars. Also in the south following portion of the plate are several regions with few stars in contrast with crowded regions

Plate 43. Apparently a large part of the region covered by this plate, following the line of the Milky Way, might well be investigated. A strikingly nebulous region (Sagittarius). The Trifid Nebula is conspicuous. See Thos. W. Webb's Celestial Objects for Common Telescopes, p. 111.

Plate 48. The Large Magellanic Cloud.

Plate 50. An extension region with but few stars comes from South of the Southern Cross, nearly to my Canopus

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March 25, 1904

~~11~~ 9.40 A.M.
3.15 P.M.

Preliminary examination of Trifid Nebula for Variables

Superposed plates A 1535 4951 June 11, 1896
and A 4700 Sept. 27, 1900

Examined in this way the Trifid Nebula and the nebulous cluster south of it. No variation was found in either region. Then a count was made outwards from the center of the Trifid Nebula. 372 stars, including nearly all on the nebula itself, show no sign of

5.30 variation

March 26, 1904

Trifid Nebula continued

10.45 Marked off a region 30' square with nebula
12.15 at the center. Examined 357 star images, none of which showed any variation. The same two plates as yesterday were used.

Center of square is A GC 24508 RA 1900: 17h 56m. 3 Dec. 1900 -23° 2'.

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March 28, 1904

Examination of Plates for DM -1° 943, announced as variable by Mr. J. Miller Barr, St Catharines, Ontario, Canada. Announced range 0.4 to 0.5; period about 18 or 36 hours

Plate	AC 3305,	Feb. 17, 1903	Exp. 62m
12	AC 4587	Feb. 1, 1904	75m
4	AC 2960	Oct 31, 1902	96
	AC 552	Nov. 24, 1899	64
	AC 152,	Jan. 11, 1899	62
1	AC 3309	Feb. 10, 1902	60
2	AC 2885	Oct. 9, 1902	59
3	AC 2931	Oct. 24, 1902	78
12	AC 4979	Jan. 14, 1904	61
14	AC 4631	Feb. 10, 1904	64
11	AI 1879	Dec 22, 1903	81
12	AI 1918	Dec. 28, 1903	59
10	AI 1871,	Dec. 19, 1903	79
6	AI 1698	Nov. 9, 1903	80
7	AI 1651	Nov. 10, 1903	76
8	AI 1661	Nov. 12, 1903	66
9	AI 1676	Nov. 18, 1903	97

On the above plates DM -1° 943 appears always almost exactly equal to DM -1° 935, 6m.0 DM -1° 965, 8m.7 appears always to be about four grades brighter, and DM -1° 949 9m.7 appears considerably fainter, - 7 or 8 grades at least. DM -1° 949, 9m.7 was also used for comparison, the difference being a little greater than in the case of DM -1° 949.

March 28, 1904

161

Examination for DM -1° 943 continued.

On the following plates the star was suspected of being somewhat fainter than normal, not, however to exceed, one or two grades.

AC 3447,	March 20, 1903,	Exp. 60m
AC 2393,	March 10, 1902	84
AI 1403,	Sept. 16, 1923	84
AI 1819,	Dec. 19, 1903	59
AI 1897,	Dec. 24, 1903	48
AI 1974,	Jan 10, 1904	97
AI 1957,	Jan. 5, 1904	76

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March 29, 1904

Examination of the Trifid Nebula. Cont from p. 159

13h.0

A conspicuous object (9½ magn.) on Plate A 4700 on the southern limit of the region marked ✠ and preceding the centre about 10 mm is square instead of round, and evidently a defect. It is almost precisely in the position of a faint star, which it conceals.

Another conspicuous object (magn. 13.3) on Plate A 4700, 2 mm preceding the following boundary and 20 mm north of the southern boundary, also seems to be a defect.

Stopped at 1h.0 after examining 212 star images without finding any variable.

2.15 PM

3.20 PM Stopped after examining 226 stars without finding any Variable.

In the region 30′ square extending in right ascension from 17h 55s.2 to 17h 57s.8 and in declination from -22° 47′ to -23° 17′, 1167 star images have been examined and no variables found. The centre of the region is the bright star in the centre of the nebula (p. 57). The above positions are for 1900

March 29, 1904

Examination of the Central Part of the Nebula of Orion for variables suspected by Bond

4h.0 PM
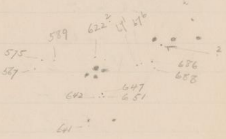
Stars nearest the Trapezium.

Bond 575, 589, 622, 641, 647, 654, 671

Of the above stars, all were identified on the plates except 589, whose presence is suspected on Plate I 7352, and 654 which could not be found.

The only other stars identified in this region are 642, 651, 676, 686, 688

Numbers 642, 651 and 676 were suspected by Bond, though not mentioned by him as certainly variable



It proved impossible to compare these stars with others more distant from the Trapezium. They have been compared with each other on the following plates.

I 5231, Sept. 12, 1893, +ph. 10
I 7368 March 13, 1896 10
I 7367 " " " "
I 7351 March 9, 1896 15
I 5230, Sept. 12, 1893, 10
I 7352, March 9, 1896 15
I 1379
I 2182
I 2355
I 2358
I 2376

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March 29, 1904

Variables in Orion continued

a = 671
b = 647
c = 575
d = 589
e = 651
f = 676
~~g = 612~~ I think this is not a star image
gk = 686
hk = 688
kk = (?)
l = 622(?) I am not absolutely certain of identi.

Plate I 7352
a | b
b 5 c
c | e
Further images not comparable with these
g 2 h
h | k
k o d ?

These images are very diffuse and fade away into the Nebula. The image of f is seen but is very faint and imperfect, incomparable with any other star. There is a scratch on for f 622(?)

March 29, 1904

Variables in Orion Continued

Plate I 7351
a o b
b 6 e
e | c
c | d

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March 30, 1904

Variables in Orion continued.

$10^h 25^m$ The sequence method of examination tried in the two preceding pages is not satisfactory. Direct comparison of plates is here attempted.

Each plate compared with XI 7367

Plate XI 7532

575 Probably as on XI 7367
589 Nebulosity too strong for good observation
622 Position covered by scratch
647 As on XI 7367
651 (appears equal to 612 on plate 7367) probably as on 7367
612 not seen(?) Nebulosity dense and turbid here. It seems to me it ought to be seen if as bright as on plate 7367
671 as on 7367
642 not seen? Surface of plate
676 faint unsolid nebulosity. Probably as on 7367
686 As on 7367
688 " " "
? As on 7367.?
641 Probably as on 7367

Variables in Orion continued

Plate XI 7351

575 Certainly as on 7367
589 " " " "
622 " " " "
647 As on 7367
651 Probably as on 7367
612 " " " " Image very close + definite
671 As on 7367
676 Almost certainly bright
686, 688 As on 7367
642 Not seen?
641 Prob. as on 7367
? Pos. covered by a scratch

Plate XI 7368

575 Too faint

647 and 675 seem to be normal. The plate is too faint for these stars.

Plate XI 5231

622 may be bright. See no evidence of variation in other stars.

Plate XI 2376

Nebulosity too dense. I think that no 671 is rather faint.

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March 30, 1904

Variables in Orion continued

Plate X 2358

Nebulosity rather strong. No evidence of change seen.

Plate X 3355

No certain change seen

Plate X 2182

No certain change seen. Nebulosity strong

Plate X 1379

No change seen. nebulosity strong

Stars 658, 688, and ? are never clearly defined and seem more like knots in the nebulosity than like stars. On the plates examined there is no real evidence of variation in any of the stars within 1.5 of the Trapezium. Fluctuations to the extent of half a magnitude could probably take place without definite observation on these plates being possible, owing to the strong and complicated nebulosity.

Variables in Orion continued.

Examination of short exposure plates for Bond 746, 801, and for 40, 64, 68, 71, 69 (see Chart fringe 113).

Compared with X 7367

X 7352

746	Seems slightly brighter - 0.75
801	Too faint
40	No variation
64	" "
68	" "
69	" "
71	" "

X 5231

746	Seems as bright as on 7352
801	Too faint
40	No variation
64	" "
68	" "
69	" "
71	" "

X 7351

746	as on 7352
801	Not seen. too faint ?
40	No variation
64	" "
68	" "
71	" "

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March 30, 1904

Variables in Orion continued

Plate X 1379

746 normal
801 N.S. Stamens 4 sec st. should be seen
40 Normal
64 "
68 "
69 "
71 "

X 2182

All the suspected stars are normal
801 scarcely seen - Normal ?

X 2355

All susp. stars normal. 801 n.s. too faint

X 2358

All susp. stars probably normal. 801 just seen ? normal ?

X 2376

Susp. stars all probably normal. Nebulosity rather strong. Too few for 801

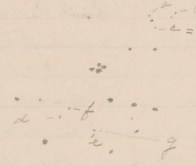
March 30, 1904

Variables in Orion and Examination for susp. var. Marked (?) on chart page 113

Plate X 7352

As on X 7367

c = 11.4 ?



X 5231

c very bright 11.0 ?
a and b equal - scarcely seen

X 7351

As on 7367

84 c = 11.4 ?

X 2376

Probably as on 7367. Nebulosity strong
11.6 ? Very uncertain - Groups poor

X 2358

c very faint 12.2 ?
other stars normal
Stang has not been seen before in at variable ?

X 2355

c faint 12.1 ?
g noticeable again

X 2182

c faint = 12.2 ?
g noticeably bright

X 1379

84 c faint 12.5 ?

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March 30, 1904

Variables in Orion Continued

Plate I 5230

C probably bright - Plate rather poor

C = 11.0

I 5227

C certainly very bright - Plate not very good

C = 11.0

I 5357 C = 11.7? Very uncertain

84 C is unquestionably variable -

Does no reason for considering g to be variable.

Apparent variations are probably due to nebulosity.

Variables in Orion continued -

Marked dark lanes on Plate B 2312 - Compared the plate B 2325 on which the outlines have been traced (by Prof. W. H. Pickering[2]) and found substantial agreement. Superposed B 2312 and B 3891. Found no new variables, but rediscovered 84 found a moving object (planet) marked on Plate B 2312 3891, also another conspicuous object on B 2312 3891 which is probably a defect. Marked on the plate.

Marked outlines of dark lanes on A 3429. Superposed that plate on A 2156. No variables found in regions marked ff. Any variation to exceed half a magnitude should have been found unless the stars are extremely faint.

The object found on plate B 2312 is a defect. It was not on Plate 2325 that the other object was found, but on B 3891. On that plate it was an image at the end of the trail of a bright star of which the principal image is not on the plate.

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March 31, 1904

Variables in Orion continued

9 30 Superposed A 3119 on A 3429 and examined all the nebulous regions marked on A 3429. No variables found.

Superposed A 5730 on A 3429. One faint 84 variable (?) found. The image seems rather different from those of others stars on the plate, but coincides precisely with the position of an extremely faint star on Plate A 5731. There is also a trace of it on Plate A 3156. See Book VIII page 34

Plate A 1271 superposed on A 3429

No variables found in regions marked 85 on A 3429.

Plate A 153

85 not seen

Superposed on A 3429. No variables found

It seems improbable that any variable with a maximum above 13m.5 and a range of more than half a magnitude has been overlooked on these plates. On plates A 3429, 2156 and 3119, variables 14m.0 or brighter, at work, and with a range of half a magnitude would probably have been detected. While it is not improbable that an occasional variable of small range may have been overlooked in this examination, it appears likely that there are no great number of variables outside the regions covered by Bond's maps.

12.30

Examination for Variables in Nebulous Region near Antares (Uranus plates)

1 45 Plate A 3635 June 15, 1899 superposed on Plate A 3531, May 20, 1899

Regions apparently nebulous were marked on A 3635. A rather cursory examination shows no variation between the two plates. If a plate can be found quite distant in date, it may be worth while to make a more careful examination. Any conspicuous variation (magn. or color) would have been noticed at this time.

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March 31, 1904

Examination of the Looped Nebula in the Greater Magellanic Cloud - for Variables

3h 30m Plate A 2960, Apr. 11, 1898, Exp. 125m
A 2172 Nov. 13, 1896 Exp. 196

These two plates were superposed, but on account of the strong nebulosity and the crowding of star images, this method cannot be used to advantage.

Plate A ~~2207~~ 2172, Jan. 29, 1897, Exp. 165m superposed with Plate A 2960

Marked a region 20' square with the Nebula near the centre. One star strongly suspected of variability. The plates available do not fully confirm it. Apparent variation about 0m.3

5 15. Examined 265 star images, covering a little more than 1/3 of the region

Nebula = Gillis 3373 5h 39m 45s.0 -69° 10' 43".9 (1850)
5 39.4 -69 9.3 (1900)
Region extended from RA. 5h 37m.6 to 5h 41m.2
and from Dec. -68° 59'.3 to -69° 19'.3

Looped Nebula Continued

9 55 Star probably variable



Plate A 2960
a 5 V
V o b
V 5 c
c 4 d

Plate A 2172	Plate A 2207
b 5 V	b 3 V
V o c	V 1 c
V 3 d	

Plate A 2202	Plate A 2157
b 2 V	b 3 V
V 2 c	V o c
Images poor. Obs. doubtful	b 4 d
	Images very poor. Obs. doubtful

Plate A 2969
b 1 V
V 3 c

The above estimates seem to confirm my impression of a slight variation in this star

1 20 Stopped after examining 609 star images, finishing the region marked off

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April 1, 1904

Looped Nebula ante.

Examination of Plates for Var. (1) on preceding page and two others suspected.

Plate A 2960 Apr. 11, 1898

Var. 1
bright ~~13.9~~ 13.2



Telescope up

Var. 2
bright ~~13.7~~ 14.7

Telescope up

Var. 3
bright 15.0

Plate A 2172 Nov. 13, 1896

(1) faint 13.3
(2) faint 14.1
(3) faint 15.2

Plate A 2209, Jan. 31, Feb. 1, 1897 Exp. 190m + 75m

(1) medium 13.1
(2) faint 14.1
(3) faint 15.1

Plate A 2157, Nov. 11, 1896 Exp. 203m

(1) faint 13.2
(2) faint 14.1
(3) faintest 15.1

Admit the variability of (2)

Looped Nebula continued

Plate A 2207, Jan. 29, 1897

(1) faint - 13.1
(2) faint 14.1
(3) faint 15.2

Plate A 2202 Jan. 23, 1897 Exp. 160m

(1) faint 13.2
(2) faint 14.0
(3) nominal? Image very faint

Plate A 2198, Jan. 21, 1897. Exp. 90m

(1) rather bright 13.0
(2) decidedly faint 14.2
(3) faint? 15.2

Plate A 2203, Jan. 26, 1897 Exp. 240m

(1) faint 13.2
(2) rather faint 14.0
(3) nominal

Plate A 2130 Oct. 14, 1896, Exp. 143m

(1) medium 13.1
(2) 14.0? Image very fine
(3) 15.8? scarcely seen

Plate A 2969 Apr. 14, 1898 Exp. 53

(1) rather faint 13.1
(2) bright 13.5
(3) faint 15.3

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April 1, 1904

Looped Nebula Continued

Plate B 23846 Nov. 24, 1897

(1) Probably bright stars too crowded for good eye

(2) Bright 13.4

(3) Faint 15.1

I do not think there is sufficient ground for considering (3) variable. There is no question about (2) and I think more about (1)

Total number of stars examined in the Looped Nebula of the Greater Mag. Cloud, 874

April 2, 1904

Greater Magellanic Cloud

Superposed Plate A 2209 on Plate A 2960,

Made a cursory examination of about a region about 2° square, preceding the Looped Nebula and north of a line about $\frac{30'}{2}$° south of the Nebula. The crowding of stars and darkening of the plate in places by nebulosity made a very thorough examination impracticable. Any conspicuous variation in the region examined would probably have been noticed unless it occurred within a dense cluster. It seems evident that there is no general tendency to variation in this region, for such a tendency would surely have been noticed.

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April 4, 1904

Carina Examination of the Keyhole Nebula for Variables.

11.50 GMT

Plate A 3018, May 20, 1898 Exp. 225m superposed on Plate D 5492 = A 2208, June 1, 1896 Exp. 240m

Some[1] emp. var. marked

Plate A 2208, Jan. 30, 1897 Exp. 240

superposed on D 5492

Three emp. stars marked on A 2208

Plate A 1743

Plate A 1737

Plate A 2013

Plate A 2549

All three plates superposed with D 5492.

Two bright stars noted by Prof. Pickering seem to be variable. I find many defect. Some of the images marked may prove to be variables.

April 5 1904

Keyhole Nebula continued

10 30

An examination of Plate 3018 in comparison with A 2208 shows that four other images marked, beside the two discovered by Prof. Pickering, are markedly variable. They are marked on both plates.

Plate A 2208

Var. 1 bright magn. 9?
2 bright magn. 7? = U Carinae
3 bright magn. 14?
4 faint " 15?
5 faint " 8.
6 bright magn. 13.5?

Plate A ~~3018~~ 1743

Var. 1 faint 11.0?
2 rather bright 7.5?
3 very bright 13.0?
4 rather bright 14.0?
5 bright 13.0?
6 not seen < 15.0?

Plate A 1743

Var 1 medium 10.0?
2 probably bright - near edge
3 Extremely faint. 15.5?
4 rather bright 14.0?
5 faint 15.0?
6 bright 14.0?

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April 5, 1904

Keyhole Nebula continued

Plate A 1737
Var. 1 bright
2 medium = η Carinae
3 n.s.? < 15
4 rather bright 14.5?
5 faint 14.5?
6 bright 14.0?

Plate A 3018
Var. 1 faint
2 faint
3 n.s. < 15
4 very bright 13.5?
5 bright 13.5?
6 n.s. < 15

Plate A 3013
Var. 1 faint
2 rather bright
3 n.s.? < 15
4 very bright 13.0?
5 bright 13.5?
6 n.s. < 15

1 h PM.

The above estimates of brightness are very rough, and not to be quoted in any announcement. They are made for practice in estimating magnitudes directly.

April 5, 1904

Keyhole Nebula continued

2 15 Examination of AM Plates for variables 1 and 2

Plate Arch 738, March 26, 1901
1 medium 9m.5?
2 rather bright 7.5 / 9m.5? = η Carinae

Plate AM 459, May 8, 1900
1 medium 9.5?
2 bright 7.5?

Plate AM 1724 Nov. 26, 1902
1 faint 10.5?
2 bright 7.5?

Plate AM 2117, July 14, 1903
1 rather faint 10.0?
2 medium 7 / 8.5?

Plate AM 1970,
1 medium 10.0?
2 faint 9.0?

Plate AM 389 March 26, 1900
1 very bright 8.5?
2 faint 7 / 9.0?

Plate AM 2098, July 6, 1903
1 bright 8.5?
2 faint 8.0?

345 The above plates show variation markedly. Estimate of brightness not reliable. Put down for practice merely.

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April 6, 1904

Variable Stars in the Nebula of Orion.

Measures of Nos. 7, 24, 31, 36, 52, 60, 62, 66, 67 (circular D)
Also nothing suspected variables. Mean 47, susp.

Plate A 153, Jan. 7 '94 Exp. 60m

I	nst even?	< 14.8	
24		12.5	
31	F	< 14.8	
36		14.2	
52		14.6	
47,		13.7	
60		12.8	
62		14.8	Very faint image
66		12.9	
67	n.s.	< 14.8	

8, 1904 n.s.

Plate A 1271

7	12.8	
24	13.0	
31	12.9	
36	13.1	
52	14.1	
47,	13.9	
60	14.4	
62	14.9	just seen
66	13.4	
67	12.4	

2, 1904 n.s.

Variable Stars in the Nebula of Orion cont.

Plate A 2199, Jan. 22, 1897 Exp. 129m

This plate shows only the southern portion of the region. All the stars now examined are in the southern portion.

Looked for Wolf's 32, 1903 and 33, 1903, but found no variation from plates previously examined.

Plate A 5730, Dec. 3, 1901 Exp. 60

7	n.s.	< 15
24		11.9
31	n.s.	n.s. < 15
36		12.8
52		13.9
47,		13.4
60		13.8
62	F	15.0 ?
66		11.9
67		13.2

8, 1904 n.s.

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April 6, 1904

Variables in the Neb. of Orion cont.

Plate A 192, Jan. 25, 1894 Exp. 60 m

7	F	14.8?
24		12.4 d cums saltke faint
31	F	14.7?
36		13.7
52		14.5
47,		13.5
60		12.9
62		14.2
66		14.2
67	F?	15.0?
8, 1904	not seen	

Plate A 2154, Nov. 9, 1896

7	n.s.	<14.8
24		12.9
31	F	14.7?
36		13.2
52		13.8? Fogging from Orionis Trapezium
47,		13.8? " " "
60		13.1
62	F	14.7?
66		12.0
67		13.1
8, 1904	not seen	

April 6, 1904

Variables in Orion cont.

A 3422, Dec. 8, 1898 Exp. 10 m

7	n.s.	<13.0
31 ~~24~~	n.s.	<13.0
36 ~~31~~		12.2
24 ~~36~~		12.3
52	F	13.3?
47,	F	13.2?
60		13.0?
62	n.s	<13.1
66		11.8
67		11.9
8, 1904	not seen	

Plate A 144, Jan. 1, 1894 Exp. 60 m

7	F	14.6? Images of ft. stars very poor
24		12.4
31	n.s.	<14.6
36		13.7
52		14.2? Very uncertain
47,		13.5? " "
60		14.0? " "
62	n.s.	<14.6
66		12.5
67	n.s.?	<14.6
8, 1904	not seen	

Comp. stars 16, ~~28~~, 31, 34, 36, 39, 40, 44, 46, 54, 55, can be trusted, not always to admiration in this plate. ~~28 is very bright and found easily.~~

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April 6, 1904

Variables in Orion Cont.

Plate A 3423, Dec. 8, 1898 Exp. 10m Isochromatic

7	Too faint	
24	"	"
31	"	"
36	"	"
52	"	"
47,	"	"
60	F	12.0?
62	n.s.	<12
66	F	12.0?
67	F	11.9?
8, 1904	not seen	

Susp. variables cannot be examined on this plate

Plate A 61, Nov. 30, 1893 Exp. 61m

7	F	13.8
24		12.4? Image poor; meas. uncertain
31	n.s.	<14.6
36		12.8
52	F	14.1?
47,		13.9?
60		14.1
62	n.s.	<14.6
66		12.5
67	n.s	<14.6
8, 1904	not seen	

The images on this plate are poor and most of the comparisons uncertain

The suspected variables were looked for, but none observed to advantage

April 6, 1904

Variables in Orion continued

Plate A 240, Feb. 16, 1904 1894
Reg. too far north

Plate A 1270, Jan. 25, 1895 Exp. 25m

7	n.s.	<12.4
24		12.0
31	n.s.	<12.4
36	Too poor	
52	Too faint	
47,	"	"
60	n.s.	<12.4
62	n.s.?	<12.4
66	F	12.5?
67		11.7
8, 1904	n.s.	

Suspected variables looked for, but the plate does not show faint enough stars

Plate A 216, Feb. 4, 1894, Exp. 36m

7	n.s.	<13.4
24		12.9
31	n.s.	<13.4
36		12.8? Image very poor
52	F	13.4?
47,		13.2? Image very faint
60		13.3
62	n.s.	<13.4
66	F	13.4?
67		13.0?

All measures uncertain on account of faintness [illegible] but plate too poor

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Variables in Orion cont.

Plate A 128, Dec. 27, 1892 Eyp. 60m

7	F2	<13.4
24		12.0
31	n.s.	<13.4
36	n.s.?	<13.4
52	Too poor	
47,	" "	
60		12.8
62	n.s.	<13.4
66		12.3
67	n.s.	<13.4

5, 1904 n.s.

Too poor for susp. variables. They were looked for. 40, shows no variation

Plate A 3430, December 17, 1898

7	n.s.	<13.1
24		12.4
31	n.s.?	<13.1
36		12.7
52	n.s.?	<13.0
47,		13.0? Very faint smudge
60	n.s.	<13.1
62	n.s.	<13.1
66		12.1
67		12.2

40, normal

Too poor for susp. variable, which were looked for, however

April 6, 1904

Variables in Orion cont

Plate A 29, Nov. 20, 1893 Eyp. 20m

7	Too poor	
~~31~~ 31	n.s.	<12.5
~~36~~ 36	n.s.?	<12.5
~~24~~ 24		12.0?
52	Too faint	
47,	" "	
60		12.2?
62	Too poor	
66		11.9?
67	n.s.	<12.5

This is a copy from plate and some of the measures were felt to be satisfactory

40, normal

Plate A 3424, Dec. 8, 1898 Eyp. 10m

7	n.s.	<12.4
~~36~~ 31	n.s.	<12.4
36		12.3?
24		12.4?
52	Too faint	
47,	" "	
60	A defect comes the position	
62	Too faint	
66		11.7
67		12.3

40, normal

Too faint for suspected variables

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Variables in Orion Continued

Plate A 187, Jan. 23, 1894 Exp. 11m
Too poor

Plate A 241, Feb. 16, 1894

7	n.s.	<12.9
24	Too poor	
31	susp. F	12.9? Very uncertain
36	n.s.	<12.9
52	Too faint	
47,	"	"
60	F?	13.0?
62	F?	13.0?
66	n.s.	<12.9
67	Defect hides position of star	
40,	rather faint?	

Too poor for unspotted variables

Plate A 205 Jan. 31, 1894 Exp. 27m

7	n.s.	<12.9
24		12.8?
31	n.s.	<12.9
36	n.s.	<12.9
52	Too faint	
47,	"	"
60	F	13.0?
62	n.s.	<12.9
66		12.8? Very uncertain
67	F	12.9?
40,	normal	

Too poor for susp. variables

April 6, 1904

Variables in Orion continued.

Plate A 2563, Oct. 29, 1897, Exp. 10

7	n.s.	<13.4
24		12.8
31	n.s.	<13.4
36		12.1
52	Too faint	
47,	"	"
60	F	13.4? Very doubtful
62	n.s.	<13.4
66		12.1
67		12.6
40,	normal	

No susp. variables obs. satisfactorily

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Variable Stars in the Nebula of Orion cont.

9 45

Plate A 142, Jan. 1, 1894 Exp. 11m

7	not seen	< 12.1
24		11.9
31	n.s.	< 12.1
36	n.s.	< 12.1
52	n.s.	< 12.1
47,	n.s	< 12.1
60	n.s.	< 12.1
62	n.s.	< 12.1
66	F	12.0
67	n.s.	< 12.1
40,	normal	

The images of 24 and 66 are very faint, but the measures seem to be fairly good.

Plate A 3432, Dec. 17, 1898 Exp. 10m

7	n.s.	< 12.5
24		12.0
31	n.s.	< 12.5
36		12.3
52	n.s.	< 12.5
47,	n.s	< 12.5
60	n.s.	< 12.5
62	n.s	< 12.5
66		12.1
67		12.1
40,	normal	

Variables in Orion Cont.

Plate A 44, Nov. 25, 1893 Exp. 12m.

7	
24	This plate is too poor. Comparison
31	stars have faint images which
36	cannot be compared with any
52	accuracy.
47,	
60	
62	
66	
67	
40,	

Plate A 176, Jan. 20, 1894

Too poor

Plate A 3431, Dec. 17, 1898 Exp. 10m

7	n.s.	< 13.4
24		12.0
31	F	13.5 Extremely ft. but identification seems certain
36		12.6
52	F	13.4?
47,		13.0
60		13.3
62	n.s.	< 13.4
66		12.1
67		12.1
40,	normal	

The suspected variables were looked for, but the plate does not show faint enough stars

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Variables in Orion cont.

Plate A 3433, Dec. 17, 1898

7	n.s.	<13.5
24		12.2
31	n.s.	<13.5
36		12.4
52		13.3
47,		13.0
60	F	13.5?
62	F?	13.5? Identt. not absolutely certain
66		12.2
67		12.2
40,	nomal	
45,	bright?	
46,	faint?	

Bond 801 nomal

Images lts faint & there other susp. variables

Plate A 108, Dec. 20, 1893

Too poor

Plate A 230 Feb. 5, 1894 Exp. 60m

7	Reg. not on plate
24	12.0?
31	Pro. carried by defect on plate
36	13.5?
52	13.7?
47,	13.0?
60	Reg not on plate
66	" " "

Variables in Orion cont.

Plate A 230 cont.

67	Reg not on plate
40,	Nebulosity too strong for good observation
16,	Reg not on plate
21,	n.s. faint
31,	too near edge
34,	nomal?
36,	nomal
37,	lts faint
39,	nomal
44,	bright? nebulosity strong
45,	lts poor
46,	bright
78	bright
48,	not seen
52,	nomal
54,	nomal
55,	Nomal
59,	not seen
63,	not seen. faint?
32, 1903	no var. seen
33, 1903	" " "
47, 48, 1903	Reg. not on plate
8, 1904	not seen

The variables measured on this plate, and the comparison stars, are on the edge of the plate. All the measures, therefore, are doubtful.

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Variables in Orion continued

Plate A 5731

7	F	15.7?
24		12.5? Mean uncertain on account of fogging from L
31		13.5? 2d intrafocal 15.5? 2d Seq. Neither at all satisfactory
36		Rather bright. Not comparable with other sequence
52		14.7? Dense fogging from L Orionis
47,		14.1? " " " "
60		13.4
62		14.6
66		11.9
67		12.3

40, Nebulosity too strong

"8, 1904. A faint trace of this star is seen

The measures of 7 and 62 are fairly satisfactory. Those of 24, 31, 52 and 47, are probably far from the correct values as the regions are heavily fogged. Measures of 60, 66 and 67 were made with difficulty, on account of the brightness of the images.

Variables in Orion cont

Plate I 5503

24	n.s.	<13.0
31	n.s.	<13.0
36	F	13.1?
52	F	13.1?
47,		12.8

Other variables of group not on I plates

8, 1903 n.s.

Bond 801 n.s. nearly

Plate I 5242 Sept. 15, 1893

24	F	14.2?
31	n.s.	<14.1
36		12.9
52		13.8
47,		13.8

8, 1903 n.s.

Bond 801 rather bright?

Plate I 5255

24	12.9
31	14.2? Nebulosity troublesome. Very uncertain
36	12.7
52	13.7
47,	13.7
7	14.5
60	13.9
6662	12.9

(over)

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Variables in Orion cont.

Plate I 5255 cont.

6266 14.5

67 Reg. not on plate

8, 1904. A trace visible on this plate

Plate I 5227.

Does not show faint comp. stars

40, normal

Plate I 5231

Too faint 40, normal

Plate I 2689

Too faint

40, normal

Plate I 2756

24 F 12.1?

31 n.s. <12.1

36 F 12.1?

52 Too faint

47, " "

40, normal

Other stars of comp. not on plate. Image poor. Comparisons doubtful

Plate I 2759

7 Reg. not on plate

24 12.3

31 n.s. <14.0

36 12.6

April 7, 1904

Variables in Orion cont.

Plate I 2759 cont

52 13.3

47, 13.2

60, 62, 66, 67 not on plate

40, nebulosity too strong for est.

"8, 1904" not seen

Susp. variables looked for, but the plate is too poor.

Plate I 2651

24 12.4

31 n.s. <13.4

36 12.6

52 F 13.5?

47, F 13.4?

7, 60, 62, 66, 67 Reg. not on plate

This suspected variable was looked for, but the plate is too poor

Plate I 2925

24 12.5

31 F 14.2? Comp. star is off edge of plate

36 13.6

52 13.8

47, 13.3

7, 60, 62, 66, 67 Reg. not on plate

40, nebulosity too strong

1 15

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April 7, 1904

Variables in Orion cont.

Plate I 2925 cont.

Susp. Var. 86, faint. This star has been under suspicion, but is not included in the list un-ess it has given a number. This star is much brighter on I 5242. See page 87 = 1 (chart) 85)

Bond 801 seems to be bright

16 Reg. not on plate
28 Not seen faint
31, probably normal
34, rather bright?
36, probably normal
37, faint?
39, normal
40, probably normal
44, bright?
45, bright. Shows this to be genuinely variable
46, normal?
87, I miss a star north of this and slightly preceding. Is it variable? 87 - 44
47, Too faint
62, Too faint
54, Normal
55, Too faint (normal?)
59, Too faint
63, " "
78 bright
7, 1904 Not seen.

See Bk VIII 41, 170

April 7, 1904

Variables in Orion Cont.

Plate I 2917

7 Reg. not on plate
24 13.1
31 n.s. < 14.2 Comp. star K 17f edge of plate
36 13.8
52 13.8
47, 13.4
60 Reg. not on plate
62 " " " "
66 " " " "
67 " " " "
40, Appears faint, probably on acct of nebulosity
7, 1904 Not seen
16, not on plate
28, too faint
31, " "
34, bright?
36, probably normal
37, bright?
39, bright?
44, bright
45, rather faint
46, normal 78 bright?
87, normal
48, normal
52 Not seen - normal?
54, normal
55, Seen very faint. normal?
59 n.s. normal?
63 " " "

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April 7, 1904

Variables in Orion continued

Plate I 7351
Does not show faint enough stars
Plate I 7352
Does not show faint enough stars
Plate I 7367
Too faint
Plate I 5230 Too faint
Plate I 5228 " "
Plate I 7368 " "
Plate I 5232 " "
Plate I 3881 Spectrum plate
Plate I 4049 Too poor
Plate I 4069 Spectrum plate
I 2600 Too faint
I 2597 " "
I 2551 " "
I 2388 " "
Plate I 2386
7 Reg. not on plate
24 F 12.9?
31 n.s. <12.9
36 12.1 Comp. star d not on plate
52 n.s. <12.9
47, n.s. <12.9
40, normal
Suspected variables looked for, but plate too poor

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Variables in Orion continued

Plate I 2387 Too faint
I 2353 " "
I 2168 Wing Region - Andromeda
I 1372 Too faint
I 1281 " "
I 1139 " "
I 1132 " "
I 2601 " "
I 2602 " "
I 2645 Wing region
I 2647 " "
I 1 Too poor
I 3 " "
I 2 " "
I 2355 Too faint
I 2358 " "
I 1379 " "
I 2376 " "
Plate I 2182
7 Reg. not on plate
24 12.5? Extreme edge of plate
31 n.s. <13.4
36 12.1? Comp. star d not on plate
52 F? 13.5?
47, 13.4
40, Probably normal
Bond 801 Normal
A number of defects on this plate look very much like stars -
Too poor for susp. Variables

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April 7, 1904

Variables in Orion cont.

Plate I 2598 Too faint
I 4 Too poor
I 5 Not a chart plate
I 3070 Too faint
I 2689 missing? See page 202.
I 2399 "
I 2917 missing? See page 205
I 2925 " ? " " 204

Plate B 2335

7 m.s. <13.4
24 11.9? Images very poor
31 m.s. <13.4
36 12.5? Images of f defective. Meas. uncertain
52 Too poor
47, " "
6062 12.9? Very doubtful
6266 F 13.4?
6667 12.8?

7 Susp. variables looked for, but not successfully. Region near edge of plate. All the above measures are doubtful.
67 Too poor

April 7, 1904

Variables in Orion cont.

Plate B 2325

7 m.s. <13.6
24 12.0
31 m.s. <13 ? Nebulosity strong
36 12.2? " "
52 13.6? " troublesome
47, 13.5? "
62 m.s. ~~13~~ <13.6
66 12.8
67 11.9
60 12.3 Noticeably bright

Susp. variables looked for, but all are too faint to observe in this plate.

Plate I 209

7 m.s.? <13.4
24 12.5? Images of d and e poor
31 m.s. <13.4
36 13.0?
52 Too poor
47, " "
60 13.3?
62 F 13.4?
66 13.3?
67 11.5 Noticeably bright

The measure of 67 is good. The other stars are too faint for satisfactory measurements.

Susp. variables looked for, but too faint to observe.

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April 7, 1904

Variables in Orion continued

Plate B 7608, Oct 7, 1896
Too faint Comp. star a just seen

Plate B 8895, Dec. 22, 1892

7	F	#14.4?
24	Pro. covered by defect	
31	n.s.	<14.2
36		12.4
52		13.9? Images poor
47		13.7? " "
60		14.2?
62	n.s.	<14.2
66	Pro. covered by defect	
67	n.s.?	A heavy trail is close to the position

Variables suspected were looked for, but the plate is too poor for them to be observed.
The measures were made with difficulty and are open to doubt

Plate B 2312,

7	n.s.	<14.2
24		12.6? A defect on the film is close to the image
31	n.s.	<13.0? Nebulosity strong
36		13.0? " " doubtful
52		14.0? " " "
47		13.4?
60		13.9
62	F?	14.3? Very doubtful
66		12.0

Variables in Orion cont.

Plate B 2312 cont.

67 11.7

The suspected variables were looked for, but most of them are too faint 40, 44, 45, 46, 63 and 70 are too dusky involved in nebulosity. No. 27 of Tablet in Circular 78 is strikingly bright
48, 54 - Neither star seems bright

Plate I 2349, Dec. 29, 1899

7	n.s.	<14.0
24		11.7
31	F?	14.1?
36		12.7
52	n.s.	<14.0
47		13.8?
60		13.2?
62		13.9?
66		12.1?
67		12.9?

The images are poor and the comparisons are all doubtful. The region is near edge of plate Suspected variables looked for - Not seen to advantage.

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April 8, 1904

Variables in Orion Cont.

11 00 Plate B 10250, Sept. 8, 1893. Exp. 80m

7 F 13.5? Comp. star b n.s.
24 F 13.4?
31 n.s. <13.0 nebulosity strong
36 13.0? nebulosity strong. Image poor
52 Too poor
47, " "
60 13.4
62 n.s. <13.6
66 12.0
67 n.s. <13.6

Bond 80T 736 normal

48, 54, 1903. Northern and southern stars equal?

The other unplotted variables were looked for without definite result.

Plate B 31232, Jan. 5, 1903

7 n.s. <14.0
24 12.8
31 n.s. <13.5 nebulosity strong
36 12.8
52 13.6? Extremely doubtful. Fogging from c star
47, 13.4? " " " " "
60 14.1
62 n.s. <14.0
66 12.9
67 12.1

The comp. variables looked for without definite result. The plate has trails and multiplied images.

April 8, 1904

Variables in Orion cont.

Plate I 31447, Feb. 9, 1904

7 n.s. <13.5
24 12.5? Images poor
31 comp. 13.6?
36 13.0?
52 Too poor
47, " "
60 13.2
62 n.s. <13.5
66 13.0
67 13.3

Bond 736 normal

48, 54, 1903. Southern star the brighter

Other comp. var. looked for without result

Plate I 31511, March 4, 1904

7 13.0
24 12.3 meas. difficult
31 n.s. <14.0 nebulosity strong
36 13.8
52 14.0
47, 13.8
60 13.1
62 Image, if present, too poor to measure
66 13.1
67 12.1

Bond 736 normal

31 sum - probably normal

34, too poor

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Variables in Orion cont.

Plate I 31511 cont

36, normal
37, bright?
39, normal
40, probably normal
44 bright?
45, too from faint
46, " "
48, bright?
52, too faint
54, seems very bright
55, too faint
59, " "
63, " "
78, " "
8, 1904 not seen
32, 1903 too faint
33, 1903 Normal
47, 1903 no var. seen
54, 48, 1903 Smithsn star ltle brighter
Bond 801 Ast. normal.

Plate I 31439, Feb. 8, 1904

7 F? 14.2?
24 11.7
31 n.s. <13.4 nebulosity strong
36 13.2? " "
52 14.2? Strong fogging from L. Orionis
47, 14.0? " " " "

1 00

Variables in Orion cont.

Plate I 31439 cont.

60 13.8
62 14.1
66 12.7
67 13.8
Bond 736 normal
16 too faint
90, 16a A star near (38, 1903) m. 16 in
circular, is apparently faint 16a
28, too faint
31, normal
But see ~~38, 16a~~ ~~A star near this is bright (13.9 2/7) Very~~
Bk VIII p. 41 ~~faint 16a A 5.7 31 (15.5) Hardly not seen~~
34, too faint
36, " "
37, " " 33, 1903 Normal
39, normal 47, 1903 Smith star seen just normal
40, prob. normal 48, 54, 1903 Smithsonian Much too star brighter
44, too faint
45, 46, too faint
48, n.s. faint ?
52, too faint
54, bright ?
55, too faint
59, " "
63, " "
78, " "
8, 1904 not seen
32, 1903 no var. found

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Variables in Orion cont.

Plate I 566, Jan. 24, 1890
7, 24 ff edges of plate
Images too poor to measure. Edges of plate
Bond 736 appears bright - but images are poor
Susp. variables looked for, without results

Plate I 2564, Dec. 22, 1890
Does not show faint enough stars to completely a just one
Bond 736 unusual

Plate I 5297, Dec. 30, 1891
Too faint

Plate I 7933 Jan. 21, 1893
7 too faint
24 12.4?
31 n.s. <12.4
36 n.s. <12.4
52 too faint
47, " "
60 n.s. <12.4
62 n.s. <12.4
66 n.s. <12.4
67 n.s. <12.4
Bond 736 unusual.
Too poor for other susp. variables

Variables in Orion cont.

Plate I 7446 Feb. 27, 1897
On this plate comp. stars g, h, k appear equal and companions of ft. stars will be poor
7 n.s. < 14.2?
24 11.9 fairly good comp.
31 n.s. < 13.4
36 13.3? doubtful
52 too poor
47, " " 13.4? doubtful
60 13.4? doubtful
62 n.s. < 14.2?
66 11.9
67 12.2
Bond 736. rather faint?
16 too faint
16a faint
Other susp. variables looked for without result
Plate I 19334 Oct 22, 1897 Isochromatic?
7 n.s. < 13.5
24 12.1? Comp. difficult
31 n.s. < 13.5
36 12.7? Very doubtful
52 Too faint
47, "
60 F 13.6?
62 n.s. <13.5
66 11.8 fairly good measure
67 13.4
Measures very uncertain Bond 736 unusual
Other susp. var. looked for without result.

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Variables in Orion Cont.

Plate I 21400, Oct. 12, 1898

7 bet faint
24 0m2 a faint blue star with. Cannot measure
31 m.s. <12.2
36 m.s. <12.2
52, 47, bet faint
60 m.s. <12.2
62 m.s. <12.2
66 11.8?
67 F ?

Susp. stars e and f not seen. f is just seen g m.s.
No reliable measure can be made of 67, which is,
however, very far below maximum
Too poor for susp. variables. Stars looked for them.
Bond 736 normal

Plate I 24326 Dec. 26, 1899.

7 m.s. <13.8
24 13.0? Very bright prism. images near make bo. diff.
31 m.s. <13.5 nebulosity strong
36 13.3 " rather troublesome
52 13.9? Image faint
47. 13.6?
60 F 14.0
62 F? 14.0? Ident. not absolutely certain
66 11.5
67 12.7
36a 11.9
36b 13.4
36c 13.3



Variables in Orion Cont.

Plate I 24326 Cont.

90. 16a bright
28 bright? There is a faint star in this position which careful comparison of plates seems to identify as 28. But see Bk VIII, p. 34
Bond 736 normal.
Other stars looked for without results

Plate I 27815, Oct. 19, 1901
See Book VIII page 4

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