1898phae.proj.1235w

KG
11366
v.233

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tmp9nmre.proj 1235w

L. D. Wells.

Note Book No. 3

For Index - see Pages 220, 221, 222

- Just two pages taken out - because book (list of some kind) was started for some other purpose - which it was decided not to use - or continue -

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1898phae.proj.1235w

20 h
5

DM. +20° 4609 20h 25.6 +20 27.4 mag. 9.3
DM +20° 4610 20 25.8 +20 28.5 9.0

h m ° ' magn.

~~DM. +69° 316 5 76 +69 46 8.0 (1855)~~ Variable in this 500 page H

~~Do~~ either of the above stars variable?

Dec. 25 1898

DM +20° 4609 mag 9.3 is brighter on plates I 4371 than I 6946
DM +20° 4610 9.0. (That is if the brighter of the two stars which are very close together, is DM +20° 4609.) There are two stars on the plates so close to each other that it is impossible to tell which is the catalogue star DM +20° 4609
Why are not both in DM. catalogue?
Examine more chart plates of this region.

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1898phae.proj.1235M

5

Dm. +69° 316 5^h 7.6^m +69° N6 8.0^{mag} (1855)

January 13
1899

Why is the above star so faint on chart Plate I 3118? It is much fainter than other star near of the same Catalogue magn. Is ~~this~~ it variable? (Noticed this when checking selection of Standard stars on I 3118) More Plates must be examined.

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4h

Approx pos. 1855) 4h 40m.4 + 65° 14'

Jan. 13 1899 There is a star on chart plate I 3118 in the above position which is not in the D.M. catalogue though it is much brighter than other catalogue stars near. (Is it var.? Noticed this when checking selections of standard stars on I 3118) Chart plate I 13308 shows the same star. Other chart plates must be examined.

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1898phae.proj.1235w

6

8h

Approx. 1875 pos. 8h 3.8m − 48° 5′

Jan. 16 1899

In checking identification of an Ma star (No. 6380 in B 12766) using chart plate B 20 H 39 I find on the chart plate, an object in the above approximate position It is longer than other images on plate + slants in a different direction. What is it?

Chart plates B 9141 + B 18018 show that the object noted above is made by three stars very close together.

Jan. 16 1899

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7

A. & C. 10488 7 535 - 49 N3 8 (1900)

Jan. 17 1899 When checking identification of the above star (IV type) on B 12651 using chart plate B 15477 I find that it is very faint on the chart plate. Is it variable? Examine more plates.

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8

7h

	h	m	°	′	mag.
Dm. +28° 1482	7	41.0	+28	33	7.3 (1855)

Jan. 18 1899

Is not the above star brighter - in comparison with other stars near - on Plate I 10469 than it is on Plate I 10329 (Noticed this when estimating pos. of Planet (D.2. on I 10469)

Examine more chart plates.

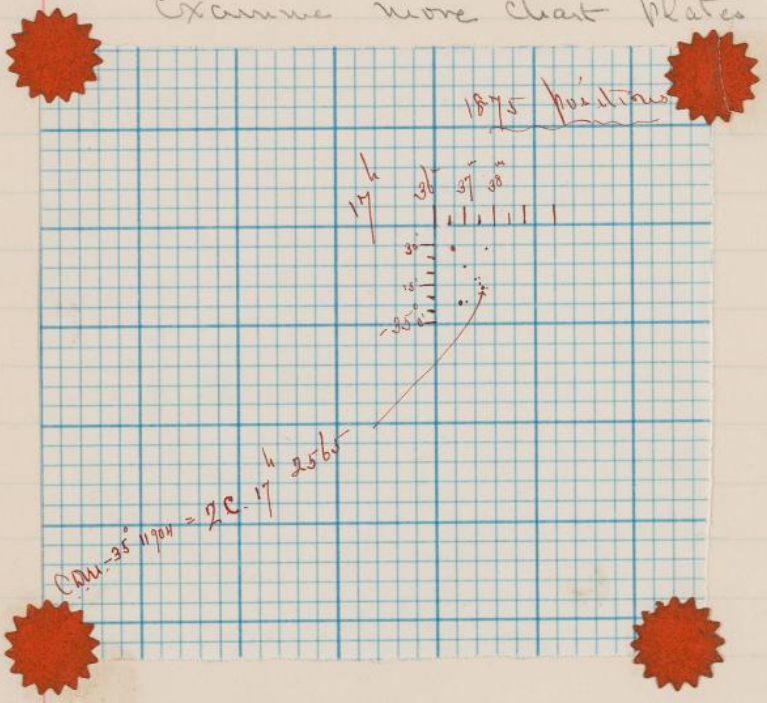
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1898phae.proj.1235w

17h

2C. 2565 17h 37m.7 − 35° 14'.2 magn. 9 (1875) = CDM. −35° 11904

Jan. 23 1899 Why is the above star ~~so~~ fainter on plate B 16518 = B 20489 than CDM. − 35° 11900 Magn 9.9 & CDM. − 35° 11905 Mag 10. Is it var? Noticed this when identifying 2C. 17h 2565 on B 16518 for orientation of this plate. & Miss M. S. Stevens also noticed it when checking identification. Examine more chart plates.



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1898phae.proj.1235w

h
10

Dec. +5° 2300 h m 10 5.2 + 5° 0.3 mag. 9.5 (1855.)

Jan 24 1899

When checking selections of standard stars on chart plate I 18031
I find that the above star does not appear. Is it var? Neither does it appear on I 1028
Examine more plates

1907

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1898phae.proj.1235w

4

21

D.M. +15° ~~2197~~ 4337 21 4m 0.5 +15° 11' mag 9.0 (1855)

Jan 25 1899 *Chart plate I 7171 does not have the above star on it. Neither does the star appear on chart plate I 1881 5 though other stars of the same catalogue magnitude are clearly seen on both plates. Is the star var? More chart plates must be examined.

1907

* Noticed this on April 24 1899 when checking ~~the~~ ecliptic positions of standard stars on I 7171. Note made on cover of plate then.

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1898phae.proj.1235

11h

A.G.C. 15847 11h 31.1 -61° 7½ (1900)

Feb. 1 1899

Is the above star var.? It is given in the Z.C. Magn. 9 On chart plate X 8465 it is quite faint. (Noticed this when making a chart in this region - about a year ago - to estimate the position of a close double star found on X 8465) May be an error in the A.G.C. or Z.C. but more chart plates had better be examined.
(For chart of this region see box containing charts made on rectangular paper.)

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1898phae.proj.1235w

4
4

D.M. +13° 703 4 31.4 +13° 26 9.5 mags (1855)

Feb. 6 1899 * The above star does not appear on chart plate I 5293 I 7119 or I 17259 Due to color, error in D.M. cat or var? Examine more plates? (See also notes on pages 14 15 16 & 17)

Nov. 22 1906 The above star is not on I 31161 with an exp. of 80m - and find that there is a question mark against it in new D.M. cat. published in 1903

1907

* Noticed this about ~~five~~ six years ago when checking selection of standard stars on I 5293 made note on cover of plate then.

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1898phae.proj.1235

h
W

D.M. +13° 700 ↙ h m ° ′ magn.
W 30.2 +13 37.1 9.4

Feb. 6 1899 * The above star does not appear on I plate 5293 I 719. or I 17259 Is it var, or due to color, or an error in catalogue? Examine more plates? (see also notes on pages 13 15 16 + 17)

Nov. 22 1906 The above star is not on I 31161 having an exposure of 80m - & I find that there is a question mark against the star in the new D.M. catalogue, published in 1903.

1907

* noticed this about six or five years ago when checking selections of standard stars on I 5293.

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1898phae.proj.1235w

4h

5M. +12° 05' 95 4h 19.2m +12° 5' 9.5 magn. (1905)

~~5M. +12° 4h 19.4 +12° 9.5~~

Feb. 6 1899* The above star does not appear on chart plates I 5293 I 719 or I 17259 ~~xxx~~ Is it due to color, an error in catalogue or var?

Examine more plates? (See also notes on pages 13, 14, 16 & 17)

Nov. 22 1906 The above star is not on I 31161 which has an exposure of 80m

shad

1907

* Noticed this about six ~~four~~ years ago when checking selections of standard stars in I. 5293

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1898phae.proj.1235w

h
H

DM. +10° 600 ✓ h m 30 46.0 + 10 ° ' " 14.3 mags. 9.5 (1855)

Feb. 6 1899 * The above star does not appear on chart plates I 719 I 5293 or I 17259 Due to color, error in catalogue or var?
(See also notes on pages 13 14 15 & 17)
Examine more plates!

Nov. 22 1906 This star is not on I 31161 Taken Nov. 19 1903 which has an exp. of 80m. & I find that it is crossed out in new DM. catalogue published in 1903 & is not entered on new DM. chart.

1907

* Noticed this about six years ago when checking selections of standard stars on I 5293

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1898phae.proj.1235w

h
4

D.M. +14° 719 4h 25.m4 +14° 33'.9 magn. 9.5 (1855)

Feb. 6 1899 When looking up other notes to-day (see pages 13. 14. 15 + 16) of stars which do not appear on chart plate I 5293 I noticed also that D.M. +14° 719 is not on the plate. Neither is it on chart plates I 719 + I 17259 (The star or the place where it ought to be seems to be marked on I 719. Has it been looked up before?)
Examine more plates.

Nov. 22 1906 This above star is not on I 31161 taken Nov. 19 1903 + having an exposure of 80m

1907

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1898phae.proj.1235w

14h

DM. +27° 2406 14h 33.3m +27° 29.8 mags. 9.5 (1855)

Feb. 7 1899

When checking a probable error in dec. of DM. +27° 2391 To-day - I noticed that there is no star on plates I 1537 & I 1559 in position of DM. +27 2406 14h 33.3m +27° 29.8 There is on both plates a star in the R A - & in dec about 5' north. Is it DM. +27° 2406 with an error of 5' in dec in DM. cat. & on DM. chart or is the DM. +27° 2406 variable

Examine more chart plates.

1907

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1898phae.proj.1235w

	h	m	°	′	magn.	
DM. +48° 2797	18	52.6	+48	28	9.5	(1855)
DM. +48 2798	18	53.0	+48	31	9.3	(1855)

Feb 17 1899 Chart plate I 6758 shows a much greater difference between magnitudes of the above stars than that given in DM. catalogue – Is one of the stars variable?

(Have made note in card catalogue of "Examined & suspected errors in DM. Cat. & on DM. charts" That the magnitudes of these stars are transposed on charts* the following star being charted as if it were the fainter of the two –)

Chart plate I 15385 agrees with I 6758.

More chart plates had better be examined.

* Noticed this when checking selections of standard stars on I 6758 March 21 1892 See note on cover of plate.

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1898phae.proj.1235w

7m

DM. +16° 1516 7h 26.9m +16° 38.9 (1855) magn. 9.5

Feb. 25 1899

On March 8 1898 when checking selections of Standard stars on I 17495 I noticed as I thought an error in pos. of the above star on the DM. chart DM cat. mistaking a bright star near for it. Now I find that DM. +16° 1516 appears on the plate in pos. given in DM. but it is extremely faint. much fainter than other stars near of the same catalogue magnitude. Thinking that it might be variable I have just examined chart plate I 20699 I 916 I 42094 & it seems to me that there is a slight change in brightness. See specially I 916 compared with I 17495. Examine more plates.

April 12 1907

Have examined I 916 & I 17495 again. Do not think they show change in magn. of the faint star I assumed to be +16° 1516. I now think that a brighter star 2' south & slightly preceding DM. +16° 1516 This would mean a slight error in DM. catalogue in both R.A. & dec. though. Better examine more plates.

April 13 1907

Probably the faint star is the DM. star - after all. It is very hard to decide

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1898phae.proj.1235w

7h

Dm. +17° 1590 7h 22.2m +17° 32.8 (1855) mag. 9.5

Feb. 25 1899

Several days ago when identifying stars in region of the above I noticed that no star appears on chart plate I 17H95 in the pol. Have examined chart plates I 20HD1 8151 10320 20699 1209N & 916 & the star does not appear on any of them. Is it an error in the Dm. catalogue or due to color. or is the star variable? Is it worth while to examine more chart-plates?

1907

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1898phae.proj.1235w

21h

Approx. pos. 21h 31m.1 +21° 46 (1855)

Feb. 28 1899

Several years ago when checking selections of standard stars on chart plate I 4263 I noticed a star in the above pos. It is not in the DM. catalogue though as bright as other stars near of 9.0 magnitude. Chart plates I 4284 & I 16146 show the same star of the same brightness. Is it worth while to examine other plates to see whether it is var. or not — or is it perhaps due to color that it is not in DM. cat.?

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1898phae.proj.1235w

21

DM. +16° 2493 21 h 11 m 0.6 + 16° 9.5 (1855) magn. 9.5

March 3 1899

Several years ago when checking selections of standard stars on I plate 7171 I noticed as I supposed an error in pos. of the above star in D.M. catalogue & on D.M. chart. I found no star in this pos. that is — on the plate & thought that possibly there is a star mag. of about 9.5 magn.* might be DM. +16° 2493 . with an error in both R.A. + Dec. On examining the plate again today. & also chart plate I 1515 . I find that there is an extremely faint star in the above position . Why is it so faint — Is it variable . or due to color? Examine more plates ?

1907

* This star was selected for a standard star . (on I 7171) as if it were a DM. catalogue star — I have selected another in place of this one —

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1898phae.proj.1235

22h

Approx pos. 22 7 - 57.8 (1900) B 11257

Approx pos. 22 28 - 57.N (1900) B 13125

March 11 1899

Some time ago - when identifying some stars on chart-plates, I noticed a hazy object on B 11257 at 22h 7m -57.8 (Approx 1900 pos.) & another on B 13125 at 22 28 - 57.N (Approx. 1900 pos.) They are unlike other objects on these plates. What are they?

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1898phae.proj.1235w

h
10

2C. 785 10 10.6 − 48 36.2 (1875) 9 magn

April 20 1899

Why is the above star so ~~faint~~ bright on chart plate B 18447 It is much brighter than other stars near of 8 or 8½ magn. Compare it — for instance with 2C. 853 10 11.4 − 49 2.4 8 mag. See too. Spectrum plate B 13780 which shows the stars to be of the same type. Is 2C. 10h 785 variable?

Examine more chart plates — or is there an error in the 2C.?

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1898phae.proj.1235

17h

A.G.C. 24365 17h 51.1 −24° 7′ (1900) 9¼ mag. = C.D.Hr. −24° 13665

April 24 1899 Why is the above star so faint on chart plate B 17444.0. Is it var? (Noticed this when checking identification of C.D.H. −24° 13657 marked IIIa on B 13796). On chart-plates B 19111 + B 12117 it seems to me to be slightly brighter. Examine more plates.

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1898phae.proj.1235w

17h

C.D.M. −35° 11923 17h 39.1m −35° 39′ (1875.0)

May 9 1899 In checking identification of the above star (No. 7761, Type III. on B 13850) today - using chart plate B 15824 . I found that the star is extremely faint on the chart plate - Suspecting it of variability I looked it on chart plate B 17534 where it is brighter - Showed these plates to Mrs Fleming who confirmed variability - Look up other plates -

May 9 1899 later - Find that Mrs F. suspected this star of var. Dec. 12 1898 A (see note on B plate 12195 page 75 in Book 85) & it was marked & waiting to be examined on other plates - All plates must be gotten out & star measured - as it is surely variable -

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1898phae.proj.1235w

h
18

H.P. 3191 18 Hb.1 + 32 N2 1900 5.6
H.P. 3192 18 Hb.2 + 32 26 1900 5.1

May 9 1899

~~When~~ When ~~drawing~~ identifying C plate 11927 to-day I noticed that H.P. 3192 is fainter than that of H.P. 3191 On plates C series 11920 11922 11900 11906 11913 11919 11889 11887 11903 11896 11899 it is brighter - Is it variable or is H.P. 3191 variable - Plate 11927 has two exposures of the same region - ~~I~~ On examining it again I find that in the exposure having the wider spectra H.P. 3192 is fainter than H.P 3191 as I noticed at first - but in the exposure having narrower spectra - H.P. 3192 is brighter Is the star possibly an Algol variable?
Examine chart plates -

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4
H

050*136

SEARCHING REPORT

Heading (Check **one** box only)

- ☐ Identification guaranteed
- ☐ Identification **not** guaranteed
- ☐ Conflict
- ☐ No conflict

Other headings searched and Comments:

Edition Report

Latest Widener edition

Year

Call number

- ☐ Only edition
- ☐ No edition
- ☐ Earlier
- ☐ Later
- ☐ 5 or more

} editions in Widener

- ☐ Earlier
- ☐ Later

} editions in K

Author number (unless shown above)

13.4
3 + 11 HH (1855)

April 24 1894
...ctions of standard stars on I 7700. ...
...n that plate - in the above approximate
... +11° 656 4h 41.3 + 11 148 with a slight-
...ww. catalogue ? on ww. chart. On
...gain to-day. ? also I 2888, I 10532, I 5089
...that there is a very faint star on all
...sition given for ww. +11° 656 - If the
...ww. star, why is not the brighter
...oo ? Is it var? On the above
...to ... in
...pa... united.

L D Wells
Book 3

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1898phae.proj.1235w

H 4

Approx pos. H 41.3 + 11 ~~11~~ 13.4 (1855)

May 12. 1899. When checking selections of standard stars on I 7700. April 24 1894 I assumed a star on that plate - in the above approximate pos. to be D.M. +11° 656 4h 41.3 + 11 148 with a slight error in dec. in D.M. catalogue & on D.M. chart. On examining I 7700 again to day & also I 2888, I 10532, I 5089 & I 9543 - I find that there is a very faint star on all these plates, - in position given for D.M. +11° 656 - If this faint one is the D.M. star, why is not the brighter one in the D.M. too? Is it var? ~~On~~ The above chart plates it seems to me to show a slight change in brightness - Perhaps more plates had better be examined.

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1898phae.proj.1235w

15h

Approx pos. 15h 7m -37.2 (1900)

May 2H 1899

A day or two ago when checking identification of stars near the above region I noticed three objects at about 15h 7 -37.2 on chart plate B 2027H. They do not appear on chart plate B 16277. Showed them to Miss Fleming who thinks they are defects.

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23h

Dm. +56° 3111 23h 47m.2 +56° 41 (1855) mag 11. 5.0 = H.P. 4224 plate.

Sept. 14 1899 when identifying C series plate 12121 to day I noticed a 5 magn star

	HP					
		0 35	56	0	var.	
	9 44	0 34	+55	9		
C	9	0 44	+58	36		
γ	1442	0 51	+60	10		
δ	2119	1 19	+59	43		2.8
ε	2887	1 47	+63	11		3.6
3	82	0 31	+53	21		3.7
4	120	0 43	+57	17		3.6
θ	189	1 5	+54	37		4.4
σ	4237	23	54	+55 12		5.0

Var. near ε Cas. 4224 23 49. +56.57 H.6

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1898phae.proj.1235w

22^h

Dm. +56° 3111 $2^h3^m47^s.2$ +56° 41′ (1855) Magn. 5.0^{2m} = H.P. 422W plate.

Sept. 14 1899 When identifying C series plate 12121 to-day I noticed that the above star is very faint for a 5 magn star. Examined chart plates I series 42W 6894 7H51 21189 18745 15858 + found. I think - evidence of change in brightness. The star seems to be much fainter on the latest plate than on the earliest. More plates must be examined

Charts examined and variability confirmed
October 28, 1899. W. P. Fleming).

Measure. Examine also early & late Spectrum plates to note change if any in Spectrum, corresponding to change in light. Spectrum 2nd type Peculiar. No. + Other Dm Magn 7.5 has very narrow but well defined

I 17300

I 15891

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1898phae.proj.1235w

23h

Dm. +56° 3111 23h 47m.2 +56° H1 (1855) Mag 11. 5.0 = H.P. 422N plate.

Sept. 1H 1899 When identifying C series plate 12121 to day I noticed that the above star is very faint for a 5 magn star. Examined chart plates I series N2N 6894 7H51 21189 18745 15858 + found. I think - evidence of change in brightness. The star seems to be much fainter on the latest plates than on the earliest. More plates must be examined

Charts examined and variability confirmed October 28, 1899. W. P. Fleming.

Measure. Examine also early & late spectrum plates to note change if any in spectrum corresponding to change in light. Spectrum 2nd type Peculiar. Adjacent star, Dm Magn 7.1 ... narrow but well defined

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1898phae.proj.1235w

23h

DM. +56° 3111 23h 47m.2 +56° 41' (1855) Magn. 5.0 = H.P. 422N Class.

Sept. 1H 1899 When identifying C series plate 12121 to-day I noticed that the above star is very faint for a 5 magn star. Examined chart plates I series N2N 6894 7H51 21189 18745 15658 + found. I think - evidence of change in brightness. The star seems to be much fainter on the latest plates than on the earliest. More plates must be examined

Charts examined and variability confirmed
October 28, 1899. W. P. Fleming.

Measured ... plates ... spectrum plates
... corresponding
... 2nd type Peculiar.
... but well defined

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1898phae.proj.1235w

2.3h

DM. +56° 3111 2.3h 47.2m +56° 1' H1 (1855) mag 11. 5.0 = H.P. 422N plate.

Sept. 14 1899 When identifying C series plate 12121 to day I noticed that the above star is very faint for a 5 mag. star. Examined chart plates I series N2N 6894 7H51 21189 18745 15658 + found. I think - evidence of change in brightness seems to be much fainter on the latest plates earliest - More plates must be examined

variability confirmed
W. P. Fleming).
late Spectrum plates
ctrum, corresponding
trum 2nd type Peculiar.
arrow but well defined

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1898phae.proj.1235w

2 23 4

Dm. +56° 3111 23^h $47^m.2$ +56° 41′ (1855) Magn. 5.0 = H.P. 422H plate.

Sept. 14 1899 When identifying C series plate 12121 to day I noticed that the above star is very faint for a 5 magn star. Examined chart plates I series 42H 6894 7H51 21189 18745 15658 + found. I think - evidence of change in brightness. The star seems to be much fainter on the latest plates than on the earliest. More plates must be examined

Charts examined and variability confirmed October 28, 1899. W. P. Fleming.

Measure. Examine also early & late spectrum plates to note change if any in spectrum corresponding to change in light. Spectrum 2nd type Peculiar. Adjacent star, Dm Magn 7.5 has very narrow but well defined hydrogen lines.

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6h

~~Dm. +3° 1552~~ 6h 59m +3° 35 magn. 9.5 (1855/02)

Sept. 22 1899 Why does not the above star appear on plate I 22099? Is it var. or ~~not~~ in wrong pos. in Dm. cat? More plates must be examined. (Noticed this when checking selections of standard stars on I 22099)

April 5 1907 Chart plate I 3276 does not have the above star on it either

1907 Circular 129

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1898phae.proj.1235w

15h

Z.C. 2254 . 15h 32.7m −5° 54.4 mag. (1875 pos.)
~~34.5 − 54 35~~ 9

(in region of max. var. found on A 3562 - approx 1875 pos. 15h 34.5 − 54° 0')

Sept 23 1899 When identifying stars on plate B 9492 (chart) today I noticed that Z.C. 2254 15h is very faint for a ninth magnitude star. Examined it on plates B 13526 B 10935 − B 12840 + B 19274 − found that it showed evidence of variability.

Charts examined and variability confirmed
October 28, 1899. W.P. Fleming.

Measure.

Announced by Innes see Vol. 20 A.J. Page 111
Confirmed by Roberts see Vol. 20 A.J. Page 170

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1898phae.proj.1235w

13h

2.C. 3015 13 49 – 57 5.8 (81²)7½ = A.G.C. 18925

Oct 18 1899

When estimating position of a star marked in region of the above yesterday – on chart plate B 18916 I noticed that ✳ (2C A.G.C. 18925 13h 3015) is not quite as bright as 2C. 13h 3005 Mag 9. Do it vary? Probably type would account for it – See spectrum plate R A 2225

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1898phae.proj.1235w

1h

N.G.C. 419 1h 1m 4 – 73° 38.0 (1860 pos.)

Oct. 20 1899 Is not the above very bright on chart plate B 2064S as compared with spectrum plate B 2184D Do not chart plates B 5725 10292 18066 20650 & 2064S show some evidence of variation in N.G.C. 419 ?

(Noticed this yesterday when superposing 2064S on 2184D to identify a near Type star in region of the above)

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1898phae.proj.1235w

12h

C.D.M. -40° 7456 12h 36m.7 -40° 39' (1875) 7.2 magn.

Nov. 16 1899

In checking identification of this star on plate B 9378 to-day. I find that it is not in the G.C. or Z.C. though according to C.D.M. it is 7.2 magn. Is it a variable? ~~Examine other~~ Chart plates had better be examined

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12h

12 19.3 - 48. 51 (1900 pos. in Painter's copy of the Type stars)

Nov. 16 1899 On Chart plate B 19748 I find this star very faint when compared with spectrum on B 9378 - Is it variable? Chart plates B 21610, B 5350, & B 11427 seem to me to show a slight change in brightness - More chart plates had better be examined

Feb. 16 1906 Have examined to day B 25491, B 23123, B 11427, B 24916, B 29506 B 33411, B 33564, B 5905, B 9634, B 13652, B 24816, B 21561, B 29130. B 19748 B 21610 B 31603 & the star certainly does change I think (See specially the last five plates)

Obs. B 3416 in Book 42 Obs. B 3445 in Book 42

This star I find was suspected of variation by Mrs. Fleming on B 7479 Aug. 1892 - Eleven chart plates were examined by her & she found no evidence of variation. See Book 55 Page 143 B 3509, 3353, 3379, 4826, 4998, 5015, 5135, 5303, 5350, 5356, 3508 are the plates examined by Mrs. F. Must show her the plates on which I found variation - Did not know at time I suspected it that Mrs. Fleming had already done so

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14

A.G.C. 20210 1N 50.0 − 51 2 7.0 (1900)

Nov. 18 1899 When checking identification of the above star - to-day - on B 9625 - using chart plate B 14024 - I noticed that it is very faint on the chart plate - for a seventh magnitude star - It is an "Ha" star but even for that type - it seems very faint - More Chart plates had better be examined.

Feb 27 1904 Examined chart plates B 20237 13788 5908 9147 14024 3381 9628 27264 25105 9669 15550 9669 21157 22468 23463 27264 18940 10890 & find no evidence of variation -

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13 4

A.G.C. 17944 = Z.C. 275 13h 4.8m -5° 20.1 8½ (1875 pos.) 13h 6.3m -5° 28 (1900 pos.)

Nov. 25 1899 A day or two ago when checking identification of a star in region of A.G.C 17944 I noticed that ~~it~~ A.G.C 17944 is very faint on chart plate B 3477 for an eight + one half magn. star - very much fainter than Z.C. 298 magn. 8½. Thinking that it might be variable I examined it to-day on chart plates B series 18935 19988 21304 21371 22685 13563 16303 16268 15544 16179 21872 22992 9150 21234 22446 18637 15767 20038 + 3477 + it seems to me that the star shows change in magn. On some of the plates the image is like that of the ~~IV~~ IV th type variables - Is it a IV type star - show Miss L. spectrum plates B 19924 9422 13794 + ask what type star is - Also show her the chart plates mentioned above.

Plates examined show small variation about 0.4 magn. Sp. G1. on B13794. Other plates will probably show greater range of variation. Add to list of variables to be announced, but do not announce until measures have been made and reduced. W.P. Fleming, February 19, 1900

"Spectrum M6. on B 23238" Miss L. says. March 26 1903

Announced in Circular 54
Measured by Miss Breslin April 8 1903
Variation given in Miss Cannons Catalogue 9.8 - 10.4

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1898phae.proj.1235w

h

H

DM. +13° 670 H 14.5 +13 35.8 9.5 mag. (1855)

Dec. 7 1899 When checking selections of ~~#~~ standard stars to day - on plates I 5432 and I 10531 I noticed that the above star is very faint on these plates. much fainter than other 9.5 stars near ~~it the same~~. Is it var? More plates had better be examined

Nov. 22 1906 Examined to day chart plates I 1928, 5432 5293 31161 26014 32620 ~~33592~~ 24130 22210 22466 23753 26250 7750 19966 17146 10058 10531 & AC chart plates 2308 3337 4620 7220 & found no evidence of variation in the above star — Is it due to color. that it faint?

1907 Circular 128

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9

A.G.C. 13539 9 51.3 −41 7 (1900) 7½ magn.

Dec. 13 1899 When checking today identification of the above IV type star on spectrum plate B 9505H, using chart plate B 16504H. I find the star very faint on this chart plate. Thinking that it might be variable. I have examined it on plates B 15713 9225 + 22640 too + it seems to me that the star changes in magn. More plates must be examined.

Dec. 14 1899 Have examined chart plates B series 22461 21177 9185 11170 16590 18961 9225 16504H 22640 15713 18747 7815 52333 7853 10981 18117 + 20975 (plates underlined have A.G.C. 13539 near the centre) & they certainly show A.G.C. 13539 to be variable.
Ask Miss F. if she can confirm —

Plates examined and variability confirmed. The plates B 52333 7853 the star is about 0.8 magn. brighter than on B 10981, 18117, and 20975. Feb. 15, 1900. W.P.F.

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42

10h

A.G.C. 1NN10 10h 30.8m − 39° 3' mag. 5.9 (1900)

Dec. 14th 1899 When checking to day - identification of the above IV Type star - on spectrum plate B 9555N - using chart plate B 16504 - I found the star faint on this chart plate - On Examining chart plates B 21023 22811 13196 11172 + 5298 I find distinct evidence of variation - Ask Mrs. F. to confirm V.

B 21023 22811 13196 11172 + 5298
Charts examined and variability confirmed Dec. 16, 1899
Measure + make ledger. W. P. Fleming

Feb. 21 1903 This var was announced , as it was confirmed by Mrs F. on plates noted above - but it has never been measured until now - When getting out all plates yesterday - for Mrs Breslin to measure - I found the star marked on chart plates B Series 4815 6125 7NN3 7512 13090 13476 as if it had been examined on them for variability Not at the time B Series 21023 22811 13196 11172 5298 were. Do not know whether it was before or after Dec 14 1899 when I found the star to be var. I can find no note anywhere of its having been suspected of variation by anyone else - though Mrs Fleming has marked the star Type IV on spectrum plates

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8

A.G.C. 11890 8 N24 - 29 21 7½ (1900)

Jan. 16 1900 ~~1899~~ Suspected the above star of var. because on chart Plate B 21389 it seems to me a little brighter than most IV Type stars of this magn. Chart plates B 18051 22624 9180 + 12669 seem to show slight evidence of variation - Examine other chart plates.

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19h

D.M. −16° 5360 19h 26.0m − 16° 41.3 mag. 7.2 (1855)

~~A.G.C. 13902 10 9.7 − 32 11 8½ (1900)~~

Jan. 19 1900 Is the above star variable? I had chart plate B 1160 on the D.M. chart to-day & noticed that this star is very faint on the plate. Chart plates B series 17869, 13937, 15045 22746 & I series 18590 seem to show change in magnitude. Also the image on some of these plates looks like that of a II Type star.

Later Looked up star in list of IV Type stars & found it there. But it is not known as var. Ask Mrs F. if she can confirm variability.

Plates examined and small variation seen. This star had better be measured before announcement. Ent. in list of new variables for announcement, but mark with a star in the margin. Feb. 15, 1900. W. P. F.

Measured by Miss Breslin Sept. 1905. Variation of about 1.2 magns. 8.5 to 9.7 given in Miss Cannons Catalogue.

→ Announced in Circular 54

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1898phae.proj.1235w

3 h

Dm. +12° 449 3 2.5 +12 6 9.5 (1855)

Jan. 25 1900 The above star does not appear on chart plate I 5325. Noticed this today when checking selections of standard stars on that plate - Neither does it appear on I 4134 or I 10529 - although on all these plates other stars of the same magnitude are seen - Is it due to color that the star is not seen or is it variable?

~~Feb. 13 1904 Chart plates~~

March 31 1907 I find that this star is questioned in the new D.M. catalogue published after I made the above note.

1907 Circular 128

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1898phae.proj.1235w

23

D.M. +55° 3075 23 5h.2 +55 2.8 9.5 mag. (1855)

April 2 1900 * The above star does not appear on chart plate I 11570 Is it var? Examine more chart plates.

Feb. 13 1904 Examined chart plates I 15347 25633 15605 12071 18745 11941 3224 & do not see the above star on any of them - On I 3116 which had a long exposure & on which there are many very faint stars there is an extremely faint one in position given above - Can it be D.M. +55° 3075 & due to color that it is so faint on photograph?

April 9 1907 * I do not believe this faint star is D.M. +55° 3075 - There is a brighter one in R.A. given for D.M. +55° 3075 - or in dec. 2' or 3' south which is perhaps the D.M. star (?)

* Noticed this May 13 1897 - Made note on plate I 11570 then - but did not enter it in Note Book -

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1898phae.proj.1235w

15h

Approx pos: 15h 17m.0 − 57° 23' (1875)

~~Sept~~
Oct. 2 1900

On July 2nd 1900 when looking up plates for Hd. var. near the above star - I suspected the above of variation - thinking it a little brighter on plate B 16316 than on B 13178 - Examining it again to-day on these two plates & also on chair plate B 11783, 23021, 13178 16316 9639 23044 22547 19363 20352 I do not see any real evidence of var. Perhaps more plates had better be examined some time & also look at 16316 & 13178 again - to see if difference is there - or if it is only imaginary - or a defective image in 13178.



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1898phae.proj.1235w

15h

Approx pos: 15h 17m.0 − 57° 23' (1875)

Oct. 2 1900

On July 2nd 1900. when looking up plates for Hd. var. near the above star — I suspected the above of variation — thinking it a little brighter on plate B 16316 than on B 13178 — Examining it again to-day on these two plates & also on chart plate B 11783, 23021, 13178 16316 9639 23044 22547 19363 20352 I do not see any real evidence of var. Perhaps more plates had better be examined some time & also look at 16316 & 13178 again — to see if difference is there — or if it is only imaginary — or a defective image on 13178.

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19

Approx pos. 19 42.5 +48 47 (1855)

Nov. 19 1910 About a week ago - when examining a var. of Algol at 19 42.0 +48 42 (Approx 1855 pos.) I noticed that the star at 19 42.5 + 48 47 (Approx 1855 pos.) shows evidence of variation on chart plates I Series, 1760, 4938, 6847 7187 9416 11963 11180 13780 14520 14981 15924 18428 16385 21320 21344 21495 25327 -

This star is to be measured when Algol var. is to see whether variation is great enough to be announced -

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9h

	h	m	°	′	magn.	
D M. +31° 2005	9	26.5	+31	4.5	9.5	(1855)
D M. +30° 1880	9	27.8	+30	51.0	9.5	(1855)
D M. +30° 1882	9	27.9	+30	5.2	9.5	(1855)
D M. +29° 1920	9	28.1	+29	53.8	9.5	(1855)

March 23 1901 When checking selections of standard stars on plate I 17420 - to-day. I ~~I~~ noticed that the above stars do not appear on the plates - Neither are they on I 3323 Is it due to color. or are they variable? Many other 9.5 magn. stars are seen on the plates -

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1898phae.proj.1235w

50

12h

D.M. +35° 2385 12h 47.1 +35° 41.0 9.5 mags. (1855)

March 25 1901 When checking standard stars on I 17980 to-day - I found that the above star does not appear on the plate - Neither is it on chart plate I 6092. Though both plates show other 9.5 magn. stars - Is it due to color or is the star variable?

March 31 1907 I find that the above star has a question marks against it in New D.M. catalogue which was published in 1903 - after above note was made -

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1898phae.proj.1235w

11h

D.M. +38° 2227 ✓ 11h — m — 38° — ' mag^n 9.5 (1855)

April 10 1901 When checking selections of standard stars on I 17730 to day I found that the above star does not appear on the plate — Neither is it on plate I 21299 though both stars show other 9.5 magn stars — Is it due to color that the star does not appear .or is it variable ?

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1898phae.proj.1235w

52

15h

Approx pos. 15h 10m +56.9° (1855)

Aug. 2 1901 When identifying A-C yesterday I found an object in the above approximate position. Two or three times longer than running in opposite direction to stars on plate. Defect or what?

Showed object to Mrs Fleming who thinks it is a defect.

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1998phee.proj.1235w

4
1

Approx pos. 1 20.0 +4 N15 (1855)

Nov. 22 1901 When making DM. +4° 251 on chart plates today - I noticed on plate I 2099 an object at 1 20.0 +4 N15 (1855 pos.) which is not on chart plates I 13688 15944 16328 18971 11755 12150 26382 2376 2139 3024 9566 It is not quite the same shape as stars near - but does not look like a defect. What is it?

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1898phae.proj.1235w

6

Approx pos. $1^h\ 58.9\ +9^\circ\ 8'$ (1855)

Feb. 11 1902 When checking identification of comparison stars for variable (approx 1855 pos. $1^h\ 59.1\ +9^\circ\ 6'$) - today - it seemed to me that "b" (approx 1855 pos. 1 58.9 +9 8 shows some change on plates I 127, I 5861 a B 1+1902. Miss Cannon will look at this when she observes var. in sky -

1898phae.proj.1235w

20h

DM +18° 4556 20h 31m 15.2s +18° 37'.7 Magn. 8.5 (1855)

June 13 1902 When identifying chart plates C 12973 & C 12834 to-day. I noticed that the above star does not appear on C 12973. Is it var?

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1898phae.proj.1235w

56 h

21

21h 5m +82° 30 (Approx 1855)

On Dec. 10 1900 I noticed an object, on plate I 11847 in the above approximate position - which looks like a star. It does not appear on chart plates I 23816, 25735, 18487, 17931., 25734 - Examine more plates -

This is a star in another exp. Plate I 11847 must have been exposed twice. as there are other stars on it — not on other plates of this region. Sept. 22 1905

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1898phae.proj.1235w

16h

DM +40° 3003 ✓ 16h 14m 3.1 +40° 31' 3.3 9.2 magu (1855)

Jan 3 1903 - On Oct. 6 1894 I noticed that the above star is extremely faint ~~on~~ chart plate I 3956. Fainter than other stars near it 9.4 magu in DM. Made note on plate. But did not examine other plates then. To-day I have examined chart plates I Series 18283, 25715, 22785, 24861, 8806 20971 15652 13312 1488 3724 6593 & find no evidence of var. in DM. +40° 3003. It is perhaps due to color that it is so faint on photographs. Can not find a spectrum plate good enough to show type of star.

~~1907~~

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1898phae.proj.1235w

16h

DM +40° 3007 16 16.6 +40 24.8 9.3 mags (1855)

Jan. 3 1903

On Feb. 17 1899 I noticed on chart plate I 18283 that there are two stars quite near each other either of which might be taken for DM +40° 3007 The one of the two (the one following & north matches best - perhaps - the star on the DM. chart - but it is slightly the fainter - Why are not both in DM. Catalogue? We have no spectrum plate - good enough - of this region - to show type of star - I have examined to-day chart plate I Series 3956 6593 3724 1488 13312 15652 20971 8806 24861 22785 25713 & find no evidence of var. in either star.

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10h

A.G.C. 13765 10h 1.0 -41° 41' 7 magn (1900 ~~1855~~)

Jan. 17 1903 When orienting plate B 26682 to day I noticed that the above star is very faint on the plate for a 7 magn star. Is it var? Examined it on chart plates B 2749 7815 18747 18086 15268 20975 5233 26982 10643 15713 15210 26904 7853 24710 15177 21214 18424 13194 9225 22640 15289 12937 18117 13682 15582 7854 10981 & it seems to me that the star shows evidence of variation. Show plates to Mrs. Fleming — Also a spectrum plate

Nov. 10 1903 The above chart plates examined to-day by Mrs Fleming who finds "slight if any evidence of variation in A.G.C. 13765 —

Nov. 17 1903 Examined the star on chart plates A. W. Series 263, 332, 340, 371, 415, 754, 1133, 1173 1185 1197 1217 1316 1350 1630 1733 1749 1755 1813 & they too show slight - if any - evidence of variation —

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1898phae.proj.1235w

60 h

12 h

DM +40° 2520 12. M.h +40 50 Mag: 9.5 (1855)

July 22 1903 On July 15 when checking selections of standard stars on chart plate I 17957 I noticed that the above star does not appear on the plate — Examined chart plates I 3488 6202 8440 12639 24302 22447 1062 10866 6281 29852 & star does not appear on any of them — Is it var. — or due to color that it is not seen on photographs?

1907 Circular 128

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1898phaed.proj.1235M

h
11

Approx pos. 11 37.1 +73 5 (1855 ~~1875~~)

On July 22 1903 I found an object on ~~B~~ C 14296 11 37.2+73 V
about 1' north or 0.1m preceding D.M. +73 533 It
is not on C 14270, 14271, 14273, 14275, 14276, 14277,
14278, 14294, 14295 14302 14309 14338

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h

17

~~C P D -35° 7267 17 39 55.0 -35 39.6 9.2 (1875)~~

C P D -35° 7270 17 39 56.0 -35 39.1 9.5 (1875)

When making identifications of comparison stars for S x Scorpii on chart plate B 17534 Jan. 31 1901 I found that only one of the above stars appears on the plate & there is only one in the C.D.M. (C.D.M. -35° 11938 17 39 55.2 -35 39.4 9.7) = C.P.D. -35° 7267 & is one star variable - ~~so~~ is there an error in the C. P. D. ?

Sept 19 1903 Have examined to-day chart plates B 9482, 19052 23496 5397 17534 16448 and A 1904 2713 They show that C P D -35° 7270 is certainly variable. See especially B 16448 and B 17534.
B 19113 19217 19444 also examined.

Nov. 10 1903 Have just found that C P D -35° 7270 was announced by Innes in 1899 as variable - (This star is wrongly called C.D.M. -35° 11938 in Miss Cannon's Provisional catalogue of Variable stars published in 1903)

On March 25 1904 Miss Baeslin also discovered this var. independently on B 32049

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20h

D.M. +42° 3722 20h 17m 57.7s +42° 43.5' mag. 9.4 (1855)

I suspected this of var. in 1901 when identifying comparison stars for Williams' algol var. It was selected for comp. star "d" - but another has now been selected. Is D.M. +42° 3722 variable?

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61

18 4

CDM −22° 13531 18h 54 15.8 −22 30.0 mags. 9.2 (1875)

Nov. 10 1903 The above star is 20 feet on plate B 13539 that I suspected it of var. (on Nov 7. when identifying sequence of vars near it.) Have to-day examined it on chart plates B 27454 10010 19581 19511 22613 22745 25428 & find not the slightest evidence of variation It may be due to color ~~or perhaps an error in the CDM~~ The CPD gives its magnitude as 10.4 (photographic) The A.N. magnitude is 9.5 (DM −22° 4949)

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see Remarks Cir 167

h
19

DM. +43° 3425 — 19h 52m 30.2s +43° 52' 0" 8.2 mag. (1855)

Jan. 19 1904 — Yesterday on chart plate I 15463 I noticed that the above star is extremely faint on this plate — for an 8.3 magn. star — Examining it on chart plates I series 1756 2302 29106 22981 21345 6919 6863 2357 4197 29064 2501 83 7203 1263 I find slight evidence of variation — but it has already been suspected of variability — by Espin — & confirmed by Backhouse

July 27 1910 — Not announced as var in Nic Cannons cat. even as late as 1909 Suspected this again, on spectrum plate ~~D~~ I 34112 independently because so faint — In addition to the above plates examined chart plates I 19018, 30987, 18540, ~~2357~~, 29330 23150 22898 13317 7186 ~~29064~~ 22770 They certainly show variation in this star — I 1756, 15463 22770 and 29106 alone prove that star is variable — & I do not understand why it was not announced

Aug 2 1911 — On ℰ I 22770 the var. is magn. 9b
(0.1 fainter than DM. +43° 3415 9.5)
On I 15463 the var. is about 11.6

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66

6

M.P. 1311 6 50.0 -23 N8 1900.

The above star I suspected of var. several years ago - before Jan. 1901 - & marked it on B N515 Examined a few chart plates then - without making note of them - & lately - Mrs. L - suspected this star of var. on I 31183 - & the following chart plates were examined by her - She finds no to evidence of var. though I ~~thought~~ think the B plates show slight evidence - & also the A.C. & A.M. plates.

A I Series 9N1, 906, 803, 708, 599, N2N, 77, 1879, 16N6, 169N
1702 1819 1809 1619 1529

A.M Series 718, 231, 1068, 1775, 1663, 2N6

A.C. Series N06N 2058 1989 718 N91 220N 3158 18N7 712 686
2274 N04N 1233 587 2118 1057 125N 2922 24N8 3017 2118 1057 125N 2922
24N8 3017 512 3377 1356 2389 3312 2180 3326 24N7 N081 3231

B Series 21199 N515 1N777 107 N629 20N57

Feb. 18 1904

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18h

A.G.C. 24888 18h 10.9m - 36° 48' (1900)

B 19873 Nov. 16 1897

A.G.C. 24888 18h 10.9m 36° 48' mag 3.3 η Sagitt.

Why is star at 18h 11m - 36.8
faint on
so faint on plate

11—

Feb. 22 1904 On Nov. 16 1897 I noticed that the above star is very faint on spectrum plate B 19873 for a 3.3 magnitude star — To-day I have examined it on chart plates B 17652 & 19873 & A.M. 15 2280 1960 1952 1589 1543 1487 1470 1461 1437 1422 1414 1278 1252 1043 1236 1028 907 817 808 802 614 577, 538, 461, 154, 137,[33] & I think it shows evidence of variation — See especially A.M. 538 802 1236 1043 1589 2280

March 18 1904 The above plates I gave to Mrs Fleming to examine today & she thinks the slight variation "may be due to the photographs — owing to difference in spectra of stars compared" — See her Book 13 page 152

Feb. 25 1908 Miss Cannon suspects this, also, of variation. See her Book 18 page 187

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7 h

Approx pos. 7 No. 4 + 5 50 53 (1855)

Feb 22 1904

On Nov 9 1903 when examining a star near for Miss Cannon I noticed two stars in the above approx pos. on chart plates I 24175 I 848 I 24317 I 22431 I 22544 I 30026 I 23916 I 24719 I 23880 I 5165 I 20207 I 26837 I 20404 I 24487 I 24328 I 21630 I 24925 B 379 B 27235 I 14799 I 14647 I 5683 & one is sometimes brighter & sometimes fainter than the other — I think the one north & preceding is the variable — but it may possibly be both —

March 18 1904 The above plates examined & "var. of about 0.5" confirmed by Mrs F. & Prof. Pickering — ~~Confirmed on~~ See note in Mrs F.'s Book 12 page 146 — & also on cover of I 24175

To be announced —

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18h

Dec -16° 49'0 N 18 22.0 -16 60 (1855)

Suspected of var by Mrs. F.L.W. - on ~~comp with~~ Chart plates

June 1900 - ~~Dec -16° 49'0 N~~ 18 22.^ -16 60 (1855) B 23282
Superposed on B 23025

Suspected the above star of var - in June 1900 - as noted above - Note was put with others to be looked up a month later plates were given to Mrs Fleming so that she might identify star on chart plate - Supposed ^ She also suspected it of var for the same reason that I did - Chart plates B 9880 19243 21285 21551 23282 were examined & var. confirmed -

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1898phae.proj.1235w

70 4
11

C.P.D. -89° 34 11h 22.9m -89° 14.9 (1900) Mag. 7.6

March 13 1897 B 85 W O

Why is not star marked with arrow - ~~a catalogue star~~ in A.G.C catalogue? It is very bright on plate.

Chart Plates B Series 5693 23618 5780 25448 11598 12852
11966 24136 23777 19800 14102 22000 20426 23034
and C.W. 322 163 744 1042 25 765 918 941 948 962 1032
1701 1712 1783 1796 1838 1906 1926 1943 1958 1973 2292
878 143 I have examined to-day & I do not think the star is variable — Do not know why it is not in A.G.C. as other stars much fainter are there —

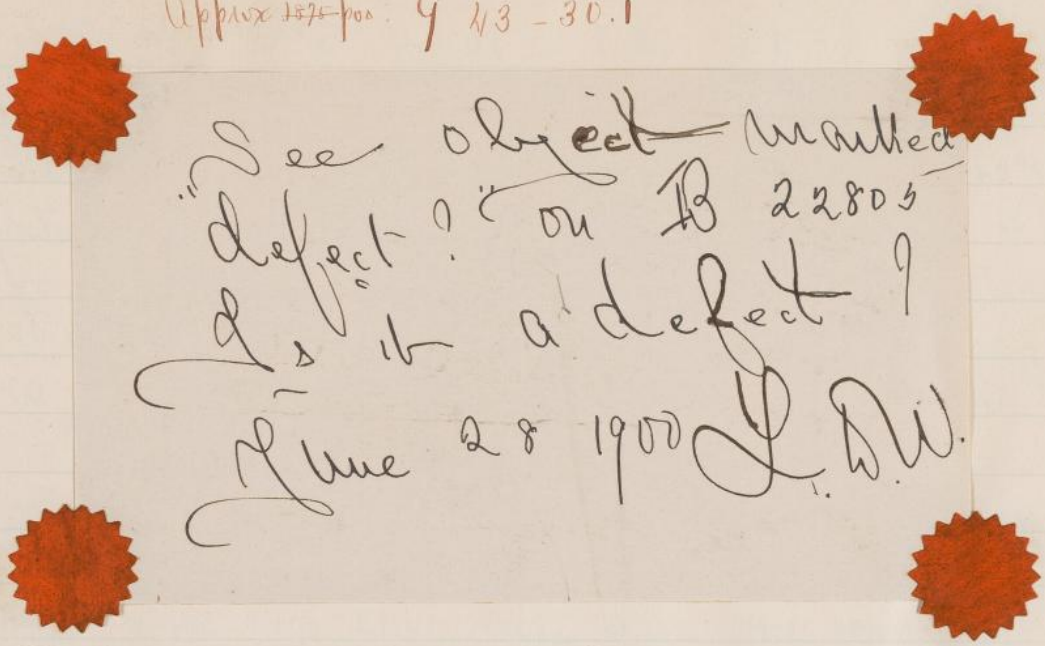
Feb. 22 1904

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1898phae.proj.1235w

9

Approx 1900 : 9 43 m - 30.1 °



Defect? on B 22805 taken May 10 1899
Noticed the above object ~~x~~ June 28th 1900. It is not like stars on plates. neither is it like other objects which are defects - What is it?
Not on B 22496 taken April 6 1899 nor on B 26683 taken Nov. 19 1900

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72

13

13 50.0 − 10 12 (approx 1855 pos.)

13 50.9 − 10 4 (approx 1855 pos.)

Feb. 22 1904 Two images on I 8559 in the above approx. pos. – Not like others on plate – What are they?

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1898phae.proj.1235w

1h

G.C. 1276 {1 16h-50 5 (1900) magn = 6.6
{1 15.3-50 13.2 (1875)

Feb. 24 1904 Several years ago I noticed that the above star is very faint on spectrum plate B 8579 for a 6.6 magn. star. Also faint on chart plates B 3929 & B 11353. Found that the magnitude in the G.C. is 8.0. Questioned it as var?

To-day I have looked at C.P.D. cat. where magn. is 8.2 v in C.D.M. cat. it is 8.1

Examined chart plates B Series 24539 26022 10664 11972 14752 20070 23340 24297 25772 28132 28934 30132 3929 12521 14010. 18161 17768 20838 & I do not think the star is variable. Probably an error in the G.C.

~~July 27 1910 Suspected the again of variation on spect plate I 31242 - because so faint — examined in addition to the above chart plates~~

Note made here by mistake see page 65

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1898phae.proj.1235w

74 21 4

DM +43° 3993 21 33 17.0 +43 6.4 9.0

Sept 22 1896

h m ° mags
DM. +43. 3993 21 33.3 +43 6 9.0 is much
fainter than DM. +43. 3991 21 32.9 +43 7 9.0 on
chart plate ~~B~~ I 2802

Suspected this of var. Sept. 22 1896 - though
it is so near the edge of plate 2802. that it might
easily be fainter than DM. +43° 3991 - However it is fainter on the
following chart plates I Series 11383 ~~11181~~ 18819 26865 19786 25233
11338 11656 11288 18819 16020 16600 16603 18628 22870 24037 19054
19142 19523 24118 22841 24708 I have examined these plates
in the area - no evidence of variation. Spectrum plate I 19131 shows
DM. +43° 3993 to be ~~Class~~ Type II or III & DM. +43° 3991
Type I which probably accounts for +43° 3993
being ~~brighter~~ fainter on plates

Eich. 24 1904

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1898phae.proj.1235m

0h

Approx 1875 pos 0h 50.4 −57° 40'

Feb. 24 1904 Made note on cover of B 18159 on March 31 1900 about that one object on it - in the above approx. pos — not on B 5716 B 20851 or A 4026 -
Is it a defect - or what?

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1898phae.proj.1235w

20h CDM. -50° 12918 20h 11.1m -50° 13' Type III Var.

Is not IV Type star found on B 23029 a Var. ?

It is extremely faint on B 23029

Aug. 11 1900 - JDW.

Feb. 24th 1904 Suspected this CDM -50° 12918 star of Var. Aug. 11 1900 - See Above note - but did not examine it on Chart plates until to-day - Chart plates B Series 28241 N081 13100 25729 23823 12142 30496 29533 30243 16642 show that star is variable.

On March 18 1904 I gave the above plates to Mrs. F. to examine & she confirms var. ☆ See her Book 13 page 148. ~~where also~~

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1999phas.prop.1325W

12h

DM. +7 2711 12h 56m 18.2s +7° NN.5 7N (1855) magn.

Feb. 25 1904 On Sept. 18 1899 I marked the above star on Chart plate I 20869 - meaning to look it up later - as the star is extremely faint on the plate - while other stars were fainter than those given in catalogue are quite bright on the plate - Chart plates I 11546 974 & 22184 also show the star to be very faint - It may be variable but probably the faintness on the plates is due to color -

1907 Circular 128

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1898phae.proj.1235w

3 1/4

DM +34° 631 3h 12.8 +34 17 9.5 magn. (1855)

Feb. 25 1904 Made note about the above star on chart plate I 2755 in Oct 1894 - It is not on the plate - but I found that many faint catalogue stars are either extremely faint - or do not appear - as the plate is a poor one - Chart plates I Series 29229 29231 17916 32215 11613 27327 20150 16162 I have examined to-day - they have the star on them - It shows no evidence of var- in it -

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1898phae.proj.1235w

5h

Dm. +26° 803 5h 8m.8 +26° 8'.0 (1855) Mragn. 9.0

Feb. 24 1904* The above star does not appear on plate 2652 I Series. But other cat. stars near of same magnitude do not appear either. Probably due to color. But may be variable. Better look up more plates.

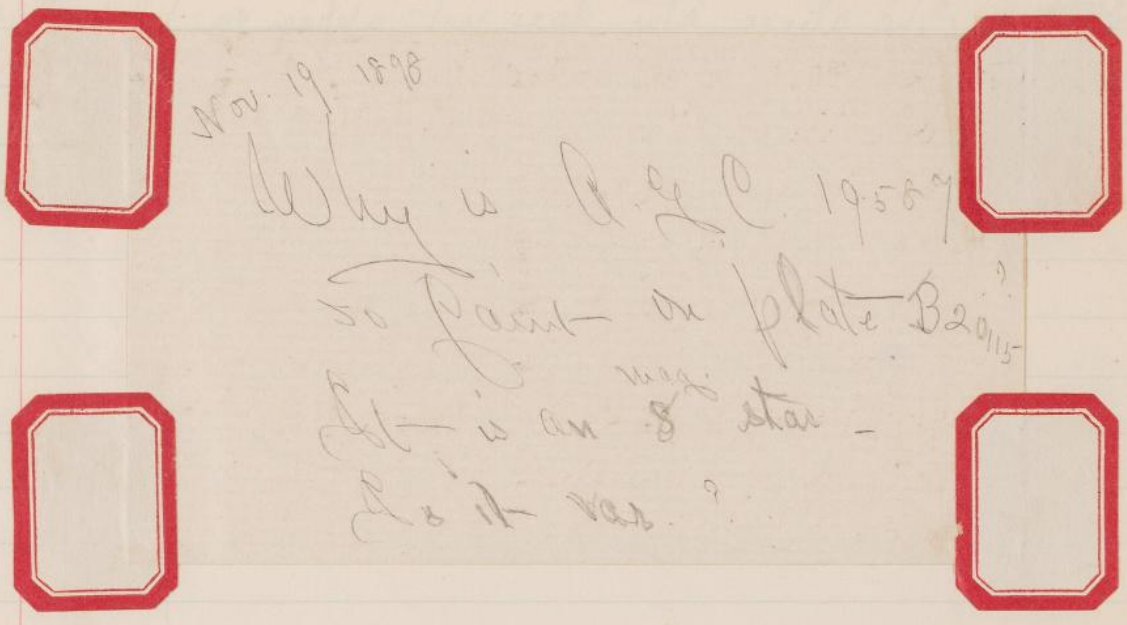
* Noticed this before 1894 on plate I 2652. Made note on cover of that plate. I ought to have entered it in my Note Book No. 2.

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1898phae.proj.1235w

14h

A.C. 19587 1H 23.2 −43 20 (1900) magn 8



Nov. 19. 1898

Why is A.C. 19587 so faint on plate B 20115?
It is an 8 mag star —
Is it var.?

Feb. 26 1904 Chart plates B 20115 11207 27335 21238 18879 27258 22997 6065 5310 25699 I have examined to-day & do not find that star changes in magn. It is "orange" (See A.C.) which probably accounts for its being faint on plates. — A.C. magn = 8.2 C.D.M. magn = 8.2 P.C.P.D magn = 8.6

~~Dec~~ Dec. 1907 marked on B 37610 by Mrs. F. "Is var?"
In Oct. 1910 marked on B 41702 by Mrs. F. "Is var?"
Better examine some A.M. plates.

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1898phae.proj.1235w

17h

C.D.M. h m s ° ' magn.
~~C.P.D.~~ -45° 11383 17 9 47.5 -45 49.6 10 (8.75)

~~Algol Type~~

March 1st 1904 In 1895 when identifying the above IV Type star for Miss L. on B 13836 I suspected it of variation - Chart plates B series 5405 3851 3867 6102 9686 11284 13570 14740 Were examined & star was not found to be variable. But to-day I have examined chart plates B 20447 23169 21917 11284 27711 20280 19655 9686 & 17386 & I find evidence of variation -

March 18 1904 - Gave the above plates (the last nine in the list) to Miss L. today to examine & she finds evidence of var. too. About one magnitude on these plates - See her Book 13 - Page 149

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1898phae.proj.1235w

5h

A.GC. 7044 5h 52m 13s -69° 55.6 (1875) magn. 7.

Var ?

Mag. Mag.
A.GC 7044 7.6 . ZC. 5h 2017 8.0

Chart plate B 10208

May 28 1897

Magn. of the above star is 7.8 in the C.P.D.
Suspected it of var. on May 28 1897 because of difference between A.G.C. & Z.C. magnitudes but Some other stars have that difference between the magnitudes in two catalogues & are not variable

March 8th 1900 Chart plates B 10208, 15008 30682 ~~31228~~ 31228 28725 31175 28998 26320 26718 24N144 18129 12705 12458 14823 17677 24N131 26295 22125 26808 24N102 I have examined & do not think the star is variable.

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1898phae.proj.1235w

7

A G C 10113 7 4h 1.7 – 37 NN (1900) 3.6 magn. c Puppis

See B plate 17936

Why is c Puppis so faint – ?

Is it var ?

Found in using the plates to identify X Series plate of this region.

Feb 9 1897.

Noticed in 1897 – that the above star is very faint on plate B 17936 for a 3.6 magn star (See note on slip of paper) but did not examine other plate until to day – Chart plates C. M. 382 391 721 723 735 785 1113 1231 1291 1581 1707 1786 1798 1832 1896 1160 1932 1957 349 817 show variation in magn. of star I think –

March 8 1904

On March 18 1904 I gave the above plates to Miss Fleming to examine & she finds "slight if any evidence of var". See her Book 13 page 147

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1898phae.proj.1235w

h

|| A.G.C. ~~15359~~ 15346 || 7.9 −46 25 (1900) 7 mags.

A.G.C. 15359 || 8.41 −46 31 (1900) 8

March 9 1904

Long ago I suspected one of these stars of var. because A.G.C. 15359 is much brighter than A.G.C. 15346 on chart plate. Made note on slip of paper but did not examine other plates until to day. Chart plates B Series 11426 31861 29220 5361 5264 27333 27205 25025 21178 22497 21299 22782 21556 21030 19296 15806 12815 9515 7855 18428 I have examined now & on all of them the following star is brighter than the preceding. Neither star shows evidence of variation

Spectrum plate B 13030 ~~29220~~ show spectrum of both to be about the same type — & A.G.C. 15359 brighter than A.G.C. 15346 as on chart plates

A.G.C. 15346 is 7 magn. in 2.C., 7.7 magn. in C.D.M. & 8.3 magn. in C.P.D.
A.G.C. 15359 is 8 magn. in 2.C., 7.1 magn. in C.D.M. & 7.5 magn. in C.P.D.
(C.D.M. & C.P.D. - catalogues having preceding star fainter - as on plates)
Have also examined chart plates A.M. Series 360 1858 1850 1824 1814 1771 1750 1370 1341 1223 1169 441 837 750 1987 1996 2056 2077 430 404. Do not find any variation in A.G.C. 15359 -
A.G.C. 15346 may show variation of 0.1 or 0.2 of a magn — but that doesn't amount to anything - Cannot account for the ~~following~~ preceding star being brighter in A.G.C. & 2.C. - unless there is an error in magn. in both catalogues.

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1898phae.proj.1235w

23

DM +47° 4314 23h 47.3 +47° 21.2 (1855) J.2 mag.

March 9 1904

Several years ago I found the above star to be extremely faint on Chart plate I 7409. Made note on slip of paper but did not examine it on other plates until to-day. Chart plates I Series 9015 16234 4536 6893 18563 1857, 28104, and 31129 show no change in magnitude. It is quite faint on all of them (which may be due to color) Probably the reason that it is specially faint on I 7409 is because it is so near the edge. Other stars near are very faint too on this plate

~~1907~~

Look up the star above the noted one.

1898phae.proj.1235w

0h

Appox 1855 pos. 0h 7.8 + 42.9°

March 10 1904 I found yesterday an object (hazy) in the above position. On Plate I 18563 (Chart) but as it is not on I 18547 taken four days earlier or I 19103 taken a little over a month later it is probably a defect.

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1898phae.proj.1235w

8 4

h m ° ' Mags.
A.G.C 11622 8 33.0 −57 53 (1900) 5.9
A.G.C. 11624 8 33.0 −57 110 (1900) 5.11

March 19 1900
Why is star A.G.C. 8 33 −57.9
brighter than A.G.C. 8 33 − 57.7
on plate A. 30.35?

Have just looked at stars on spectrum plate I 13081 & it is probably because of type that A.G.C. 11622 is ~~fainter~~ brighter than A.G.C. 11624 on plates

March 10 1904 –

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1898phae.proj.1235w

8h

1855. positions

D.M. +68° 551 8 49.4 +68 11.3 5.1
D.M. +67° 573 8 55.7 +67 27.2 5.2
D.M. +67° 577 8 57.6 +67 43.8 5.3

A 1314

Notice magnitudes of stars marked —
Is one variable?
Saw these several years ago when identifying centre of plate.
L.D.W.
Nov. 1901

D.M. +68° 551
D.M. +67° 573
D.M. +67° 577

On A 1314
D.M. +67° 577 is so much brighter than D.M. +67° 573 & D.M. +68° 551 that I suspected one of variability but I have just given spectrum plate B 3147 to Mrs Fleming to examine type of these three stars & she thinks it is because of difference in type that there is such a difference in magn. on plates
March 1904

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1898phae.proj.1235w

2h

A&C 16939 12 19.6 −62 25.8 (1875) 6.8

Near ζ Crucis
2 12h 21 −62° 5

X 4076
7378
4090
7410
4591
6418
5190
6638

It does on

March 1897 Why does not A&C 16939 appear on Plate X 7515?

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1898phae.proj.1235w

21 h

		h	m	°	′		mag.
D.M. +80°	679	21	10.0	+80	35.6	(1855)	7.0
D.M. +80°	682	21	12.9	+80	24.9	(1855)	7.0

On March 29 1897 when identifying centre of A plate 1411 I noticed that the preceding of the two stars given above - is much ~~fainter~~ brighter than the following - though the magnitudes are the same in the D.M. cat. Looked at them to-day on spectrum plate I 7264 & found that the type of the two stars differs - which probably accounts for difference in magnitude on plates - Not worth while to look up for variability I think.

March 17 1904

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1898phae.proj.1235w

19h

mag 11

A.G.C 26384 19 10.0-33 N2 69 (1900)

March 29 1904 The above star is bright on s/p. plate A. 6464 & does not appear or is extremely faint on ch. plate A - 2726 It is it var.? Noticed this to-day when identifying other stars on A - 6464 on A 2726

Later. I find this star is R Sagittarii Discovered by Markwick. & also Mrs. Fleming found it "Vec." on B 14135 a spectrum plate

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1898phae.proj.1235w

92

4

15

Approx. pos. $15^{h}\ 1.3^{m}\ +1.8^{\circ}$

May 18 1904 On A.C. 3662 there is an object in the above approx. pos. not on A.C. 3655 (taken the night before.) nor on B.D. I 14663. It looks like a comet — What is it — ?

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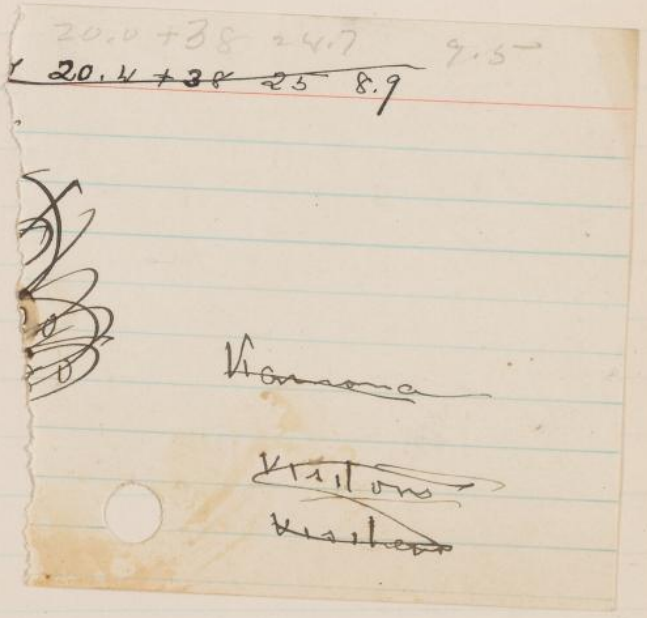
13h

Z.C. 13h 717 13 11.6 −73 47 8½ (1875)

June 20 1904

The above star is so faint on chart plate B 29644 that thinking it might be var. I have examined it on chart plates B 15541, 10932, 19825, 12994 & find that it does change in magnitude. Plates B 22876 25609 9332 24873 25734 25526 25223 27782 31606 also show evidence of variation — It is known as Type II.

Plate	Date	Ref.
B 31606	May 4 1903	10 m
B 27782	June 26 1901	10 m
B 25223	May 5 1900	60 m
B 25526	June 21 1900	67 m
B 25734	July 16 1900	24 m
B 24873	March 21 1900	10 m
B 9332	May 3 1893	10 m
B 25609	June 25 1900	10 m
B 22876	May 20 1899	10 m
B 15541	April 7 1896	10
B 10932		
B 12994	April 10 1895	10 m
B 19825	July 15 1897	10 m
B 29644	May 14 1902	10 m



An examination of the above plates shows a variation of about 1.4 magnitude. Measure and announce.

W. P. Fleming.

Oct. 29 1904 Have just identified this star in the C.P.D. Where I find this note against it: "Only a tolerably faint image on check plate. Certainly missing on measuring plate (which is somewhat more powerful)" Does this mean that star was suspected of var. when C.P.D. was made?

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1998phae.proj.1235w

13h

Z.C. 13h 717 13 11.6 −73 47 8½ (1875)

June 20 1904

The above star is so faint on chart plate B 29644 that thinking it might be var. I have examined it on chart plates B 15541, 10932, 19825, 12994 & find that it does change in magnitude. Plates B 22876 25609 9332 24873 25734 25526 25223 27782 31606 also show evidence of variation — It is known as Type ~~II~~.

Plate	Date	Mag.
B 31606	May 14 1903	10m
B 27782	June 26 1901	10m
B 25223	May 5 1900	60m
B 25526	June 21 1900	67m
B 25734	July 16 1900	14m
B 24873	March 21 1900	10m
B 9332	May 3 1893	10m
B 25609	June 25 1900	10m
B 22876	May 20 1899	10m
B 15541	April 7 1896	10
B 10932		
B 12994	April 10 1895	10m
B 19825	July 15 1897	10m
B 29644	May 14 1902	10m

An examination of the above plates shows a variation of about 1.4 magnitude. Measure and announce.

W. P. Fleming.

Oct. 29 1904 Have just identified this star in the C.P.D. where I find this note against it: "Only a tolerably faint image on check plate. Certainly missing on measuring plate (which is somewhat poorer)." Does this mean that star was ~~suspected~~ suspected of var. when C.P.D. was made?

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1898phae.proj.1235w

91

17h

17h 33.8m 35° 8'
~~17.5~~ – ~~34~~ 15 (Approx 1875 pos.)

Aug. 20 1904

An object in the above approximate position is found on B 13749 on Dec. 23 1895.
Today I have looked at it again. There is no object in same position on either B 16444 or B 23496. It is not quite the same shape as stars near. On examining the plate (B 13749) again I find two or three other objects of the same kind on it. Probably they are all defects – or possibly another exposure on plate –

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15h

Approx 1855 pos: 15h 27m −0.2

Aug. 20 1904 On C 14345 (in Oct. 1903) I found an object in the above approximate pos., elongated & not like stars on the plate. It is not on chart plate B 18937, taken April 23 1897, & not on chart plate B 31764 taken May 14 1903 (C 14345 was taken May 22 1903) What is it?

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1898phae.proj.1235w

96 9h 17

DM. +52° 1378 9h 8.3 +52° 1.2 9.2 magn. (1855 pos.)

Jan. 17 1906 Examined today chart plates (I Series) 15110 17745 26438, 26940 21887 5834 30156 28365 8392 14880 33553 8211 ~~25222~~ 12473 19490 ~~5085~~ 24242 & They seem to show that the above star is variable. Suspected it because so faint on I 31601. Noticed it in Dec. 1904 when using I 31601 to identify other stars — Image on chart plate looks like image of IV type star.

Variability confirmed by Mrs. Fleming Dec. 5 1906 See her Book 17 p. 137 "10 chart plates show variation of about 0.8 magn 11.1 to 11.9"

Feb. 9 1907 Does not spectrum plate I 31291 show star to be Type IV? If it is Type IV it is new.

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1898phae.proj.1235w

4h Approx pos. = 4 17.5 + 15 25 (1855)

Nov. 22 1906 A star, quite bright on I 5293, in above approximate position - not in AM. catalogue - May be variable.

Examined chart plates I 3116, I 9028, AM 4109, AM 674, AM 252 AC 6936 AC 2308 AC 3337, AC 4098, AC 4620, AC 7220 AM 4057 + found no evidence of variation -

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1898phae.proj.1235w

23h

Dm. +46° 4169 23 40 23.1 +46 1.4 6.5 magn. (1855)

Dm. +45° 4321 23 38 53.2 +45 36.7 5.2 (1855)

April 6 1908?

Why is Dm. +46° 4169 so bright on chart plate I 311 29
Much brighter than Dm. +45° 4321 Is one var?

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1998phaeproj.1235

23h Ⓓ III +47° 4317 23 47 51.3 +47 46.1 mag 9.4 (1854)

See also page 214

April 6 1907 The above star does not appear on chart plate I 3112g

1907 Circular 128.

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1898phae.proj.1235w

4
3 DM +28° 518 3 11 59.4 +28 25.5 (1855) mag 9.0

April 8 1907 The above star is not on I 7787. unless we assume a star on this plate about 5' north of the DM. pos. to be this star.

Later Have just looked it up in the DM. catalogue & find it questioned there.

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1999phaot.proj.1235W

20h D.M. +23° H157 20 41 38.8 +23 30.6 9.2 mags. (1855 pos.)

April 11 1907 The above star does not appear on chart plate I 21135 (noticed this when checking identification of faint stars near - noted in Book 2 page 16)
Examined chart plates I 23645 6879 9319 11677 7120 33491 25162 7296 21135 27642 - No star in position of D.M. +23° H157 appears - On all the plates there are two faint stars in R.A. given above & in dec. about 2' south - One or both may be D.M. +23° H157 assuming an error of 2' in D.M. catalogue & on D.M. chart, but it is more probable that the D.M. star does not appear.

~~April 13 1907~~

1907 Circular 128

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1898phae.proj.1235w

14' Approx pos. 1H 23.8 +5 37 (1855)

I made Note on slip of paper that Sept 1899 did not examine other plate until May 3 1907

Assuming the star slightly following & South of the above approx. pos. to be B.M. +5° 2887 1H 23.9 +5 35.5
Why is not this one also in B.M. cat? They are almost the same mags - on # I 20958
Have examined to day chart plates I 27041 28661
1H970 1H70H 10995 12579 15521 20117 20763 19737
17835 16925 17211 63410 17588 63553 18097 20950 + It does not seem to be variable

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1898phae.proj.1235w

8h D.M. +11° 1926 8h 43 19.1 +11 56.5 9.5 (1855)

May 11 1907 No star in pos. given for Dm. +11° 1926 on I 31559
Is it variable - due to color - or an error
in Dm. cat or on Dm. chart? Examine plates -
(Noticed this some time ago when selecting
stars for orientation of ~~I 31559~~ D 10515 using
I 31559)

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1898phae.proj.1235w

20 4 Dm. +0° 4606 20 11.5 59.2 +0 26.8 9.5 magn.

May 11 1907 The above star does not appear on chart-plates I 7205 or I 21177 var? Error in Dm.?

Note at foot of opposite page applies to this star too —

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1898phae.proj.1235w

20 4

Dm. +0° 4608 20 h 16 34.7 +0 26.7 (1855) magn. 9.5

Dm. +0° 4609 20 h 16 35.7 +0 43.3 (1855) 9.5

May 11* 1907

The above stars do not appear on chart plates I 7205 or I 21177.

There is a star on the plates at R.A ~~about~~ 20h 16m.6 or dec. about +0° 37'. We might assume it to be +0° 4608 with an error of 10' in dec. in Dm. cat. & on Dm. chart. ~~If~~ or it may be +0° 4609 with an error of about 7' in dec. in Dm. But either way - one star is missing from the plates. ~~Is~~ Is it variable - or simply an error in Dm. - ? Better examine more plates & also enter in card catalogue of suspected errors in Dm. -

Have entered.

* Noticed this many years ago when checking selections of standard stars on I 7205 - Made note on slip of paper - Have to-day examined plate again - May 11 1907 - & entered note here -

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1898phae.proj.1235w

20h

Dm. +0° 4604 20 45 39.2 +0° 24.7 mag. 9.5 (1855)

May 11 1907

Note at foot of page 105 applies to this star too —

No star in this position on I 7205 or I 21177
There is one in R.A. given for +0° 4604 &
in dec. about +0° 32' (bright enough
to be this star) but we would
have to assume an error of 7' or 8'
in Dm. catalogue + on Dm. chart —
Is it Dm. +0° 4604 — or is
+0° 4604 variable? Have
entered in Card Catalogue of assumed
& suspected errors in Dm. —
Better examine more plates —

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1898phae.proj.1235w

22h

Dm. +10° 4780 22h 29m 5s 4.W +10° 9'.8 9.5 magn.

May 14 1907

When looking up errors in R.A. of stars near I noticed that there is no star in the above pos. on I 4291 or I 21180

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108

	h			s	(1855) °	′	mag.
21	h	A.W. +22°4442	21	31	4.8	+22 16.4	9.2

May 14 1907 Noticed that this star is extremely faint on I 42814
Is it due to color or variable?
Examine more plates —

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1898phae.proj.1235w

17 4 h m s ° ' mag.

Dm +1° 3480 17 32 34.5 +1 8 41 9.5 (1855)

May 20 1907 When identifying some stars in this region to-day I noticed that the above star does not appear on I 25693 Is it due to color or var? Examines more plates

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1898phae.proj.1235w

17 4

17 C.D.M. -23° 13733 17 52 14.1 -23 30.4 magn. 9.2 (1875 pos.)

Allegheny 1908 When checking identification of a variable of Miss Cannon's near above star region - to-day - I did not find C.D.M. -23° 13733 on plate B 25823. It is not in P.D. catalogue - Is it another variable - or an error in the C.D.M.

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1898phae.proj.1235w

17h CDM. −49° 11815 17 48.1 −49 7 (1875) mag. 10.0

Nov. 1 1908 The above I find bright on B 26234. ? in C.P.D. the mag. is 8.8. Is it variable?

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4

O CPD. -26° o 30.9-26 50.0 (1/5/5) magn 9.8

Dec. 14
1909

This star seems brighter than 9.8 magn
on B 21973 - Is it var?
Noticed this long ago & made note
on slip of paper - Look up on plate

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1898phae.proj.1235w

18 4

Approx pos. 18 27.4 −30 50 (1900)

Dec. 14 1909

On Oct. 30 1904 I questioned why this star is so bright — Made note on slip No note of plate on which I noticed it — Examine plates — May be a catalogue star —

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1898phae.proj.1235w

4
12

Dm. +25° 2522. 12h 26.3 +25 15 (1855) 7.3

Dec. 14 1909

On March 10 1905 I made note on slip of paper questioning why Dm. +25° 2522 does not appear on C 15W80 —
Examine I spectrum plates, & chart-plates

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1898phae.proj.1235w

13 4

QQC. 18893 13 N9.1 -51 30(1900)

Dec. 14 1909 The above star is so faint—on I 12887 & X 11005—. Is it— var.
Noticed this March 23 1906 - Examine more plates Note made on slip of paper -

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1898phae.proj.1235w

10h

CPD-64° 1175 10 41.6-64·57 9.5

Dec 14 1909 See Chart plate B 2694 - Made note "var?" July 14 1914 - Never looked up more plates - Examine more -

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1898phae.proj.1235w

23h

1

2C.23h 1532 23 55.9 −59 29

Dec. 14 1909 Where is 2C.23h 1532 on B 27601? Is it var?
Made this note on slip of paper – Sept. 20 1906
Examine plates.

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1898phae.proj.1235w

21h

DM. +5° 1922 21h 53.2 +5 25.3 (1855)
var?

Dec. 14 1909 See note on B 63 14
Examine plates.

See Page 218

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1898phae.proj.1235w

20h

Approx 1875 pos. 20 54.5 – 63 59

Dec. 12/ 1909 On B 11792 is a star in above approx pos. bright enough to be in C.P.D. Why is it not? Var? Noticed this in 1906 – & made note on slip of paper. Examine plates – Planet? Var?

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1898phae.proj.1235

120

20h

(Am. +48° 3061 20h 9m 1.2s +48° 38' 8" (1855) 9.5 magn.

Dec. 14 1909 The above star so faint on I 22999 - var?
Examine chart plate.
(This note made on slip of paper - June 13 1906)

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1898phae.proj.1235w

20 4

(DM +34° 3956 20 11.529 +34 17.1 (1855) 9.3

Dec. 14 1909 Where is this star on I 8928 var?
(This note made on slip of paper June 21 1906)
Examine more plates

b)

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1898phae.proj.1235w

21h

Var?

Dec. 14 1909 See note made on X 11379 Feb. 13 1907

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1898phae.proj.1235w

h
18

Dec. 14 1909 Ex

July 31 1916 C

July 31 1916
later —

DM +6° 3898

ou I 33286
n examined
of the chart
ou cover I 33286
— but can
arrow referred
as noted above.

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1898phae.proj.1235w

h
18

Dec. 14 1909 Examine star marked on I 33286 Var?
See same chart plates examined for DM +6° 3898

July 31 1916 Can find no star marked "Var?" on I 33286 excepting +6° 3898 which has been examined
Perhaps I marked a star on one of the chart plates. Look up - sometime - Find "Var?" is on cover of chart plates I 33286

July 31 1916 later - Find several arrows on chart plates - but can not tell whether they are mine. Arrow referred to must have been on I 33286 as noted above. Mark rubbed off.

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1898phae.proj.1235w

h
18
or h
19

Dec. 20 1909 On I 23290 - star marked with arrow - What is it?
Compare with I 23184
Made this note on slip of paper July 7 1900

July 31 1916 No star is marked with arrow on I 23184 or I 23290
Must have been rubbed off -

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1000phec.proj.1336w

20h

DM. −5° 529N 20 23.4 −5 10.8 (1853) magn 9.0

Dec. 1909 On A.C. 10629 DM. −5° 529N is much fainter than on A.C. ~~10629~~ 5498 AC 10037 AM 3600 AM N671 AM 3506 AM 3569 AM 3162 AM 5403 AM N207 AM 4821 AM 2161 AC 10534 AM N932 AM 3564 AM 2867 AM N381 AM 6096 AM 3656 AC 6N86 AC 10635 AM 3517 AC 7838 I think (Noticed this when examining these plates to confirm variation of DM. −5° 5288 Wood B N0591)
Probably defective image, or defect over image of DM. −5° 529N on A.C. 10629

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1898phae.proj.1235w

23h

Approx. pos. 23h 23.5 +49° 30'

Jan. 26 1910 Object in above approx. pos. found on I 18703
Note made on cover Sept. 18 1909
Defect or what?

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1898phae.proj.1235w

5h

CDM -46° 1969 5" 39.8" -46 30.7" (1875) ~~8.5~~ magn 8.3

Type III Pechüle

July 15th 1910 When trying to find the above star on spectrum plate B 15220 ~~robart plate~~ in order to check identification in Catalogue of Type III Stars - it seemed so faint - (barely visible) for an 8.3 magn. star that I suspected it of variability -
Chart Plates B 4824, 14803, 24099, 32886, 26775, 24278 22251, 22318, 24095, 17903, 26488, 26487, 31138, 30684 17544 30996, 34979, 28894, 26304 confirm variation. ~~The~~ first four plates (in this list) above, prove star to be variable.

Aug 7 1911 On B 32886 the variable is magn. 11.0 (0.8 fainter than CPD -46° 622 10.2

On B 24278 the variable is not seen while stars of magn 15.0 are -

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1898phae.proj.1235w

h

Circular 167

7h 2m.-7° 1742 7h 2.1-7 24 (1900) Magn. 8.3
59.9-7 20 (1855)

July 18 1910 When trying to find the above star on spectrum plate I 31336 (in order to check identification in Type IV catalogue) I became it does not appear - I suspected it of variation -
Chart plates - B 14929, I 17657, B 29419, I 32954, B 31294
I 24663, I 34377, B 35345, I 23937, B 29004, B 35220, I 24493
B 35212 confirm variability - The first four plates alone prove star to be variable -
Does not appear on spectrum plate B 24716 150m exp

July 27 1911 On I 17657 the variable is about 12.8 (3 magnitudes fainter than D.M.-7° 1747 9.8)

On B 31294 it is about magn. 14.0 (1.2 fainter than it is on I 17657)

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1898phae.proj.1235w

17h

D.M. -19°4644" 17 23.8 -19 23.6 (1900) 7.8 magn.
17 21.2 -19 21.1 (1855)

July 20 1910 When trying to find the above star on spectrum plate B 9448 (in order to check identification in Type IV catalogue) I suspected it of variation because it does not appear - I think it is on spectrum plate B 10623 very faint.
Chart plates B 6091, 9404, 13991, 27109, 33388, 16446, 25268, 11207, 15823, 29517, 29819, 35714, 32022, 32075 confirm variability — the first four plates above prove star to be variable.
Spect. plate B 10623 shows star to be Type IV
July 30 1910 This star, I find, was called variable by Cacciatore in 1897 but it has not been announced in Var. star Catalogue.

Aug. 3 1911 On B 35714 the var is magn 11.0
(1.2 fainter than -19° 4644 9.8)
On B 13991 the var. is 13.0

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1898phae.proj.1235w

Circular 167

18 26.4 +4 19 (1900)

18 DM +4° 3779 18 24.2 +4 17.3 (8 55) Magn. 9.3

July 22 1910 When checking identification of this star (for Type IV catalogue) on Spectrum plate B 37597 using chart plate B 26111 I suspected it of variation

Chart plates B 9876, B 19844, B 22795, B 27587 B 25613, B 23662, B 26205, B 21287, B 25393, B 29654, B 30106, B 27998, I 36194, B 20448, I 31904 B 19381 B 23127, I 8791, B 28498 I 6619, B 19184, B 30622, B 26111 confirm variability. The first four plates alone prove star to be variable.

July 31 1911 On B 27587 the variable is about 14.0 Magn. (between 4.0 magns. & 5.0 magns fainter than +4° 3772 9.5)

On B 26205 the variable is about magn. 15.0

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1898phae.proj.1235w

18h

DM. −13° 4(918) 8 10.1 −13 29.5 (1855) 9.2 magn.

July 23 1910

When trying to find the above star on spectrum plate B13463 or B 39359 (in order to check identification in fourth Type Catalogue) because I did not find it I suspected it of variation — On the following chart plates it appears - but show no evidence of variation - I think - excepting on B15833 where it appears to be fainter —

Plate examined are B 32334, 19327, 15833, 37950, 36470, 30071 32318 36920 38825 7692 13727 10225 10224 9851 14083 6137 Poor 22007 Poor 21312 Poor

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1898phae.proj.1235v

See Remarks Cir 167

20h

D.M. +41° 3632 20h 4.7 +41 4.2 (1855) 9.5

July 29 1910 When checking identification of the above star (for IV Cyg the cat.) I suspected it of variation because it is so faint. Spectrum plates I 33562 & I 34242 do not show it at all. On chart plates I series 30987, 6863, 18540, 19018, 7203, 2351, 13317, 2801, 15463, 22770 23150 the star shows variation. The last four plates alone, prove star to be variable.

July 30 1910 This star, I found, was announced as var. by Espin long ago. But is not in Variable star Catalogues.

Aug. 3 1911 On I 15463 the Variable is magn 13.5 (N.O fainter than D.M. +41° 3689 9.5) On I 30987 it is about 14.5

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1898phae.proj.1235w

N2.2 1N.9

6

19 58 ~~58.3~~ +20 ~~39.3~~ (1855) magn. 8.9

20 DM. +20° 4417 20 0.7 +20 22 (1900)

Aug 13 1910 When checking identification of this star (for IV Typical) I suspected it of variation because it is so faint on plate 34351 I Series

Chart plates I 4617, I 9037, I 15421, I 34193, I 25719, I 25879 I 18655, I 16258 I 8847, I 4882, I 3941, I 16133, I 8960, I 11190, I 7054 I 17910, I 23643, I 23584, I 22768, I 9062, I 33466, I 6862, I 22896, I 7184 I 25732 I 7090 I 11676 B 32463 confirm variation. The first four plates in this list alone prove star to be variable.

Aug. 2. 1911 On I 15421 the var. is about magn. 10.0 (0.5 fainter than +20° 4413 9.5)

On I 4617 the var. is about 12.0

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1898phae.proj.1235w

20h

D.M. +40° 4210 20h 25.8 +40 2.0 (135) magn. 9.4

Aug. 20 1910

This star is so faint on chart plate I 31018 that I suspected it of variability when checking ident in Type IV catalogue -

Chart plates I series 31134, 19393, 6970, 27755, 18964 22920, 5272, 9977 25972, 7030, 13143, 18842, 29367 30954, 16259 16404 13759 33492 13318 23075 9066 31018 show slight change. But the change is so slight that it must not be announced without further confirmation - I think the star is variable - because it is Type IV - That is - it is called Type IV by Espin -

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1898phae.proj.1235w

20h (D.M. +37° 3903 20h 16 15.1 +37 4.7 (1855) 9.4 magn.

Aug 20 1910 This star is so faint on chart plate I 31018 that I suspected it of variability (noticed this when checking identification of it in Type III catalogue. Chart plates I series 1880, 16259, 27755, 6970, 20993 29367 22920 18964 23075 33492 9066 25972 16466 31018 30954 ✗. confirm variability. The first four plates alone, in this list, prove star to be variable. Spectrum plate I 4666 shows faint trace of star I think.

Aug 2. 1911 On I 16259 the var is 11.5
(2.0 mags fainter than +37° 3905 9.5)

On I 27755 it is 12.5

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1898phae.proj.1235w

h

20 20 11.6 + 36 28 (1855)
20 13.3 + 36 36 (1900)

Called Type IV by Espin - A star in this pos. on I 31018 chart & I 4666 2 pl. & it Type IV?

Aug. 20 1910 Have examined this star on the following chart plates - thinking it may be variable -
I Series 31018, 1580, 16259 27755, 6970, 20993, 29367, 22920
18964, 23075, 33492, 9066, 25972, 30952, 16404 & I find
no evidence of variability on these plates -

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1898phae.proj.1235w

20 h

D M. +35° 4077 20 15 39.3 + 35 9.3 (1855) 9.5

Aug. 24 1910 The above star is called Type IV by Espin (see spect. pl. I 4666 Suspecting it of variability I examined To-day the following chart plates

I Series 1580, 16259 27755, 29367 18964, 9066, 30954, 6970, 20993, 22920 23075, 33492, 25972 16404 31018 & found slight, if any, evidence of variation.

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1898phae.proj.1235w

20h

D.M. +68° 1140 20 36.0 +68 13 (1855) (1900) 88

Aug. 24 1910 When checking identification of the above star in Type IV catalogue to-day I suspected it of variation — Chart plates A.C. Series, 2918 2977 2007 776 337 352 2554 426 1614 1816 1835 856 987 2882 1761 1949 2051 8411 2721 1552 3484 2855 2358 1891 show slight change — but not enough to really confirm variation —

Identified on chart plate B I 31077 & spectrum I 36281

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1898phae.proj.1235w

20 h

(D.M. +45° 3271 20 h 11 56.5 +45 31.3 (1855) mag. 8.8

Aug. 25 1910 When checking identification of this star on plates for Type IV cat. I 23748 (spectrum) + I 32024 (chart) I found it so faint that I suspected it of variability.
On chart plates AC series 391 2664 4329 2883 5242 1850 6507 3018 1864 5494 316 577 1966 3584 3909 4040 4090 4126 4951 5043 5294 5733 6667 it shows slight change - but not enough to announce. Also examined I Series plates 32024 21600 4430 6924 7141 7249 15438 21348 16623 23723 23051 15364 7122, 9046 9721 18611 22805 21020 25398 - they show slight, if any, change.
(Spect. plate I 33604 also shows star to be Type IV)

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1898phae.proj.1235w

20h

Dm. +39° 4322 20 44.3 +39 58 (1900) 9.4 magn.

Aug. 25 1910 When checking identification of above star for Type IV catalogue – I suspected it of variability. Spectrum plate I 32604 shows the star to be Type IV

Chart plates I Series 15438, 23603, 16262, 18944, 366, 5231, 7140, 29538, 5272, 7122, 22805, 9046, 16623, 25398 15361 7249 show slight change in brightness – Not enough to announce – The shape of the image changes – as most Fourth Type stars do –

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1898phae.proj.1235w

21 4

21 14.4 +51 49 (1900)
21 12.6 +51 38 (1855)

Sept. 5 1910 This star is called Type IV by Espin —
Faint trace of it is seen on spectrum plate I 36145 —
Suspecting it of variation - today - when checking
identification in Type IV catalogue I examined
the following plate - chart - I Series 7707, 27644, 21562,
2555, 30953, 27567, 15462, 9710, 8857, 1759, 15427, 11397 & found
no evidence of variability - Perhaps more had better be
examined some time

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1898phae.proj.1235w

20 4

Dm. +54° 2398 20 38.3 +55 4 (1900) magn 9.2

Sept. 7 1910 Inspecting the above star of variation – when checking identification in Type IV Cat. I examined the following plates I Series 23168, 23962, 23522, 26321, 15797, 28145, 9748, 26287, 7031, 33495, 27263, 27566, 23266, 11315, 7123, 21132, 25901, 30964, 6882, 23077, 13787, 13554, 9722, 33635 but found only slight change – not enough to announce –

Sheet plate I 32311 shows star to be Type IV

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1898phae.proj.1235M

20 4

Nu +32° 3955 20 43 24.M +32 41.M (1855) magn 9.4

Sept. 7/1910 Suspecting the above star of variability - when checking identification in Type IV catalogue - I examined the following plates I Series 32052 11678 15753 27548 32047 33472 7121 11966 15425 18852 21912 - No evidence of variation on these plates -
Spectrum plate I 4653 shows star - Is it Type IV?
EC

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1898phae.proj.1235w

141 4

21

21 24 14.6 +49 41.6 (1855)

D.M. +49° 3535 21 25.8 +49 54 (1900) 9.4

Sept. 9 1910 Suspecting this star of variability when checking identification in Type IV catalogue. I examined these plates I Series 2779 34199 21499 18564 13026 11384 7523 4804 4360 27716 13657 12710 7815 5304 4953 & they do not prove star to be variable.
Spectrum plate I 32396 shows it to be Type IV & third. & I 35786 (This is the best spectrum plate)

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1898phae.proj.1235w

21h

+50° 3352 21 25 25.0 +50 58.4 (1855) magn. 9.5

~~D.M. +49° 3535 21 57 34.6 +50° 49.0 (1855) magn. 9.5~~

Sept. 9 1910 Suspecting this star of variability when checking identification in Type IV catalogue - I examined these plates

I Series 5304 4804 7523 13026 18564 34199 4360 13657 11384 21999 27716 12710 4953 7815 - I found slight - if any evidence of variation —

Spectrum plate I 32396 does not show star - I think - so have not checked identification in Type IV catalogue. Spect plate I 35786 is the best spectrum plate.

To be Type IV

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1898phae.proj.1235w

4
21

21 28 22.1 +17 40.8
(WW. +17° 4607 21 30.5 +17 53 (1900) 9.3

Sept. 10 1910 When checking identification of this star in Type IV catalogue - I suspected it of variability? - Examined these Plates I series 16140 23242 4711 8938 7068 6813 21183 23590 1585 29154 16178 18661 9762 11512 26104 - Slight change - I think - but not enough to announce - Spectrum Plate I 13715 shows star - In it - Type IV as announced by Vogel?

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1898phae.proj.1235w

21h

DM. +51° 3138 21 40 59.7 +51 49.0 (1855) 9.5

Sept. 10 1910 The above star does not appear, or is very faint, on plate I 27551.
Noticed this when identifying stars near (called
Type IV by Eichen) for Comst. Type catalogue -
Is this star - DM. +51° 3138 - Variable -
Chart plates I Series 27551 1762 4462 6991 7304
7403 16266 24004 show no evidence of variability -

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1898phae.proj.1235w

					Magn.	
21h	40.6	+54	8	(1900)	9.5	= DM. +53° 2692
21	40.6	+53	15	(1900)	9.2	= DM. +53° 2693
21	43.0	+52	5	(1900)		
21	43.6	+52	13	(1900)	9.3	= DM. +52° 3036
21	51.5	+50	1	(1900)	9.1	= DM. +49° 3673

Sept. 13 1910 DM. +53° 2692 called Type IV by Espin - I have suspected of variability & examined on the following plates but find slight - if any change - chart-plates I Series 27551, 24004, 16266 7403 7304 6991 4462 1762

DM. +53° 2693 called Type IV by Espin, I also suspected & examined on same plates - but found no change -

Star at 1900 pos. 21 43.0 +52 5 (Espin Type IV) extremely faint - or does not appear on above chart plates. No change.

DM. +52° 3036 (Espin Type IV) suspected of variability & examined on above plates - No change found

DM. +49° 3673 (Dunér Espin Type IV) suspected of variability & examined on above plates - Extremely faint - or not seen No change found.

Spectrum plate I 35786 covers region of above stars & identification is made on chart plate I 27551

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1898phae.proj.1235w

22 h

AM. +15° 4642 22 19.7 +15 38 (1900) 9.0 magn.

Sept. 14 1910 Suspecting this star of variability when checking identifications in Type IV catalogue - I examined the following plates AM 5198, AM 6291, AM 6691, AC 11197, AC 10676, AC 10602, AC 8831, AC 8648, AC 7790, AC 7149, AM 5249, AM 6285, AM 6656, AC 10929, AC 8005, AC 7759, AC 11098 AM 5571 & found slight - if any evidence of variation -

Spectrum plate I 31312 shows star - identified on chart plate I 8943 -

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1898phae.proj.1235w

22h

DM +65° 1770 22 25.0 +65 56 (1900) mag. 9.0

Sept 16 1910 Suspecting this star of variability when checking identification in Type II catalogue. I examined the following plates:
I Series 11842, 29366, 11460, 9729 18764, 15803, 1618, 23540, 11656, 29565, 24138 21048 27832 11028 27830 11539 29128 - ? Slight change. I think - but not enough to announce -
Spectrum plate I 13697 shows star.

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1898phae.proj.1235w

22h

22 55.2 +45 6.5 (1855)
DM. +45° 4121 22 57.2 +45 21 (1900) 9.5

Sept. 16, 1910 Suspecting this star of variability when checking identifications in Type II catalogue - I examined these chart plates: I Series 9429, 18562 27993 34421 7042 7180 9016 11569 9719 33986 9073 1853 34274 9769 and they confirm variation — The first four plates alone prove star to be variable.
(Chart-plates I 4468 6939 13187 21351 14689008 15877 4446 4995 also examined but are too poor —)
Spectrum plates I 31294 & I 34367 show star to be Type IV (31294 is the best.)

July 31 1911 On I 27993 this star is about magn 11.5 (At least 2 magnitudes fainter than DM. +45° 4118 magn. 9.5)

On I 9429 it is about 12.2 (0.7 fainter than on I 27993

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1898phae.proj.1235w

152

4
23

23 22.2 +48 38 (1900)
Dm +48° 4051 23 20 7.9 +48 43.1 (1855) 9.3

Sept. 19 1910 Suspecting this star of variability when checking identification in Type IV catalogue I examined these plates - I Series 6907 13186 23547 34202 28099 24421 4395 21522 2511 33747 1857 9074 27846 31118 18703 34201 6908 9719 7042 27993 18562 : 6893 4395 .4536 found evidence of variation - The four plates above prove star to be variable I think - though Miss Cannon - to whom I showed these four plates - does not think the change great enough to announce - Better examine more before announcing - Spectrum Plate I 25940 shows it to be Type IV.

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1898phae.proj.1235w

h
23

23 48.0 +60 27 (1900)
DM. +60° 2634 23 45 46.7 +60° 11.8 (1855) 9.0 magn.

Sept. 20 1910 Suspecting this star of variability when checking identification in Type IV catalogue I examined the following plates I Series 25634, 16840, 9176, 23415, 33663 9734 27836, 31208, 16867 18749 29515 11819 33666 13219 32180 17770 23519 24190 21111 29131 11690 25647 12132 21253 – confirmed variation – The first four plates alone prove star to be variable

Spectrum plate I 31322 shows star.

July 28 1911 On I 25634 the variable is about 11.0 (1.5 fainter than DM. +60° 2632 9.5)

On I 23415 it is magnitude 11.7 (0.7 fainter than on I 25634)

Espin calls this star Type IV but it is not – See I 31322

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1898phae.proj.1235w

4
1

Dec +59° 274 1 26.8 +60 8(1900) 9.0

Sept. 20 1910 Suspecting this of variability when checking identifications in Type IV catalogue - I examined the following plates but found no evidence of variation - I Series 11720 29859 30017 24201 15377 21768 15968 14690 13109 12080 8050 10758 4614 3927 3254 3237 3190 1771 -
Spectrum plate I 35788 shows star I think -

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1898phae.proj.1235w

2 4

2 43.6 +57 26 (1900) magn
D.M. +57° 647 2 40 15.2 +57 14.8 (1855) 8.9

Sept. 21 1910 Suspecting this of variability when checking identifications in Type IV catalogue I examined the following plates & confirmed variability. I Series 7475, 12186 18506 24218 36262 26029 3310 24423 19535 11642 9785 9950 16577 10203 16663 35973 23984 7774 2383 9938 5139 21542. The first four plates alone confirm variation. Spectrum plate I 33436 shows star.

July 31 1911 The above star shews change of not more than 0.5 magn; I think — & though it is evidently a real change & not due to photographic — it had better be omitted from Circular — & not announced as variable —

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1898phae.proj.1235w

3h

3 6.7 +47 27 (1900)

DM. +47° 783 3 3 37.6 +47 16.6 (1855) 9.0

Sept. 22 1910 Suspecting this star of variability when checking identifications in Type IV catalogue I examined the following plates & confirmed variation —
I Series 5246, 20151 32354 32428 28151 2754 23552 19484 17095 7727 29705 11703 11851 — The first four plates alone confirm variation —
Spectrum plate I 32320 covers this region but does not show star — I think —
Spectrum plates I 27700 & I 19556 show it —

July 31 1911 On I 5246 the var. is about magn. 9.5
(Equal to DM +46° 705 magn. 9.5)

On I 32428 the var is about 10.0
(0.5 fainter than it is on I 5246

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1898phae.proj.1235w

h
19

DM. +20° 4390 19 55 58.5 +20 41.2 (1855) 9.0

Sept. 23 1910 - Is not the above star a gas. neb.? See spectrum plate I 27920 & chart plate B 32463 Noticed this Aug. 19 1910 when checking identification of Type IV stars in this region. The neb. may not be the catalogue star - but if not - it follows & is slightly north of it -
see also chart plate I 11649

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1898phae.proj.1235w

Circular ~~158~~ 167

18h

18 52.3 +0 19 ~~18~~ (1900)
DM. +0° 4064 18 50 9.1 +0 15.4 (1855) 9.2

Sept. 24 1910 When checking identifications in Type IV catalogue yesterday I suspected this star of variability — Examined to-day — On plates 4971 4256 3751 3525 3763 3897 3905 3753 2778 1623 4438 1992 ac 7680 ac 8601 ac 8517 ac 8904 ac 7695 ac 7794 The star appears to change on these plates but it is so near lower edge of plates that the images are out of focus. & it is hard to estimate the amount of variation — The plates are in region 19h +15° — Plates (GM & GC series) in region 18h Dec 0° have star on extreme edge — & so I have not examined them —

On ~~Archaut~~ plates I 15397 I 19594, I 27637, I 31994, B 33930, B 9915 I 23291 ~~B 23291~~, B 36163, I 18453, B 32404, B 30649, I 21065, B 22704, B 23503, B 21320 B 27486, B 19513, B 8471, B 16291, B 25430, B 13541, I 13347, I 26130, B 36472 I 27343, I 27425, I 31801 I 1734 I 8843 I 9340 the star certainly shows evidence of variation — See specially the first ~~four~~ five plates — ~~but as the change is not great it may be well to measure it before announcing as variable~~ —

Spectrum plate B 38111 shows the star.

It was announced Type IV by Espin in 1887

July 29 1911 On I 27637 the variable is 1 magn 9.6 (0.1 fainter than DM. +0 4062 magn 9.5)
On B 33930 it is about magn. 11.0

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1898phae.proj.1235w

h
18

Circular 167

18 54.0 +14 14 (1900)
Dm. +14° 3729 18 51 54.9 +14 10.1 (1855) 9.0

Sept. 24 1910 When checking identification in Type IV catalogue today I suspected this star of variability

Sept. 26 1910 Examined the following chart plates & confirmed variability I series 33029, 20989 18524, 8929 26096 9026 30619 6678 16132 8844 18797 13466 27426 9342 3849 1740

The first four plates alone confirm variation — Also examined AM 1623, AM 3751 AM 3897 AM 4438 AM 3763, AM 3525, AM 1992 AM 2778 AM 3905 AM 4861 AM 7690 AM 8517 AM 8601 AM 4971 AM 4780 AM 4256 AM 3753 (Region 19h +15°) They show change. See for instance the first four AM plates in this list — Spectrum plate I 25572 & I 30942 show star to be Type IV It was announced as Type IV by Vogel in 1881

July 29 1911 On I 20989 the variable is about magn. 9.6 (0.1 fainter than Dm. +14° 3722 9.5)

On I 33029 the variable is about 11.6 (2.0 fainter than on I 20989

Perhaps the var. is too near the edge on I 20989

On I 6678 the magn. is about 11.0

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1898phae.proj.1235w

4
18

Ophiuchus 18 47.2 +13 37 (1855)

Sept 26 1910 An elongated object is on plate I 33029 (chart) - taken April 30 1905 - It runs in an opposite direction to the other images on the plate - What is it? ~~Not on~~. I do not find it - on A.C. 6333, taken also on April 30 1905 - Probably defect - There are others on plate

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1898phae.proj.1235w

7 4

DM. +14° 1594 7 6.7 +14 53 (1900) 9.0
7 4 4.7 +14 56.8 (1855)

Sept. 27 1910 Suspecting this star of variation when checking identifications in Type IV catalogue. I examined the following plates but found slight - if any - evidence of variation - AC 4885, AC 4828, AC 6770, AC 6725 AC 5536, AM 4434, AC 6838, AM 3425, AC 6834, AC 4514 AC 5700, AC 6077, AM 246, AM 3920, AM 4114 AC 11268 AM 231, AC 6820, AC 2894 AM 2545 AC 11444, AM 3303. Identified on I 14866 (chart plate)
Spectrum plate I 32391 shows star (called Type IV by Espin in 1889)

(Region 7 +15°)

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1898phae.proj.1235w

18 h

DM +10° 3764 18 57.5 +10 7 (1900) mags 9.5
18 55 24.0 +10 27 (1855) 9.5

Sept. 27 1910 Suspecting this star of variation when checking identifications in Type IV catalogue I examined the following plates & found slight change - but not enough to announce — I Series 33219, 31070 25702 28884 28869 3754 9341 8870 11186 8844 8939 9026 18524 20989 26096 & B 26329
Identified on B 26329
Spectrum plate B 23239 covers region but does not show spectrum I think. Another brighter star is superposed on it

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1898phaeproj.1235

19h

19 13.8 +10 20 (1900)

DM. +10° 3857 19 11 40.0 +10 15.1 (1855) magn. 9.5

Sept. 1910 This star has been called Type IV by Espin Suspected ll— of variability when checking identification — But chart plate B 26329, I 8753, I 24111 I 2158, I 4592, I 23442, I 18621, I 2273, I 3754, I 27320 I 28869 I 25702. show no evidence of variation — Spectrum plate B 23239 shows star Not Type IV?

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1898phae.proj.1235w

164

4

19

DM. +20° 4394 19 58.5 +20 46 (1900) 9.4

Oct. 24 1910 ~~1906~~ Last month when checking identifications in Type IV cat-
I suspected the above star of variability —
Chart plates B3246 & II Series 13421, 11649, 21121
6978, 10445, 26148 6806, 18929, 7004, 4195, 8980, 7090, 4882, 6862
9062, 4617, 11190, 7233, 22768, 8941 11876 show slight
change - but not enough to announce - & Hertz.
Spectrum plate I 27920 shows star to be Type IV
& so do chart images

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1898phaeproj.1235

21 h

DM. +60° 2267 21 32,5 +60 28 (1900) 9.5

Oct. 26 1910 When checking identifications in Type II catalogue last month — I suspected the above star of variability — It is Type III — Examin A.H. 135 272 Chart plates I Series 2057, 13338, 18747, 29124, 16274, 27408, 11657, 17768 23541, 21254, show slight, if any, evidence of variation — Probably more plates would show change —
Spectrum plate I 31321 shows star to be Type IV

See Also D.H.C. 6:46

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1898phae.proj.1235w

166 4

21

Ap Jour 1855 pos. 21 50 – 14 9

Nov. 9, 1910

In Dec. 1908 I found an object, which seems to be photographic – not on many other chart plates examined & not in American or English Almanacs – as a planet – What is it?

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1898phae.proj.1235w

7h

Near Eros.

Approx pos. 7 22.4 +9.4 (1855)

On Jan 21 1899 I noticed an elongated object on pl 222 in the above approx pos. What is it? Has it something to do with Eros which is on this plate at approx pos. 7 22.3 +8.8 1855?

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1898phae.proj.1235w

168 1
14

DM +12° 2752 14h 43 57.5 +12 22.1 (1855) 8.8

April 19 1911

On plate Am. 6318 this star is fainter than on 51 other chart plates - (examined to see whether DM. +12° 2753 "Md 3 var? I 3714H is variable) Closer examination shows star to be split in two - Probably defective image on Am. 6318 - Can find no other * plate of any series of this region, taken same date as Am. 6318 - Six other chart plates examined see note on cover I 3714H

* Excepting A I 790H which shows only bright stars -

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1898phae.proj.1235w

6 L

A.M. +10° 1392 b 55.6 +10 58.8 (1855) Magn. 8.6 g

May 23 1911 Do not know why I suspected the above is a var of variability — Found it marked in my writing on ~~Of~~ A.M. 6800 (chart plate)
Plates A.M. 5303 6694 6789 6800 + A.C. 7337 8096 8145 8212 8320 9026 9114 9361 9363 9410 9999 10136 10229 11235 10243 11186 11268 11444 12231 Show no evidence of variation.

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1898phae.proj.1235w

3h

Approx pos (1855) 3 50.2 +0 57

(This object follows 5 is north of
DM. +0°682 3 50.1 +0 56.3 (1855) on AC 12020)

Found Oct. 1910

Not on other plates examined —
Look up plates to make sure —
Is object a planet?

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1898phae.proj.1235w

21^h

Approx pos. 21 58.0 + 34.°8 (1855)

Dec. 21 1911 What is star ~~at~~ in the above approx. pos. on plate I 8915. It is very small — not to be a catalogue star — Is it — Variable?

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1898phae.proj.1235w

h

C.P.D. -31°178 1 21.2 -31 36.4 9.2

March 2 1912 This star is not in the C.D.M. catalogue - It is on chart plate B 3506 - Is it variable?

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1898phao.proj.1235W

13 h

Asteroid?

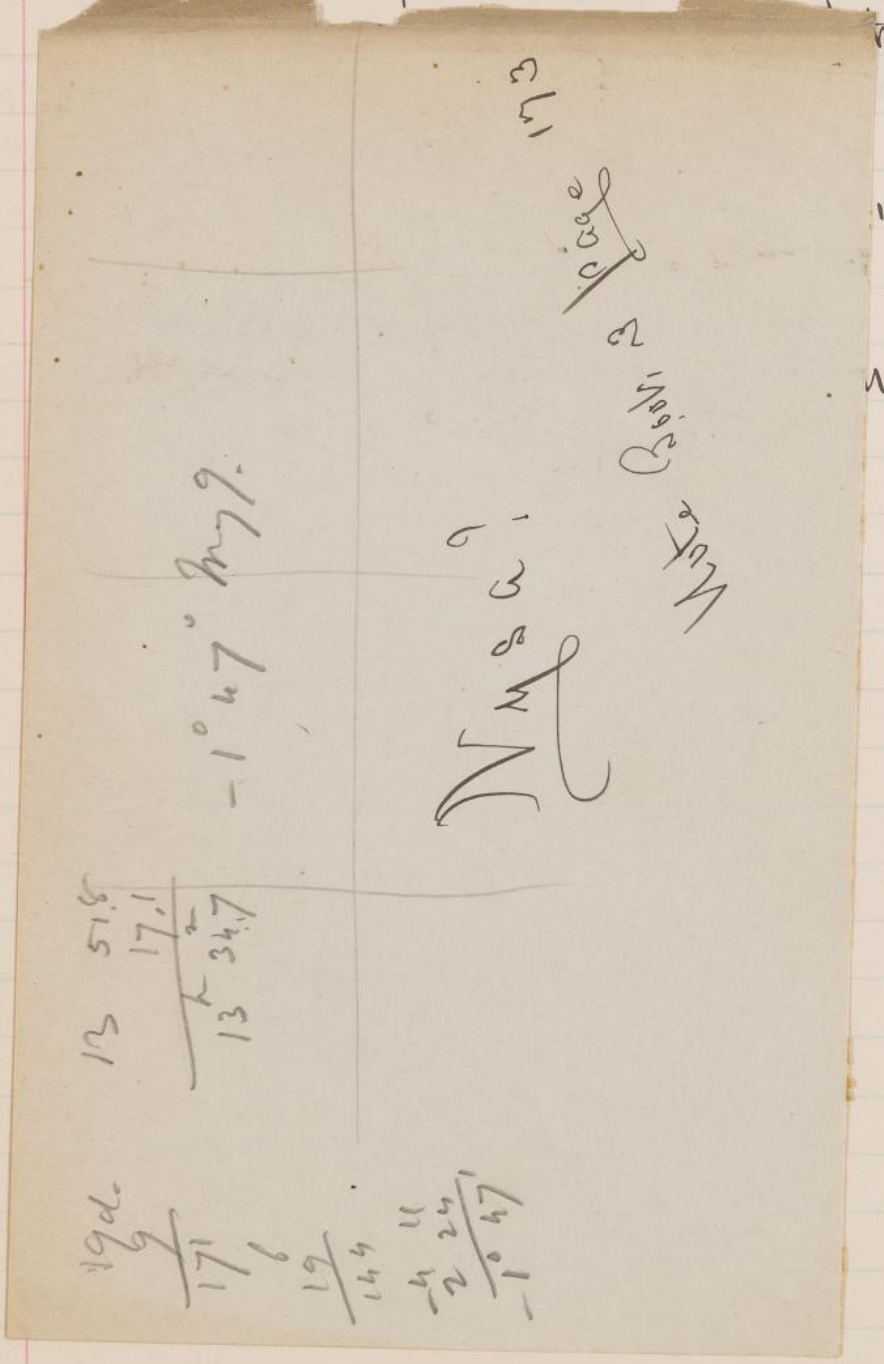
Approx 1855 pos. 13 17.7 −1 50 Planet? Magn. 8.5 or 9
On I 26723 and Ac. 2533 Both plates taken May 9 1902

Found this.
Aug 28 1912

Approx 1855 pos. 13 15.6 −1 44 [illegible] taken May 13 1902

1902

May 16 1902



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1898phae.proj.1235w

1h

C.P.D. -31°178 1 21.2 -31 36.4 9.2

March 2 1912 This star is not in the C.D.M. catalogue - It is on chart plate B 3506 - Is it variable?

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1999phao.proj.1235w

13 h

Asteroid ?

Approx 1855 pos. 13 17.7 −1 50 Planet? Magn. 8.5 or 9
On I 28723 and AC. 2533 Both plates Taken May 9 1902

Found this.
Aug 28 1912

Approx 1855 pos. 13 15.6 −1 44
On I 28783 & AC. 2547 Both plates taken May 13 1902

Approx 1855 pos. 13 14.6 −1 42
On AN 12148 Taken May 15 1902

Approx 1855 pos. 13 14.1 −1 41
On B 29717 Taken May 16 1902

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1898phae.proj.1235w

23

(Very rough) Approx pos. 1855 $23^{h}\ 4^{m}$ N +0.5 Planet?

AM. 6567 taken Sept. 9 1909

Found this Sept. 10 1912

Not on B 16749, AM. 1079, AM 699, AM 1018, AM 984 AM 883, ~~AM 699~~ AC 6855 AC. 6516 AC 5498 AC. 5347 AC 5074 AC 11208 AC 11242 AC 11891 AC 13287 AC 13501 AC 10929 AC 8654 AC 8648 AC 7831

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1898phae.proj.1235w

7

CDM. -23° 5660 7 27.2 -23 56.3 (1875) mag. 9.2

Sept. 1912

The above star is not on B 31149 –
Is it variable?

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1898phae.proj.1235w

6h

C.D.M. -24° 3921 6 14.6 -24 46 (1875) magn. 8.9.

Jan. 4 1913 The above star is very faint on chart plate B 22416
Examined it on chart plates B14626, B18072, B26514,
B 27272 B 37914. No evidence of variation found.

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1898phae.proj.1235w

6h

C.D.M. -24° 3729 6 3.4 -24 0.5 Magn. 8.8

Jan. 14 1913 If the above star is the extremely faint one following
south of C.D.M. -23° 3471 6 3.3 -23 59.6 Magn. 9.1 on
chart plate B 22416 - is there not an error in
magn. in C.D.M. catalogue — It is equally
faint — on B 14626, B 18072, B 26544, B 27272, B 37944,
B 26637, B 21240, B 22367, B 20906 -

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1898phae.proj.1235

178

5h

Dm. −4° 1143 5 21.4 −4 18.1 (1855) 9.3

Jan. 13 1913 Var? Faint – on B 26737
Examined this star on the following –
Chart plates B 18258. 26570 16811 38283 6965
10261 8291 18311 15716 18504 20305, 8891, 31232
19101 10250 10748 17000 → no evidence
of variability found –

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1898phae.proj.1235w

6h

C.D.M. -38° 2700 b 26.4 -38 41.0 (1875) Magn. 8.9
Var?

Feb. 14 1913

No star corresponding with ~~Has~~ in C.P.D. & it is not on chart plate B 29415, 22320 22485 26778 8945 17906 31160 7189 26740 26909
Error in C.D.M.?

32

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1898phae.proj.1235

h

:20

C.D.M. -49°	5125	10	12.5	-49	28	8.6
2 C. 10h	933	10	12.5	-49	28	8 8½
A.G.C.	14047	10	12.5	-49	28	7¾ ("Crimson")

June July 4 1914

Several days ago I noticed that the above star is not in C.P.D. catalogue and it is extremely faint — sometimes not seen — on chart plates where the exp. was short. This may be due to color but examined — The following plates show that it is variable though always faint. Magnitudes fainter than C.P.D. -49° 3306 9.0 12.4 -49 31 9.2

		Exp.				Exp.
B 24709	Feb. 21 1900	10m	*	B 13181	May 8 1895	10m Faint — m faint
B 35319	Nov. 30 1904	10m	*	B 9226		
B 21021	March 17 1898	11m		B 22641	April 28 1899	10m
B 18447	Jan. 30 1897	10m		B 26995	March 25 1901	61m
B 9227	April 29 1893	10m	*	B 27136	April 11 1901	10m Br.
B 35450	Jan. 10 1905	10m		B 29155	March 11 1902	60m
B 28880	Nov. 30 1901	10m	*	B 26960	Feb. 23 1901	60m
B 15583	April 11 1896	10m	*	B 29071	Jan. 4 1902	60m faint
B 16505	June 29 1896	10m	*	B 29429	April 26 1902	10m Br.
B 15714	May 6 1896	10m	*	B 33363	April 15 1904	10m Br.
B 18746	April 6 1897	10m				
B 29246	April 2 1902	10m				
B 33094	Feb. 23 1904	10m				
B 29172	March 19 1902	10m				
B 18857	April 21 1897	10m				
B 35663	April 10 1908	10m				

Plates marked with asterisks alone prove star to be Var.

On some plates — See for instance B 33363, 27136, 29429, 29155 the image is slightly different — in shape from others on same plates —

Announced Circ. 201

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1898phae.proj.1235w

16h

Approx 1855 pos. 16 56.9 −2 12

June 14 1915 Bright on B 25666 when Durr. cat. star near. are faint. Var?

Chart-plates B 25666, B 11033, B 28152, B 38968 show no evidence of variability.

AC. 9584, 9593, 9727, 9460, 9381, 8281, AM. 5682, 5670, 5520, AM. 5443, AM. 5408 AM. 5716, AM. 5764, AM. 4953, AM. 5047, AM. 5544, AM. 5060, AM. 5356, AC. 7595, AC. 8696, AC. 8413, AC. 7701, AC. 7490, AC. 6492, AC. 6485, AC. 6466, AC. 6892 B 38968, show very slight change - so slight that it is probably photographic.

Probably due to color that the catalogue stars which are fainter on plate. Star at approx (1855) pos. 16 56.9 −2 12, is brighter on plate = Class A. on B 39399.

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182 4

19

DM. +36° 3622 19 31.7 +36 32 (1855) 9.5

Note made originally on cover
I H150
Sept. 20 1894

No star in this position on chart-plate I H150
Is it due to color. or var.. or error in DM?
I 1?

There is a star on plate in same R.A. & in dec about 5' south - Could this be +36° 3622 ?
Chart plates I. 18938 & I 35616 agree with I H150

July 7 1916

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1898phae.proj.1235w

21h

Approx 1900 pos. 21 W4 −60.0

Found on B 10494 & marked before 1900

Moving object — or defect?
Many - elongated object — not like stars on plate

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1898phae.proj.1235w

h
22

Approx pos. 22 8 −57.6 (1900) (roughly given)

Many object — Probably defect.

Worked on B 11257 by me before 1900 —

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1898phae.proj.1235w

22h

Approx 1900 pos. end 22 28 −57.4 (Rough positions)
22 37 −58.8

Found before 1900

Many objects on B 13125
Defects or moving objects?

See also page 2H

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1898phae.proj.1235w

22h

22h 52m -54.0 Approx. 1900 pos. (rough)

Before 1900 Marked on plate.

Bright-hazy object on B 14266. Though not same shape as other objects on plate: it does not look like a defect.

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1898phae.proj.1235w

21 Approx 1900 pos (roughly given) 21 27.9 −6 2 10

Found on plate before 1900

Yet hazy object on B 10474 - Defect?

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1898phae.proj.1235

23 Approx 1900 p.o. (roughly given) 23 h 4.5 m – 48° 43'

Found before 1900 - Bright object - Different shape from stars on plate.

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1898phae.proj.1235w

20 h.

C.P.D.
~~C.D.~~ -44° 9729 20 v.1 -44 46 9.6
C.P.D. -44° 9730 20 0.2 -44 52 9.2

Made note of this several years ago. Look up. July 1916

On B 3731 -44° 9729 is fainter than -44° 9730
Is one variable or an error in C.P.D.?

Book 18 p. 188

C.P.D. Magn.

21 = -44° 9729 9.6
On B 3731
~~This~~ star is fainter
than -44 9730 C.P.D. magn. 10.3
Error in C.P.D.? or
one may be variable.

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1898phae.proj.1235

23 Approx 1900 pos. (roughly given) 23 h 4.5 m − 48° 43'

Found before 1900 - Bright object - Different shape from stars on plate.

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1898phae.proj.1235w

20 h.

C.P.D.
~~C.D.~~ -44° 9729 20 v.1 -44 46 9.6
C.P.D -44° 9730 20 0.2 -44 52 9.2

Made note of this several years ago. Look up. July 1916

On B 3731 -44° 9729 is fainter than -44° 9730
Is one variable or an error in C.P.D.?

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1898phae.proj.1235w

1901

h
14

CDM -49° 8688 14 14.1 -49 17 8.3

Not on chart plate B 1918 7
Not in C.P.D.
Error in CDM or variable?

Noticed this in 1915
Look up.

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1898phae.proj.1235w

20h

CDM. -47°13315 20 7.0 -47 2.8 (1875) 9.7

Noticed this some time ago. July 1916 Look up.

Not on B 25534 - Variable or error in CDM?

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1898phae.proj.1235w

19 h

					CDM. Magn	C.P.D Magn.
CDM	-30° 17657	19 59.0	-30 16	8.7	~~9.2~~ 8.7	9.2
CDM	-30° 17657	19 59.2	-30 14	9.6	~~9.5~~ 9.6	9.5

The following star is brighter than the preceding on chart plate B 36174 & Spect B 10716 Is one variable?

Noticed this Feb. 22 1916 Look up.

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1898phae.proj.1235

13h

CPD. -45° 6462 13 29.2 -45 46 9.1

Saint ou B 41206 - variable ?

Noticed this in 1915 Look up.

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1898phae.proj.1235w

13h

D.M. −22° 3693 13 30.4 −22 10 9.6

This star does not appear on chart plate B 313 8B.

Noticed this variable?

Feb. 16 1915

Look up.

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1898phae.proj.1235w

10h

D.M. +56° 3597. 10 33.5 −56 46 9.6

8B So Knight — ou B 40090 x B 25090 variable.

Noticed this some time ago. July - 1916 Look up.

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1898phae.proj.1235w

h
21

D.M. +20° 5.005 21 38.5 +20 1N.9 (1855) 9.5

No trace of this star on chart plate I 7068
Variable on due to color?

Noticed this
Feb. 1 1915
Look up.

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1898phea.proj.1235

11h

{C.D.M. -46° 6917 11 11.1 -46 19 10
{C.P.D. -46° 5245 11 11.2 -46 19.5 10.4

So faint — on B 27333 Variable?

Noticed this
Sept. 10 1914
Look up.

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1898phae.proj.1235w

34

DM. +54° 651 3 3.1 +54 23 9.0 1

faint on chart plate ? Variable?

Noticed this long before July 1916 Look up.

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1898phae.proj.1235w

5-4

Dun. +9° 852 5h 22.8+9 9 9.0

So faint on B 28720 variable?

Noticed this
Oct. 1914
Look up.

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1898phae.proj.1235w

18h

A.M. +1° 3882 18 58.2 +1 0.8 9.5

Noticed the March 2 1905 Look up.

Does not appear on chart-plate B 23.365+ Variable or due to color?

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1898phae.proj.1235w

12h

C.D.M. −31°9975 12 50.N −31 2 9.5

Not on chart plate B N1204

Not in C.P.D. Catalogue

Variable or error in C.D.M.?

Noticed this long before July 1916 Look up.

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1898phae.proj.1235w

19 4

Approx pos. 19 59.7 −20 18

Noticed this June 9 1915 Look up -

See Chart plate B 17561 - Variable ?
And 3 Dim stars south. Faint or not seen on B 17561

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20h

Noticed this
June 9 1915
Look up -

Dm. -21° 3672 20 8.6 -21 22 8.3 Type IV
May be variable
See B 17561

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1898phae.proj.1235w

19h

CDM. −25° 1N10b 19 23.1 −25 37 9.5

Not in C.P.D.

Noticed this Feb. 25 1916 Look up.

Not on chart plate B 23 H 15

Error in CDM. or due to color. or variable?

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1898phae.proj.1235w

h
10

C. P. D. -58° 2099 10 15.6 -58 47.4 (1875) 8.0

This star is faint on B 5251 (chart) & B 38749 (spect)
Is it variable?
Has any one else noticed it?

Made note
of this
May 24 1913
Look up.

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1898phae.proj.1235w

20h

CDM. −27° 15202 20 54.9 −27 35 (1875) 8.7

April 1 1916

Not in C.P.D. – Not on chart plate B 31925 ...
Variable or error in CDM.?

Look up.

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1898phae.proj.1235w

15h

CDM −40° 10069 15 47.5 −40 24.8 9.7

Noticed this long before July 1916 Look up -

CDM magn. 9.7 ?
CPD " 8.0
ZC " 8.0
B plate 31891 8.0 (?)

} Variable or errors in CDM!

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1898phae.proj.1235w

H 4

Dm. +17° 720 N 17.3 +17 40 9.5

Noticed this long before July 1916 Look up.

Not on chart plate I-2H 31H
Due to color or variable?

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1898phae.proj.1235w

3h

Dm. +59° 658 3 16.8 +59.4 7.3

Noticed this many years ago. July 1916 Look up.

C plates 6081, 6075 show star fainter than other stars of same catalogue magn.
Not as bright as stars of fainter catalogue magn.
see Dm. +59 654 8.0 magn. & Dm. +59° 655 7.3 magn.

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1898phae.proj.1235w

h
15

C.D.M. -40° 6884 15 7.2 -40 54.8 10.0

So faint on B 1926b variable?

Noticed this long ago. July 1916 Look up.

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1898phae.proj.1235w

12h

Dun. +10° 2401 12 10.4 +10 52.2 9.3

No star on plate
Error in Dun., due to color, or variable?

Noticed this long ago.
July 1916
Look up -

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1898phae.proj.1235w

6h

CD.M. -2° 4515 6 46.1 -2 11.6 (1875) 9.2

Noticed this July 1913 Look up.

Where is this star on B 38487 (chart) & B 24433 (spect)?
Variable?
Not in C.P.D.

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1898phae.proj.1235w

10^{4}

10 45.9 − 34.0

?

Made note of this Nov. 19 1903 Look up on chart plates –

Var ?

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1898phae.proj.1235w

23h

D.M. +47° 23 47.9 +47.8

Noticed this May 13 1897 Look up again.

Does not appear on chart-plates examined. (No note made of them)
Does it not appear on I 7218, 7360?

See also page 99

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1898phae.proj.1235w

16h

Approx pos. 16 4.7 +12 32

Superposed (preceding 1 south) on D.M. +12°2963 16 4.7+12 32 9.1

Noticed this Nov. 23 1906

Object — marked with arrow on A.C. 6332 Var? What? Different — shape from other images on plate —

July 29 1916 Examined with high power microscope. Probably defect.

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1898phae.proj.1235w

Noticed this Nov. 24 1906

Object marked with arrow on I 11278 Region 16 10 +13.2
Var?
Probably another exp. There are other stars on plate not in region given for I 11278 - See if recorded two exps.

- The other end of exp. which is very much enlogated with images on both ends. -

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1898phae.proj.1235w

11 4

A.G.C. 1527W 11 4.6 – 61 1 (1900) 9.5

Noticed this wrong 1 year ago.
July 1916.
Look up.

Error in A.G.C. or variable?

Book 70 p. 8

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1898phae.proj.1235w

21h

Dm. +5° 4922 21h 53.2 +5 25.3 9.5

Where is it on B b 31 H ? See also I 19379

Variable or star 5' south? (which is double) See I 19379 and A 4673

Noticed this when checking sequence on B b 31 H Oct. 19 1903

1898phae.proj.1235w

4
1

	h	m	°	′	magn.
D.M. +79° 34	1	4.4	+79	48	8.0

Noticed this March 2 1901

See star marked on C 12463
Variable ? Probably not
Though D.M. +79° 37 1h 6.2m +79° 57′ 9.1 is ~~not~~ on C 16132
D.M. +79 32 1h 2.0m +79 43 9.3 is not
And there are other stars on one plate not on others

Euler 31 1916

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1898phae.proj.1235w

h	m	°	page
0	7.8	+42.9	86
0	30.9	−26.8	112
0	50.4	−57.7	75
1	4.1	−73.6	35
1	4.4	+79.8	219
1	15.3	−50.2	73
1	20.0	+4.8	53
1	21.2	−31.6	172
1	26.8	1900 −60.1	154
2	43.6	1900 +57.4	155
3	2.5	+12.1	45
3	3.1	+54.4	198
3	6.7	1900 +47.6	156
3	12.0	+28.4	100
3	12.8	+34.3	78
3	16.8	+59.4	209
3	50.2	+0 57	170
4	14.5	+13.6	40
4	17.3	+17.7	208
4	17.5	+15.4	97
4	19.2	+12.9	15
4	25.4	+141.9	5 17
4	30.2	+13.6	14
4	30.8	+10.7	16
4	31.4	+13.4	13

h	m	°	page
4	40.4	+65.2	5
4	41.3	+11.2	29
5	7.6	+69.8	4
5	8.8	+26.1	79
5	21.4	−4.3	178
5	22.8	+9.2	199
5	39.8	−46 31	127
5	52.2	−69.9	82
6	3.4	+24.0	177
6	14.6	−24.8	176
6	26.4	+38.7	179
6	46.1	+24.3	212
6	50.0	1900 −23.8	66
6	55.6	+10 59	168
6	58.9	+9 8	54
6	59.6	+3.6	32
7	2.1	1900 −7.4	128
7	6.7	1900 +14.9	161
7	22.2	+17.6	21
7	22.4	+9.4	167
7	26.9	+16.6	20
7	27.2	+23.9	175
7	40.4	+5.8	68
7	41.0	+28.6	8
7	41.7	1900 −37.7	83
7	53.5	−49.7	7

h	m	°	page
8	3.8	−48 57	6
8	38.0	1900 −57.7	87
8	38.0	1900 −57.9	87
8	42.4	1900 −29.4	43
8	43.3	+11.9	103
8	49.4	+68.2	88
8	55.7	+67.4	88
8	57.6	+67.7	88
9	8.3	+52.0	96
9	26.5	+31.1	49
9	27.8	+30.8	49
9	27.9	+30.5	49
9	28.1	+29.9	49
9	43	−30.1	71
9	57.3	1900 −41.1	41
10	7.0	1900 −41.7	59
10	5.2	+5.0	10
10	10.6	−48.6	25
10	12.5	−49.5	180
10	15.6	−58.8	205
10	30.8	(1900) −39.0	42
10	33.5	−56.8	195
10	41.6	−64 57	116
10	45.9	−34.0	213
11	4.6	−61.0	217
11	7.9	−46.4	84

h	m	°	page
11	8.4	−46.3	84
11	11.1	−46.3	197
11	11.8	+38.6	51
11	22.9	1900 −89.2	70
11	31.1	1900 −61.0	12
11	37.1	+73.1	61
12	10.4	+10.9	211
12	11.4	+40.8	60
12	19.3	−48.8	37
12	19.6	−62.4	89
12	26.3	+25.2	114
12	36.7	−40.6	36
12	47.1	+35.7	50
12	50.4	−31.0	201
12	56.3	+9.7	77
13	4.8	−56.3	39
13	11.6	−73.8	93
13	14.1	−1.7	173
13	14.6	−1.7	173
13	15.6	−1.7	173
13	17.7	−1.8	173
13	29.2	−45.8	193
13	49	−37.1	34
13	49.1	−51.3	115
13	50.0	−10.2	72
13	50.0	−10.1	72
13	50.4	−22.2	194

Asteroid or Planet

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h	m	°	page
14	14.1	-49.3	190
14	23.2 (1900)	-43.3	80
14	23.8	+5.6	102
14	33.3	+27.5	18
14	44.0	+12.4	168
14	50.0 (1900)	-51.0	38
15	1.3	+1.1	92
15	7 (1900)	-37.2	30
15	7.2	-10.9	210
15	10	+56.9	52
15	17.0	-37.4	47
15	27	-0.2	95
15	32.7	-54.9	33
15	47.5	-20.4	207
16	41.7	+12.5	213
16	14.1	+40.5	157
16	16.6	+40.4	58
16	56.9	-2.2	181
17	9.8	-48.8	81
17	23.8	-19.4	129
17	32.6	+1.1	109
17	33.8	-35.1	94
17	37.7	-33.2	9
17	39.1	-35.6	27

h	m	°	page
17	39.9	-33.6	62
17	48.1	-49.1	111
17	51.1 (1900)	-24.1	26
17	52.2	-23.5	110
18	10.1	-13.5	131
18	10.9 (1900)	-36.8	67
18	22.0	-16 60	69
18	24.2	+4.3	130
18	27.4	-30.8	113
18	46.1 (1900)	+32.7	28
18	46.2 (1900)	+32.4	28
18	47.2	+13.6	160
18	52.5 (1900)	+0.3	138
18	52.6	+48.5	19
18	53.0	+48.5	19
18	54.0 (1900)	+14.2	157
18	54.3	-22.5	64
18	57.5	+10.1	162
18	58.2	+1.0	200

See page 124

h	m	°	page
19	10.0	-33.7	91
19	13.8	+10.3	163
19	23.1	-25.8	204
19	26.0	-16.7	114
19	31.7	+36.6	182
19	42.3	+48.8	48
19	52.5	+43.9	65
19	56.0	+20.7	157
19	58.5 (1900)	+20.8	164
19	59.0	-30.3	192
19	59.2	-30.2	192
19	59.7	-20.3	202
20	0.0	-44.9	189
20	0.0	-44.8	189
20	0.7 (1900)	+20.4	133
20	4.7	+41.1	132
20	7.0	-47.0	191
20	8.6	-21.4	203
20	9.0	+48 59	120
20	10.0	+80.6	90
20	11.1	-30.2	76
20	11.9	+34.3	121
20	12.9	+80.4	90
20	13.3 (1900)	+36.6	136
20	13.7	+35.2	137
20	16.3	+37.1	135
20	18.0	+42.7	63
20	23.4	-3.2	125
20	25.6	+20.3	3
20	25.8	+40.0	134
20	25.8	+20.3	3
20	31.3	+18.6	53

h	m	°	page
20	36.0	+68.2	138
20	38.3 (1900)	+55.1	142
20	41.9	+45.5	139
20	42.0	+23.5	101
20	43.4	+32.7	143
20	44.3	+39 58	140
20	45.7	+0.4	166
20	46.0	+0.4	104
20	46.6	+0.4	103
20	46.6	+0.7	105
20	52.5	+63 59	119
20	57.9	+27.6	206
21	0	+15.2	11
21	5	+82.5	56
21	10.0	+80.6	90
21	11.0	+16.2	23
21	12.9	+80.4	90
21	14.4 (1900)	+51.8	141
21	25.4	+51.0	145
21	25.8 (1900)	+49.9	144
21	27.9	-62.2	187
21	30.5	+17.9	146
21	31.1	+21.8	22
21	31.1	+22.3	108
21	32.5	+60.5	165
21	33.3	+43.1	74

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h	m	°	Page
21	38.5	+20.2	196
21	40.6	+54.1	148
21	40.6	+53.2	148
21	41.0	+51.8	147
21	43.0	+52.1	148
21	43.6	+52.2	148
21	44	−60.0	183
21	50	−14.9	166
21	51.5	+50.0	148
21	53.2	+5.4	118
21	58.0	+34.8	171
22	7 (1900)	−57.8	24
22	8	−57.6	184
22	19.7 (1900)	+15.6	149
22	25	+65.9	150
22	28 (1900)	−37.4	185, 24
22	29.1	+10.2	107
22	37 (1900)	−58.8	185
22	52 (1900)	−54.0	186
22	55.2	+45.1	151
23	4	+0.5	174
23	4.5 (1900)	−48.7	188
23	22.2 (1900)	−48.8	152
23	23.5	−49.5	126

h	m	°	Page
23	38.9	+45.6	98
23	40.4	+46.0	98
23	45.8	+60.2	153
23	47.2	+56.7 (Casa)	31
23	47.3	+47.4	85
23	47.9	+47.8	99, 21N
23	55.9	−57.4	117
23	56.2	+55.0	46

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