B38415 good pl.

Monday, Nov. 15, 1920

B spectrum plates

B39373 22 30 − 48

1 6 M Bunsd out.

2 2 Ma

3 3 Ma

B39374 15 30 − 48

1 3 Md Sp. Mk. Hγ (brighter) = 10 Hδ = 10

See p. 8 for range. Variable Appears.

No. 18D C. DM. −47°, 10298 (1900) 15 37.6 − 47 40 (1875) 15 39.4 − 47 45 10.0 L.D.V.

Independently Br. on B31878 May 28, 1903, & B15558 Apr. 8, 1896

[illegible] by A.D.W. Flt. on B30219 Jan 27, 1902

Range 10.6 − <14. 13.5 on B21924 Sept. 5, 1898 10m Exp.

2 2 Mb.

Nov. 15, 1920

B39379 16 46 -18

One M star already classified in B40331

B39385 17 8 -23

1 2 Ma

B39386 18 8 -23

1 1 Mb

2 2 Ma

Nov. 15, 1920

B39387   19 28 − 23

Nothing of interest

B39376   17 30 − 48

1 3 Ma

2 5 Mb

3 2 Ma

4 1 Ma

5 3 Pec. Hβ, γ, δ ε bright

17 38.2 − 46 3 Also 'bright' patch way up in violet

Classed in 76 as P Cygni type

Nov. 15, 1920

B 39395   18 26 _ 8
Nothing of interest.

B 39398   16 5 - 8
2 M stars already classified

B 39317   22 10 - 53
Several M stars all classified
on plate for H.D.

Nov. 15, 1920

B 39304   16 48 – 63

Very narrow images. Many M stars.
Several of them have already been
classified on B 39370 for H.D.

1   1   Pec.! A faint object having
Hγ + Hδ bright. It appears
to correspond to a star on
B 38946.
showing no variation. Ft. continuous
spectrum seen. I thought it might
be a faint Nova!

Hβ not seen. Cont. spectrum very
ft. Hγ stronger than Hδ.
May be of P Cygni Class.

✓ (1875) 16 42.7 – 64 1   L.D.W.

(1900) 16 45.1 – 64 4

In H.C. 224.

Nov. 15, 1920

B 39304 16 48 – 63

2. 2 Mb

3 5 Md

Hγ = 10 Hδ = 10 . Hζ = 2

✓ Sp. Ma or Mb, two dense
Known var.? Z Triang. Aust.? −64°3573 Fes.

4 1 Mb
very faint

5 2 Ma

6 3 N Known var.

Several others but brighter and already classified.

7 Neb. or Nova

Sep. 10 Hγ = 10 4686 = 9 Hβ = 4 Hδ = 2
Hε = 1 Hζ = 1

179 = CDM − 46° 13014 19 18. 32.6 −46 6.8 10 ~~B31378 10.0~~
~~W Tel B23852~~ 1.8 +3 ~~B21924 n.s. < 14~~
Range { B28181 11.0
19 20.3 −46 4 1900 { 30829 14?

180 = CDM − 47° 10298 15 37 33.6 −47 40.0 10
CPD − 47° 7363 15 37 34.2 −47 39.7 8.9 Range B31878 10.0
~~179K B45408~~ 1.8 −5
15 39.4 −47 45 1900 21924 < 14

181 = CDM − 23° 12396 15 27 59.3 −23 31.5 9.4
~~[illegible] [illegible]~~ −5
1.5
15 29.5 −23 37 1900
B 27398 11.4
Range 30318 14.5?

Nov. 15, 1920

B39376 19 28 -48

1 2 Md $H\gamma=10$ $H\delta=11$

Sp. Mb.

Var. confirmed by L. D. W.
and identified

C.D.M. -46° 13014 19 18.5 -46 7 10^m

Ident. L.D.W. Independently A.W. 1.8 .3

✓ 19 20.3 -46 4 (1875) (1900) Range 11.0 -14? A.W.

No. Br. on B28181 Aug. 9, 1901

179

Barely seen on B20849 Oct. 10, 1902

Sep. 8 for range Mod. br. " B30322 July 9, 1902

Ft. " B25759 July 26, 1900.

Range 3 or 4 magnitudes.

2 3 Ma

3 2 R Approx. 1875 19 42.9 -47 41

-47° 13120 Faint. Confirm if possible. Certainly Class R.

magn. 10 No A Spectrum plate. Not seen on

B39668, B39820, 12270, 19963, 20453.

Marked on B20856.

Jan. 15, 1920

B 39305 18 45 − 63
very poor focus Nothing found

Nov. 15, 1920

B39316 20, 10 – 53

5 objects marked, all known

B39321

2 objects Md stars, probably known

1. 2 Mb

B39320 20 8 — 48

Very poor focus nothing of interest

B39322 18 10 - 28

1 1 Pec. Faint emission band. O star?

Approx 18 10 – 28

Known neb. 18 5.6 – 28 12

See also A 2093.

2 2 Ma

Tuesday, Nov. 16, 1920

B 39323   18 29 -28

2 M stars, probably known

B 39324   18 28 -33

2 M stars bright enough to
be known
Gas Neb. Evidently
18 39.3 -33 27

B 39325   21 28 -53

2 M stars fairly bright

Nov. 16, 1920

B 39332   15h 28m - 23   July 20, 1908.

1   2 Md

Hγ = 10   Hδ = 7   Sp. uncertain

✓ All bright lines bet. Hβ & Hγ.

~~181~~ RW Librae? Yes.

2   1 Md

Hγ = 10   Hδ = 9   Sp. Mb.

Approx. 15 30 - 23

181 -23°,12396   15 28.0 - 23 31.5   9.4   L.D.W.

15 29.5 - 23 37.5   Identif. and G.W.

✓ Ident. on B27398 very bright. May 25, 1901

B 41640 n.s. Exp. ~~60m~~ 10m. July 15, 1910.

See p. 8 for range   B 30318 very ft. Exp. 60m. July 9, 1902.

B 18939 n.s. 10m. Apr. 23, 1897.

Range from 27398 and 30318. at least 3 mags.

Range   11.4   14.5

3   1 Mb

very ft.

Nov. 16, 1920

B39337 15^h −38

Numerous flt. M stars

Seems to be a rich region for them

1. M? Hβγ bright? var.?

✓ −41° 9373 14 52.7 −41 59.4 9.6 (1875)

Ident. I. E. W. checked A. W.

188 Br. on B 29973 June 9, 1902, 25782 Apr. 27, 1900

very flt. on B23462 July 14, 1899, & B 6261, June 14, 1891 (poor pl.)

Found by I. E. W. 1920. Med. on B5237, May 20, 1890.

Range 10.6 to <12.5. I. E. W.

2. Bright line may be defect.

3. Comp.? Br. lines?
Just below a K5 star

4. Gas neb. Known
15 6.4 −37 44

Nov. 16, 1920

B39338 16 28 − 33

1. 3, 6, 10 stars

Approx. 16 30 − 31

−30° 13283 16 28.7 −30 58.6 8.9

✓ ST Scorpii said by Innes to be very red.
Class R5.

B39339 18 28 − 38

M star sup. on A star

B39341 20 10 − 33

13 M stars marked.

1 Pec. Sp. Appears to be M. & A superp.
Too ft. to appear on B14335, B40402 and
B20244 Red end = Md and very
bright in region of Hδ Violet end = A
Approx. 19 50 − 31

Wednesday, Nov. 17, 1920

B39345 17 18 -58

7 M stars
and
V Pavonis Class N

B39346 18 26 -18

A number of objects already marked.

1. Near edge. Seems to have bright lines.

2. Near edge. Ma

Nov. 17, 1920

B 39353   16 46 -23

5 M Stars.

Gas Neb. Known

Approx. 17 -22

16 55.6 -21 40

B 39354   16 47 -28

5 M Stars.

B 39355   22 6 -33

1 Md   Sp. Me

$H\gamma = 1.0$

$H\delta = 40$

~~Miss Breslin's var?~~

S Pis. Aust. 21 58 28

Nov. 17, 1920
B 39356
6 M stars
One marked dubious
extremely flt.

B39357 15-47-28
Several M stars
Some very flt.

B39358 16-28-28
Several M stars
1 R5 same as in
B39338.

Nov. 17, 1920
B 39357
Objects already marked
Also found
R star
Kmm
Comp. Kmm

B39367 IX 26 -43

Already exam. by W. P. F.

11 additional M stars marked
by A. J. C. Some are very ft.

Nov. 17, 1920

B 39368 15 46 −33

Already exam. by Mr. R. for new objects.

1. N very ft.
Approx. 15 36 −33

Within H.D. −32° 11111 15 39.5 −32 42.4 10.0 L.D.W.

Defect.? 10 B plates show no variability. See cover.
A 6473 shows this star to be of class G_5 or K.

2. Md; Hβ appears to be bright.
Approx. 16 −32
−31° 12460 15 52.7 −31 14
K5 in H.D.
No var. See cover

Nov. 17, 1920

B39369 16 16 −63

Already examined by W. P. F.

1. Ft. Hγ seems to be bright.
Var.?
May be defect.

L.D.W. −64°3296 15 43.6 −64 37.8 9.3 Not in H.D.
See com of B31801. 13 Am plates show no var.

2. Wide absorption bands.
Look up on another plates
Probably due to defect in glass.

B39373 22 25 −68

Examined
Several Me stars

Thursday, Nov. 18, 1920

B39377 21 49 − 48
Examined
3 or 4 m stars marked

B39366 19 28 − 53
Examined
3 ~~m~~ stars
1 very flt. m.c. Magellan

B39372 20 26 − 48
Examined
5 flt. m stars

B39394 17 7 − 7
~~Examined~~
~~6 or 7 m stars.~~
2 m stars.

Nov. 18, 1920

B39361 21 38 -43
Examined.
6 or 7 M stars

B39378 17 6 -18
Classified.
nothing new found

B39380 17 46 -13
Classified
nothing new

B39397 21 47 -10
Classified
nothing new

Friday, Nov. 19, 1920

B39397 21 47 -18
Classified
Nothing new

B39297 17 7 -43
Examined
2 flt. Mb stars
1 ?

B39385 17 8 -23

2 M stars
1 Md? Probably defective

B39283
not marked before

Several M stars &
13 10.7 -44
Very red star

Nov. 19, 1920

B39386   18 9-23

Examined by W. P. F.

2 gas. neb. found. Both known

B39387   19 28-23

Examined

2 m.

B39388   21 27-23

Examined

1 m

1 m?

39392   21 5-18

Classified

Nothing else

B39391 See page 34

Nov 19, 1920

B39383 22 21 -58
examined
2 M stars

B39379 16 46 -18
Several M stars
1 Md?

B39384 16 10 -23
Md?
Hγ + Hδ bright
Perhaps of low temperature

B39344 Sl. 3481
examined
1 M star

Saturday, Nov. 20, 1920

B38833 17 7 - 63

Nothing

B38841 18 8 - 48

1 comp. Known on B19962
2 not known

B38840 17 8 - 48

Nothing new.

B39659 18 46 - 48
Examined
3 add. on plate
R plate not marked
18 40 7 5
Known

Nov. 20, 1920

B 19928
Exam
2 M stars.

8 47 - 38
B 39921
not exam
2 M stars Roemer

B 39944 8 28 - 48
Nothing of interest
Several M stars.
1 O star. 8 51 - 47

Nov 20, 1920

✓ MF 334 | 7 1 | +22
R Gem
very short spec
Almost same as on MF 240, taken two minutes earlier.

1 Class N | 7 46 | +25 P
Krumm

2 R 5 | 7 20 | +22
Krumm

Monday, Nov. 22, 1920

Sept. 6, 1895	B14578	18	4 - 32
	Nothing new		
Sept. 22, 1899	B24154	18	10 - 32
	Nothing new		
	B39924	14	7 - 38
	Nothing new.		
	B39937	8	8 - 28
	Nothing new		
	B42506	17	45 - 45
	Nothing new		
	B42508	16	26 - 48
	Nothing new		
	B42513	19	9 - 23
	Nothing new		

Tuesday, Nov. 23, 1920

A 8329 17 21 -44
Examined by W. P. F.
Two gaseous neb. overlooked.

1. Hyd. bright, also 5007, 4959.
Hβ strongest.
✓ Something like a nova spectrum
Nova? Hγ=10 Hδ=8
Hβ=12 5007=9 4959=3
(1875) 17 17.0 -44 4

2. 5007 & 4959 bright.

✓ See A7656.
No. 1 seems to correspond with a star.
No. 2 may belong to a faint nebulous object, but the object seems too faint.
Nova?
(1875) 17 18.4 -46 48

No. 1 on A 8329
(1900) $17^h 18^m 58^s$ $-44° 6.1'$

No. 2 on A 8329
(1900) $17^h 20^m 20^s$ $-46° 50.3'$

Wednesday, Nov. 2$\overset{4}{5}$, 1920

B38941, 14 27 – 12.9
M stars known

1. K star with apparent brightness at band K. Is this real?
Star is No. 46 on B 40606.
−12°4084 14 25.9, −12 57 9.0
Rather flt. at band K, but there is a trace of brightness
Look up other plates.

Nov. 2~~5~~4, 1920

B 39920   + 10 - 38
Nothing except bright M. [illegible]

B39398   16 5 -8

1. Seems to have bright Hγ and Hδ
No. 39 on B41229 =
-7°4258   16 11 3 -7 31 8.7
Rather thin on that plate, but
there is a trace of brightness at or
near Hγ
Add R in H.D.?

B 39393   16 7 -13

Nothing of interest
1 7th M. [illegible]

Nov $2\overset{4}{5}$, 1920

B39384   16 10 −23

1. Md?
Hδ appears bright.

No. 2574 on B40316 −20° 4423
16 2.5 − 20 0.7 8.9

Enter R̿ in H.D.? No.
May be defective on 39384

B39371   18 6 − 33
Examined by W. P. F.
Several fnt. M stars not marked.

1 Gas neb.
Known

2. Hyd. lines bright
Trace of 4640
Known

Nov. 2$\overset{4}{5}$, 1920

B 39371 cont.

3. Very flt. neb.

5307 + 4859 seen

Not known

See chart plate

18 21.1 − 31 35′ See AC 6463 p. 36.

B39647 18 6 − 28

Same neb. as on 39371 No. 3

approx 18 30 − 31

Marked on B ~~3033~~ 32032

also on B39657

Friday, Nov. 26, 1920

A6463 18 30 − 32

1 Md. var.
Sp. neb. $H\gamma = 10$ $H\delta = 15$
Lum's var. 18 27.5 − 32 26 (1900)
Br. on B32032. Ftl. on A2673.

2. Neb.
$H\gamma = 10$ $H\delta = 4$
$H\beta = 10$ $4959 = 10$
$5007 = 30$
Not in NG. This same object was marked on B39371 where it is extremely fnt, and shows only 5007
18 21.1 − 31 35 (~~1900~~ 1875) Miss Wells' position
Mark on A plate when measured A2673. Image stellar.

Nov. 26, 1920.

A 8348 | 14 | 41 - 44

S Lupi not previously marked, but it is seen at a glance to be very peculiar. The bands are quite like those in Class N or R. It will bear some study for my paper on the Spectra of Var. Stars of Long Period!

A 6464 | 19 | 10 - 32

Several M stars marked in red

A 2062 | 18 | 10 - 32

P Cygni upper star 18 9. - 3015x shows two bright lines which seem to be 5007 & 4959.

Intensities

Hγ=10 5007 = 2

Hβ=12 4959 = 1

Hδ=4 Hazy band at 4686 or 4650 = 2

Nov. 26, 1920.

A 6474   17.30 -32

Several M stars.

1 bright line. May be a defect as it is less curved than the lines in other objects.

July 28, 1903.   Get chart plates

A 2725 shows the star to be double, but the bright line comes from the preceding star only

Add R to H.D.

July 1, 1903   A 6438   17 10 -32

1. Type V. Known

~~JV=173643~~

2. 1 bright line =145 of T~~X~~u Scorpii Approx 17 00 -32

Region marked on A 903,

√ Get another plate. This is T~~M~~ Scorpii Known Md

Cd.Dm. -33° 12168   17 24.5 -33 32 (1875)

Known OB, but bright line looks too narrow on this plate. Get B plate

Tuesday Nov. 30, 1920

a 8346 17 20 −44

1 Neb. 17 17 −44

✓

		a8329	
Hγ	18	10	10
Hβ	25	12	18
5007	20	9	14
4959	4	3	4
Hδ	4	8	6
Hε	1		1

2 Neb. 5007 only seen 17 18 −46

✓ Both found on a8329 see p. 31

Other objects are old.

Wed. Dec. 1, 1920

a 4375   18   10 – 42
Poor plate. Tracking loaded

3 M stars.

a 4363   16   30 – 42
May 4, 1902   very poor
Nothing

a 4366   18   50 – 43
3 M stars.
One seems to have Hδ bright, but not distinct enough to look up.

a 4376   19   10 – 42
2 M stars.

a 4377   19   50 – 42
3 M stars.

Dec. 1, 1920

A2020 18 53 -42

1 Ind. Int. 3

Sp Mb
$H\gamma = 10$
$H\delta = 30$

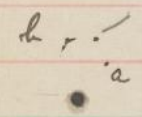
Approx.
19 02 - 43

new.

C.DM. -42° 13918 (1875) 18 57.8 - 42 33 10.0
L.D.W. Conf. by him on A2683,
B3745 B17692 B5924. 1859 45.2 - 42 33.1 (1875)
Ident. ~~conf.~~ done independently by M.A.S. on B17692. van [illegible]

182 Missing on very [illegible] on B3745

van



Slightly br. than a on B17692
Oct. 14, 1896.

B5924 May 16 1891.
Much brighter than a or b,
at least 2 mags. brighter.
Range 10.4 — <13.5 A.D.W.

December 1, 1920

B 37604		17 9 — 43	

Narrow images.
Nothing new found except
M Harris

Thursday, Dec. 2, 1920

a6470 18 29 -12

Nothing but 1 M stars

very poor plate

a1175 18 38 +8

too poor.

a6469 16 49 -12

Two bright lines superposed on a

1 K star,

neb. or defect.

a2021 19 29 -42

very poor,

nothing of interest

Dec. 2, 1920

a6430 19 30 - 42

very poor
Several M stars.

a2052 20 11 - 37
Several M stars.

a2071 19 12 - 37

M stars.

Dec. 2, 1920

A 20$\overset{5}{\cancel{7}}$0 18..5 - 37

Several M stars.

1. Class R. Bright

Apparent 18 49 - 38

Is this V Cor. Aust.? yes.

N. S. on B 39272 used for H. D.

Range must be quite large

Identify.

V Coronae Austrinae measured by E. F. L. in 1896. Strange that the spectrum is given N in H. A. 56

The focus is not very good on this plate, but it is a well defined 'Class R0 Star.' and no bright lines are seen but these might be masked by the indistinctness.

α A 2070 18 37 - 37

Two M stars.

Dec. 2, 1920

A 8333   14 40 – 45

S Lupi

No b. lines

Numerous Metals

Good for general spectra

A 8337   14 41 – 45

S Lupi

No bright lines

Measured positions for Vars.

	R.A. 1900	Dec. 1900
No. 83	17h 56m 24s	−47° 14.1′

Friday, Dec. 3, 1920

A 4583 15.8 – 42
Several Md stars, probably all bright enough to be already done.
1 star looks like a dwarf.
It is No. 87 on B 21281
–42°10934 15 49.2 –42 15 7.7

A 4505 17. 50 – 47

1 Md var.
L.D.W. Approx. 17 54.5 – 47 14 (875)
Br. on B 30288 very ft. on A 8975, and has a
183 companion almost equally ft. Can not tell which star is variable unless found bright on A plate. A 2677
Sp. Md. Hδ bright shows the var. to be the preceding of the two.

2 Wide bright bands Type V?
L.D.W. 17 58.5 – 46 45 (875) A 8476 shows two ft. stars
Defect? near position. I think one of them is Type V. but it must be confirmed before announcing.

Dec. 3, 1920.
a 4505 cont.

3. G5 or K star. Hγ bright?
Defect?

4. Wide bright band. V?
(1875) 17 38.7 − 48 7 L.D.W.
The band comes in correct place for 4688
Defect? of star marked on a 8496.
Poor pl. for B24873, very good plate, also for 24080

5 Appearance of narrow b. lines
Defect?

6 Bright band. V?
Probably a defect.
17 38.6 − 48 43 (1875) See over.

Dec. 3, 1920

a 4505 cont

marked 17 38.2 - 46 3 P Cygni type

Hβ, Hγ, Hδ bright

Hβ strongest
Hγ = 10
Hβ = 13
Hδ = 5

Neb. lines N. S.

Numerous M stars on plate

Dec. 3, 1920.

a 4504   16. 50 – 42

1. Gas. neb.?
Perhaps N_1, N_2, N_3, but the lines are more inclined than in the other spectra

Chart plate
see page 65.

Saturday, Dec. 4, 1920

A3612 $18^h 11^m$ −47

1 Md

Hγ = 10
Hδ = 12
Sp. pt. probably Ma

192 Var. conf. L.D.W. | 18 12.8 −44 57 (1875)
Conf. on A5688, B34025, B40486, B23060,
B21282. Range 11.9 − < 14 L.D.W.

2. Class R,
Too faint and close to obtain class for B19962 classification
from H.D.

C.DM −46° 12279 18 9.5 −46 35.6 9.5 ?
Var. not conf. on A5688, B34025, B40486
B23060, B21282. L.D.W.

3. V? Defect?
Different angle from other
lines
Probably defect. It is not 5007 of any
star on A5688.

Dec. 4, 1920

A 3579 17 28 -52
no marks on plate
Numerous M stars,
✓ U Arae Md.

A 3621 19 12 -67
Nothing new except M stars.

A 3604 17 14 -52
June 8, 1899
✓ U Arae $H\gamma=10$
$H\delta=7$
Sp. mk. 4227 pt.
Numerous M stars.

Monday, Dec. 6, 1920

a4349 17 32 – 50

Only M stars.

a4502 15 02 – 67

Numerous M stars.

One very ft. band type V?

May be defects.

a2051 19 21 – 37

Too poor.

Dec. 6, 1920

a 3580 18 8 −52
nothing but M stars.

a 24501 18 20 −57
M stars.

a 8350 18 58 −15
T Sag. very conspicuous & peculiar, wide band near Hβ.

Numerous M stars.

One bright band. Var.?
May be defect.
many M stars
many leaks in plate.
Probably defect

Dec. 6, 1920

A 8335 18 58 +15

N star
appears ~~Passes~~ the U V Similar, recently
classified in MC 9634.
0, 6, 10 = Nb.

Entered in H.D.
Announced by Vogel, not previously conf. here.
Enter in Circular.

Very odd looking spectrum. Seems
Probably to have Hγ and λ 4363 bright.
caused by
superposition Not on I 36835, I 36853, I 36927 spec.
of two spectra Clear image on A 3162, extreme edge
marked on I 28670 (br. lines) and several
plates examined show no variability.
very rough position 1855 19 5 +14°
3 AC plates show no change. One was taken
on June 9, 1905 AC 6432 and this
object is no brighter
May be an Type V ~~star~~
B 38064 shows no trace, nor MC

Tuesday, Dec. 7, 1920

Dec, 7, 1920

a 8349 16 58 +15

Sorpson.

a 8339 16 58 -14

One line looks like Seppe V but is not in same direction as others, so probably a defect

Thursday, Dec. 9, 1920

A 3563 16 52 – 52
June 1, 1899

1 Bright line perhaps two.
It seems to be Hβ of a very ft
object marked on A 8258.
Defect? Should be confirmed. Or it
might be 5009 with 4959 superposed, but
if so it does not match any star in
A 8258

B 22853 shows very ft. spectra
but not these lines
No chart plate near date found

2. Hβ bright
✓ No. ~~4~~ 44 on B 19895
Bh 109.4
−51°,10676 16 55.0 −51 13 8.6

✓3 Hβ bright?
No. 86 on B 19895
−52° 10300 16 43.6 −52 25 8.5

Dec. 9, 1920

A3565 — 1,9 33 — [illegible]

1 No fil. on plates

✓ Md.

Hγ = 10

Hδ 50

Sp Md

2 Leak? Looks like a 5th type or Gas. neb. band, but nothing on Plate 8456 Chart.

Several advanced Md stars on plate

Dec. 9, 1920
A 3566 21 11 − 52
June 1, 1888

1. Md.
Hγ = 10
Hδ = 9
✓ Hζ mb. Brightest at flutings
Approx.

21 10 − 53

~~Probably~~ Is W Indi 210753.

R 5 star already marked on plate
This is 21 1.3 − 54 13 [1891]

Brightest time at 21 18 − 53
Look up.
Get chart plate
Nothing on A 4153 chart.
Nothing on A 3174, taken June 2, 1899
Evidently an defects, It is very faint and indefinite

Friday, Dec. 10, 1920

A 3562   15 32 −52
marked
S normal Md.
Already entered in Spectrum lists.

—

A 3561   13 52 −52
Does not show ft. stars.

1 Double star No. 27 on B40108

2. Silicon lines strong. 4077 strong.

No. 30 on B40108
−53°.1856   13 55.7 −53 7 8.6

entered in circular These lines are very marked. 4077 being very strong not seen on B40108 Classed A0. Should be A0p resembling α Draconis

Dec. 16, 1920
a 3561, cont.
Comp. spectrum marked as
known. It is No. 87 on B 80108

a 8341 & 8343 10 59 -54

Nova Velorum marked on both
plates.
Nothing new of interest found

Dec. 10, 1920

a 9282 17 48 -22

Nothing new

a 9384 16 48 -22

16 55 -21 40

1. Gas. Neb. Known; Shows only 5007 & 4959

Much better seen on B 40302,
Intensities given in 76.

Dec. 10, 1920

A 6431 13 39 -37
chart plate

new var. 1. Md? Hδ looks bright
not on A5390, A2349. A10110, A ,A ,A ,"
Confirmed by L. D. W. Invis. on ~~numerous B~~
184 Approx (1875) 13 40.7 -37 30 numerous B plates
Brightest on B32211 July 15, 1903
Medium on B16015 May 30, 1896
Ft. " B31889 June 1, 1903
If not found on A chart plates, must be
measured on B32211
Meas. on A3121. Range 11.5 - <14 A. D. W.

Spectrum appears that of Ma, but is very ft. Hδ distinctly bright

A 6432 14 30 -37

Nothing of interest.

184 13 42 7 -37 38.3

Saturday, December 11, 1920

A 4504   16 50 − 42

Defect) Bright lines
Lines mislined
Nothing on A ~~45~~ 1981 chart.
Is not a gas. neb., as the
distances are not right.

A 6429   18 12 − 37

1 Queer looking compound.
Superposition of an A and
an O spec. of the M star
is not it.
Chart A 2659

Dec. 11, 1920.

B22852 16 50-52

Shows fainter ~~stars~~ spectra than A plate

Numerous objects already marked by Mrs. Fleming, numerous others by stars marked by me. Some appear to have bright lines, but this may be due to bunches of light in the continuous spectrum caused by the very narrow images.

Monday, Dec 13, 1920

a 14498   14 51 – 52

Nothing of interest

Thursday, Dec. 16, 1920

A4502 1500 −67
taken July 5, 1920

1. Class N

New Class N? Approx 14 52 − 68

1875 14 39.4 −67 57 L.D.W.

Measure position on A5207 (marked)

Nb 0, 8, 10

Perhaps a defect. See B2176, 21824, 38753. Sp. flt. but does not look like N. Omit unless confirmed. N.s.m. B38959.

2 Class X?

Probably defect.
No star on A5207 that fits.
Nothing on A4493 exp 240m
showing very flt stars.
Taken June 27, 1920

A8334 1658 +15

Nothing of interest.
On slides.

Friday, Dec. 17, 1920

B 39651, 18 28 - 28

1. Faint neb.
Same object found on B 39371,
and better on A 6463, p. 36.

2 objects marked which look like
very red stars. One seems to have
a peculiar line, but they are faint
and probably can not be confirmed

Saturday, Dec. 1~~7~~8, 1920

A 2107 18 27 – 22

Poor. Nothing of interest

A 9281 16 47 – 17

Too poor. Only brightest stars seen

A 9692 17 30 – 23

Poor

Nothing of interest

Dec. 1$\overset{8}{7}$, 1920

A 6439 18 50 − 32

1. Gas Neb. Known

1839 − 33

2. Gas Neb. New
Not in N.G.C. or Lick 13.

Hγ = 1.0 5007 = 30
Hδ = 4 4959 = 9
Hβ = 1.0

Class Pd.

C.D.M. −32° 14673 18 47.5 − 32 (1875) 24.6 9.8

Ident. L.D.W.
Checked A.D.W.
Not in 56 N.G.C. or Lick
Check plates A 4800 B 15827, B 8715
show the object to be of different shape than the adj. stars, and perhaps slightly hazy.
The spectrum is quite bright.

Note. Erroneously classified as N on B 39489, and so announced in H.C. 196. On B 39489, it is near the edge and only a bunch of light is seen, which is really N_1 N_2 combined. [If I had identified it, I should have seen the true nature of the object.]

Dec. 1~~7~~8, 1920.

A 6428 17 12 −37.5

new Class R. 1. Pec. Sp. Class R 3 ~~pec.~~
Has the wide absorption of Class N, then fades gradually as far as H [illegible]

✓

L.D.W. C.DM. −36° 11460, (1875) 17 15.3 −36 21.8 9.5
Checked A.D.W.

Also seen on B 40431, but not classified.
B 40426 [illegible]. also B 40731
Best on B 17037 for B plates
Approx. 17 14 −36 20

17 7.6 −37.0 Known gas neb. on plates
N.G.C. 6302 Lines wide,
Hγ 10 Hβ 4 5007 40
Hδ 2 4686 10 4959 15
Hε 2

2. Hβ appears to be a narrow bright line

omit: No. 87 on B 17037
−37° 11463 17 10.9 −37 52 8.0
Only a trace of brightness.

Monday, Dec. 20, 1920

a6435 12 30 − 37

Only Mt. plates.

a5789 12 50 − 62.5

1. Hβ bright.

No. 124 on B39228, classed B8
Also trace of Hβ bright on this plate
−63° 2612 13 4.3 −63 9 8.7

Omit unless confirmed ~~Enter in new list.~~ a2218 shows spectrum and Hβ bright is not seen. It may consist of a narrow bright line but several other spectra on this plate have some trace of bright lines

2. Hβ bright, very narrow, ft.

Omit unless confirmed. See B39228 No. 285
−61° 3608 13 12.1 −61 21 8.6.
Confirm on another a plate if possible
a2218 does not show Hβ bright.

December 20, 1920
a 5789 cntd

Tuesday, December 21, 1920

A2218 13 20 − 62

Several objects marked
Among them ~~[illegible]~~ Centauri (1900) 13 15.1 ~~+3.2~~
−61 3 ~~60 16~~

Peculiar spectrum. The bright line is not Hγ but has shorter wave length.

On B39228, classified K5.

Announced in H.C. 24 as of Type III with bright hydrogen lines evidently from this
✓ plate A 2218. The spectrum is seen on several B plates and is about K5. The bright line on A2218 is probably the beginning of the band in M spectra. Is the star really variable? I doubt it.

Dec. 21, 1920

a 5787 ' 10 50 — 57

η Carinae region

N star, known

S η Carinae

Fifth upper & M

η Carinae excellent showing

numerous bright lines

Nothing new found

Dec. 21, 1920
A 3600 broken 12 21 - 62

1. Type V. Seems to be new
Also seen clearly on B. 3~~8828~~ 38757
outside of region classified.
12 36.6 - 62 24 (1875) L.D.W.

Oa or Ob.
Appears to be Oa because the band fades out towards the red.

1900 positions

No. 1 on A 3600
$12^h\ 37^m\ 58^s\ -62^\circ\ 32.2'$

2 $H\beta$ bright. This is 199 on B38838
~~Original~~ In Bl. 75, 48, $H\beta$ bright,
but remark states suspected to be bright.
This is a well marked bright line
✓ on A3600
12 4.8 - 63 26 - 63° 2166
H.D. 105675 -
Enter in new table as $H\beta$ bright.

Dec. 21, 1920

A 3600 cont.

3. Type V? Only a very ft. object
in A 4337 to correspond.
Must be confirmed.
12 10.4 − 6229 (1875)
May be defective? Look for another A plate

Defect?

Not seen on B 38751 which shows very ft.
stars.
Assume defect although I do not feel
sure.

Dec. 21, 1920

a6434 16 30 – 37.5

1. Md ?
very fnt. $H\gamma$ + $H\delta$ seem to
Defect. be brightest. May be scratches.
No evidence of var. found by L.D.W.
See com of a6434

a5788 11 50 – 57

Gas. Neb. 11 45.3 – 56 37
as a brilliant object
Intensities
$H\gamma$ = 10 4686 = 5 5007 = 80
$H\beta$ = 10 $H\delta$ = 5 4959 = 20

No Continuum on plate,
very fnt. $H\delta$ well marked
brightest line

Wednesday, Dec. 22, 1920

a 5786 12 20 - 67
Poor
Meeting of [illegible]

a 6426 14 51 - 42
RJ Centauri marked
& already in list
from this plate

Thursday, Dec. 23, 1920

a 6441 21 50 -32
Nothing of interest
No flt. plans.

a 6442 22 49 -32

Mar star marked
V Piscis Aust.

Much like a var. at min
Banded strongly and much
brighter near Hδ.

Dec. 23, 1920

a6436.   1850 − 37

Numerous M stars

a6443   20 50 − 32

Nothing peculiar

a6444   22 10 − 32

Only bright stars

Dec. 23, 1920

B38959 14 17 -68

Type I here

S Apmis N pec
not brightest time seen

B39501 18 29 -13
nothing new.

Friday, Dec. 24, 1920

a5845 10 20 -67
Good of bright stars.
R star known

a5844 11 32 -52
Does not show ft. stars.

a5843 10 30 -52
No ft. stars.

a5842 11 30 -37
Same

Dec. 24, 1920

A5849 ~~10~~ 10 30 -37

U Antliae on plate
Class Nb, good

A1156 2 10 +57.5
Cluster in Perseus

A1187 same
Both plates poor

B43676 17 56 -23

2 Type V known

B42505 15 47 -53
Nothing new

Dec. 24, 1920

B 42501	22 50 – 48
B 42504	18 6 – 48
B 44358 B 44343	7 10 – 22
[illegible]	
B 39066	13 17 – 63

[illegible] Type V. [illegible]

B 42522	26 25 – 3
42544	21 48 – 28
42520	18 47 – 23
42518	21 38 – 68
42524	14 47 – 58
42542	17 8 – 28
22856	18 27 – 22
22857	12 32 – 27
37383	23 21 – 48
39669	21 48 – 53
39670	23 47 – 48
39396	17 46 – 3

Monday, Dec. 27, 1920

a2095 18 32 - 27
Only bright stars.

a6433 15 27 - 37
Plenty of M stars.

a6427 16 02 - 37
No ft. stars seen

a7729 18 50 - 37
Nothing of interest

a7727 16 30 - 47
Nothing

Dec. 27, 1920

a 7726   12 8+12

SU Virginis Md. Marked already in my list from this plate

a 1155   0 30+46

Too poor.

Tuesday Dec. 28, 1920

B ~~39406~~ 39396   17 46 − 3°.0

1. Class R?   Pec. Confirmed
Nor pec. on B40873 approx 17 30 − 2

B41530 Does not show pec. clearly
B24207   "   "   "

All available plates looked up.

B41578 clearly seen but not distinct enough to show peculiarity.

B11315
B13812   Show nothing
B41413

I36125
I36777   Nothing or too poor.
I34658

Wednesday, Dec. 29, 1920

A 8338   15 14 – 14.8

1. Med. var.

Sp. Ma. Hγ = .0 Hδ = .15

15 1 – 14 57 (1855) L.D.W.

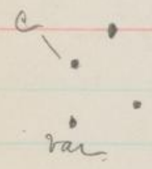
Br. on B38638, B27553

N.S. on A 9273, B23442, B23356,
I15364, B3862, and B29574.

Brightest on B38638 Apr. 9, 1908

Somewhat brighter than c on B38638

" fainter " " on B27553 ~~Apr. 24, 1908~~ June 5, 1901.



B27553 best for measuring position unless a chart A plate is found ~~to~~ show it.

18~~4~~5

R.A. 15 ~~2~~ 3 22, Dec. – 15 7.1 (1900) A.D.W.

B23356 shows star about 3 magns. fainter than "c".

B29514 shows at least 3.5 magns. fainter

Range 10.9 – 16 A.D.W.

see ADW Bk 9. p 86 for corr. pos.

~~Many~~ Several streaks on plate which look like V type bands, but no stars on A 9273 corresponding with them

1920phae.prqj.2225C

Thursday, Dec. 30, 1920

A 8336   12   –75

Nothing of interest
Some faint Nr stars

A 2098   19 30 –27
Poor plate
Nothing of interest

A 2096   20 28 +17.5

RS Delphini Max on plate
4227 very strong.

A 2093   18 10 –27

R star known
18 4 – 26 40

Dec. 30, 1920

a9773, a9785, 18 7–7.8
Poor

a9787 19 48–7.9

Poor

a9774 19 27–8

Poor.

a9772 1 48–18

Poor.

a8331 20 1–44

R. Telescopic on plate
Already in Md list.

Friday, Dec. 31, 1920

a 96~~54~~46 17 47 −13

Star has line 4077 strong.
It is 100 in B39380.
−13°4833 17 53.8 −13.8 8.4
Classified A3.

a9654 17 29 −13
Too few plates.

a9655 18 9 −13
Nothing of interest

a9659 18 7 −13
Nothing of interest

a 9658 17 7 −12
Nothing.

Saturday, Jan 1, 1921

a 9765 17 8 - 13

Sorpow.

Tuesday, Jan. 4, 1921

a 9251   18   67-18
nothing of int
no pl. stars.

a 2099   18   8-17

nothing
very poor focus

Tuesday, Jan 5, 1921

a 9658 No fl. stars.	17 7 - 12
a 9867 Nothing	18 25 - 18
a 21,03 nothing.	18 27 - 17

Thursday, Jan. 7, 1921

a 9793 19 7 - 7.9

V aquilae marked
N

Corr states Md in B+05 98
perhaps

a 9792 18 27 - 7

Nothing
Few stars.

a 9674 17 8 - 7.9

Nothing
Only br. stars seen

a 9283 19 6 - 23
Nothing.

Jan. 7, 1921

a6673		15 50 -32	

Same plt. M stars marked

Saturday, Jan. 8, 1921

A 4351 10 50 − 47

1. Md. var. Appears 10 45 − 48
Sp. Mb. Hδ very bright. Sp. ft.
and Hγ is not seen bright.
C.P.D. $-48^\circ 3567$ 10 44 57.0 −48 0.8 10.0 (1875)
B 31851 med. B 33220 barely seen.
B 24907 bright.
Range 10.8 − 14 A.D.W.

Found by M.D.A. 1920

2 Looks pec. in bands, but I can
not find it on any other plate.
A4358 shows a trace of it.
B 13780, 15329 do not show
the [illegible] star.

Jan. 8, 1921

A 4344 10 20 - 47

1. Md. var. Sp. Mb. Hδ bright.

C.DM. - 50° 5770 (1875) 10 23.2 - 50 32 10.0
See corr.
Ft. on B29071, med. on A8622.
N.S. on B18557 & B22641 (10m)
187 Br. on B29155 Mch 11, 1902.
Range from B29155 br. to B 18557
Range 10.4 - 12.5 A.D.W.

Found by
M.D.W. 1920

2 Ro known 10 21 - 48 520

Jan. 8, 1921

a 4358 10 30-47

Md, Same star as on a 4357 see p 99

a 7581 10 10 - 47

Numerous Md stars.

1 G star looks as if H δ were bright, but it may be poor focus.

a 4368 12 - 47

Nothing of interest

Jan. 8, 1921

a 2110   20 9 - 17

very poor,
Nothing found

a 2063   18 10 - 2215

Nothing new found
Several objects look like Type V,
but can not be confirmed.
A good region to have taken
again with 24-inch

Jan. 8, 1921

B 39501 18 25 − 13

0 star known

N on R star seems to be RV Scuti, known

Tuesday, Jan. 11, 1921

a 5800 10 30 - 47

Nothing.

a 2104 19 7 - 17

Poor focus

Nothing

Wed. Jan. 12, 1921

a 2108 19 41-22

Nothing
Only bri. stars.

α 2045 19 50-32

Only very bright stars.

Jan. 12, 1921

B38959 18 17 – 68

S Apodis in place
0, 6, 10.

V upper Rm
13 35.9 – 66.58

B42894 7 7 – 83

One odd looking spectrum
is evidently of two stars

42571
B~~43571~~ 21 36 – 73
No star here
numerous [illegible] stars

Friday, Jan. 14, 1921

A 3611   16 52 – 62.5

1. Gas. neb. or nova type.

Hβ, 4686, Hγ bright. Hδ & 4363

Class Pf.   16 35.4 – 62 26

~~Hδ~~

Hγ = 10   4363 = 4   Hδ = 8

~~488~~ 4686 = 50   Hβ = 40

Because it is 4686, not 4650.

✓ Get nova neb. in A plates and compare

This object is No. 7 on B 39304 p. 7. where the intensities look very different and Hγ is certainly distinguished

Hγ = 10   4686 = 9   Hβ = 4

Hδ = 2   Hε = 1   Hζ = 1

	A3611	B39364
Hβ	40	4
4686	50	9
4363	4	
Hγ	10	10
Hδ	8	2
Hε		1
Hζ		1

Jan. 14, 1921
A 3611

2 Hyd. bright, fl., Secp. 6. B39304
~~A~~ Pleione type
1645 7 − 64 4.4 (1900)
✓

3. Class N. Var. Mass? Intens. 56
189 approx 17 − 62
Conf. by L.D.W.
✓ Brightest on A 19$\overset{7}{8}$7
Small variation seen on B plates.
Faintest on B 35575
Not found yet as bright on B plate as on A 1977, but only a few have been examined.

Range	Br.	Ft	✓
189	11.7	13.3	

Friday, Jan 28, 1921

A 2038   19 8 — 25

✓ One bright patch. Defect;)

A 2057   19 29 — 17

✓ Nothing of interest

A 6476   20 11 — 27

✓ Nothing of interest

Positions of A. J. C. Variables on Plate A 1977
from A 3611.

1 – Neb.	16h	35.m	27s	−62°	25.8′	(1900)
2 – Ply gone lighter	16	45	7	−64	4.4	"
Var. 189. 3 –	17	1	.56	−61	49.6	"

measured in Bk H 9: 80–82

Computation and Precession have not been checked

Monday, Jan. 31, 1921

√ a 4366   11 32 – 42

Numerous Mb or c stars.

√ a 4369   13 50 – 47

Nothing of interest

√ a 4354   14 20 – 47

Nothing.

2 N stars already marked.

Jan 31, 1921

A4350 18 30 - 50

R plate marked

1. Md $H\gamma$ = 10 $H\delta$ = 12
Sp. Ma? Focus poor.
Brightest bet. $H\beta$ and $H\gamma$.
Approx 18 46 - 49

190

C.Dm -49°12412 18 46.7 - 49 37.5 "

C.P.D. -49°10791 9.4

Range of Var 1 on A4350
C.D.M. -49°12412
Br. on B 46907 10.0
Ft 26296 <12.8

2. Md? $H\gamma$ b.? May be defect

-52° 8851 18 42.4 - 52 7 10.

Double star which probably causes
the appearance of bright lines
Miss Wells finds no evidence of variability.

Jan. 31, 1921

a 2107   18 27 −22

1. Hγ bright. May be defect.

(1875)   18 20.2 − 21 45
Irr var. found by L. D. W.
See Circ.

Tuesday, Feb. 1, 1921

A 4347 13 50 − 50

✓

1. Md Hδ bright, but not strong
C.DM. −52°5976 13 59.5 −52 58.6 9.9
No var. found by L.D.W. See corr.

2. Gas neb. 13 44.6 − 50 43
known.
5007 4959 very strong
Hγ barely glimpsed

A 4433 13 50 − 57

1. R Centauri *very* bright June 4, 1900 Focus rather poor.
Md
Sp = Me Hδ bright but only about 1.5
as strong as cont. sp. Also narrow.
Hβ not seen bright

Good plate showing flt. stars, but no peculiar objects found among them except numerous M spectra

Feb. 1, 1921

A 3568 13 50 − 52

1 Pec. Only seen from Hγ to Hβ.
Hγ bright? [illegible]?
Also marked on A 4347, but near edge,

191 CDM. −52°5798 13 39.3 −52 43.8 8.6
C.P.D. −52°6741 13 39.3 −52 43.9 10.2
Conf. by L.D.W. on 14 Chart plates.
Br. on B31636, 37458
Ft. on B16088, B28032.
Range

1 on A 3568 10.4 11.6 ✓
−C.P.D. −52°6741 191
C. DM. ?

2. Neb. 5007, 4959 seen
Known 13 44.6
See A 4347, p. 113

3 N.b. Known
14 5 − 53

Feb. 1, 1921

A2225 13 50 -57

R Centauri on plate — Mch 12, 1897 Bright,

Hδ very bright.

No star already marked.

Thursday, Feb. 3, 1921

A 4435 15 49 − 47
✓ 1 Md June 4, 1900
Sp. Neb. Hγ = 10 Hδ = 10
No. 180. See p. 2.

1 on A 4435
CDM ~~CPD~~ −47° 10298 9.5 < 12.5
No. 180.

2 Neb, ~~5007 =~~ Planetary.
Image stellar in A 1906
Hγ = 10 superposed near Hβ of an A
star to north
~~#~~ 5007 = 40 4959 = 20

Class Pd.
Not in 56 or Lick XIII or
N.G.C.
−48° 10371 15 42.2 − 48 22 10.

Friday Feb. 4, 1921

✓ A 4428 15 30 − 47.5

1. Md. Var. Sp. neb. Hγ = 0 Hδ = 10

No. 180. Already found on B 39374. See p. 2.

2. Hβ bright. Confirm on another plate.
~~Try A 4434.~~
Approx 15 30 − 47 26
Probably no A sp. covers it. B 39069 shows bare trace of star. Try for a narrower image.

Monday, Feb. 7, 1921

ax348 15 53 - 50.5

1. Neb. Same object on ax435
See p. 116.

Saturday, Feb. 12, 1921

B37585

~~B37588~~ 15 58 -62

585?

1. Neb.

Hγ, 4686 & 5007 wide

5007 probably including 4959

~~is the strongest~~

Known
See 86

4686 & Hβ abt. equal

Class Pe.

approx. 1875 15 37.2 -60 49

Chart plate 42446, a 2670.

Meas. 1875. 15 37 8.6 -60 49.5

(1900) 15 39 16 -60 54.1

2. Class R, 3 Ro

CDM -61° 5300 16 0 56.2 -61 13.8 9.7

C.P.D. -61° 5587 16 0 56.5 -61 14.8 9.8

Ident. & checked on corr of B42446.

3. Bright Hγ, Hδ Hε? Sp. K5.

Perhaps var. or low temp.

Nr. 266 on B21767

-62° 5197 15 59.7 -62 35 9.5.

Hγ certainly looks bright & other br. lines seem also present. Image very narrow.

Feb. 12, 1921

37588

B37588 ~~15 50 62~~

1. Neb.

One bright patch which is 5007 probably +4959 of a faint hazy star

B37588

Neb.

Known

-0°3636

Friday Feb. 18, 1921

B 37587 18 7 +1

nothing of interest except objects marked

B 37589 19 48 − 3

Numerous objects marked

B 38830 13 36 − 73
38832 16 6 − 62
38835 16 38 − 68
38831 15 18 − 63

Fair plates but evidently carefully exam by W. P. H.

Saturday Feb. 19, 1921

~~A~~ B37586 16 50 −63

1. Class N 0, 8, 10
C.DM −61° 5736 16 59.7 −61 47 9.3
Same object as 3 on A3611, but
No. 189. not there ident. as DM star. p. 108.
Var. comp. See com.

Very ft. B21897

2. A very faint spectrum which looks like Class R. Must be confirmed
A3611 Approx. 17 10 −64.
A5536
Too ft. on B39370. Probably can not be confirmed.
Too near edge & focus too poor to announce from B37586.

3. Md. May be defective.
Evidently is because the supposed bright line has different slant from the lines in other spectra

4. Gas, not R

5. Very ft. Can not tell what it is

Monday, Feb. 21, 1921

Ac 3571 17 12 −52

Nothing of interest.

Tuesday, Feb. 22, 1921

a 3620   17 50 – 62

Several bright lines prove to be defects. Compared with a 5458 chart.

a 3617   14 11 – 52

1. Im pec.
See p. 126.

Feb 22, 1921

a3610 15 52 -62

B37585, p119

1 Neb. Same as 1 on ~~B37855~~

5007 and 4959 = 40 Hβ = 5 ~~588~~?

4686 = 20 Hγ = 10

~~Focus poor~~

2. Class R

Same as 2 on B37585

a5847 13 40 -67

1 Neb. Krum

2. Peculiarly strong lines

Probably a dwarf.

No 115 on B21712.

-66°2398 13 56.6 -66 40 8.9

Not in van Maanen's list of [illegible] motions.

No change in position seen from B 9366 (Sh. 1118)

and B 41665 1910. Image elongated on 41665.

Feb. 22, 1921

A3617 14 11 – 52

/ 1. M pec. Var.?

Perhaps like R Andromedae

Probably defection see A4347 which shows it to be about K5.

Miss Wells looked the image up on 45 chart plates (see card) and found it faint on one, B16088, but the image is very narrow & of peculiar shape, so it may also be a defection.

Feb. 22, 1921

B37584   14 50 − 63

1 very flt.   R?

Perhaps like R Andm

Try A3609, A3602^b too faint smaller

A careful examination with a clearer plate shows that this is an defection in stars!

Wed. Feb. 23, 1921

B37576 15 -68

Nothing new found

Star 16-26.7-7134

P Cygni type
Strong band in violet same
as No. 5 on B39387. 17 36.2 -48.3

B37578 17 8-13

B37579 18 8-8

Nothing new.

These plates have been examined

Thursday Feb 24, 1921

B37583 13 57 – 63

Nearly everything marked.

1. Oe known

2 Oa known faint

13 48.8 – 60 40

3 R? very f.c. — Var.?

Get chart. Marked on B 24685,

approx. 1875 13 56.0 – 66 25

186 Br. on B16225, B9308, Ft. on B25714,

B37656 and few other plates, see cover of B37583.

var Br. on A 2557 marked

"The sp. is faint but evidently pec. It resembles R Andm system faint.

B37589 19 48 – 3

Nothing

no. 3 (cont.)

(1875) 13 56 4 – 66 24.6 A. Dnr. 9, 94

114 – 7.3

Range 12.2 – 13.4. 13 57 58 – 66 31.9

Feb. 24, 1921.

B37598 1929 +7

Guiding near.
Good plt. Imbowe plates.

Friday February 25, 1921

B37580 19 7-3

1. Very pec.

Known Type V.

1858.7 - 428

Classed Oc in 76

The dark bands especially one near 4688 seems much more conspicuous than in ordinary Type V.

Try A2036 Too near edge and focus so poor that no peculiarity is seen.

The only A plate in my list covering region.

On B37580 I should hardly know how to class this sp.

$\overset{B}{A}$38111 38112 23253, show the spectrum. Perhaps best in 23253, but it is evidently somewhat peculiar and should be observed with larger telescope.

Feb. 2$\overset{6}{8}$, 1921

B 37575.

1. N? Very faint.
Looked up by L.D.W. and var. not confirmed.
Approx. 1875 14 2.8 - 66 30. See corr.

N? Looked up on B 3895$\overset{9}{\cancel{8}}$, 37625

14 2.8 - 66 30 Best on 37625 but not so good as 37575.
I think this is of Class N but would rather see it on another plate before announcing.

Monday, Feb 28, 1921

✓ A4429 16 50 -47

One star appears to have Hβ bright but not confirmed on A3619 | B36576.

B37581. 19 8 +6.9

One object marked looks like an R star, but focus too poor to be sure

Tuesday, March 1, 1921

✓ A3602 15 23 -62.5

1. Br. line. May be defect.

Not seen on B14132, B38802 sp. plates,
or on B38549, 38989 where the sp. are very narrow
and which show very faint objects.
It comes about right for 5007 of a fainter
star on A5195, A2381, but so many such
defects appear on these plates.

Neb. or Defect, 15 24 -62 (rough)

2. Very short sp. Var.?

Not seen on B14132, 38802 sp.
Marked on a5795.

Approx. 1875 15 21.6 -62 7.
Var. conf. by L. D. W. on B27336,
B26952, B29564, B33614,
Change ~~not very large~~ well marked. A. J. C.

187

(1875) 15 21 32 -62 7.5
126 - 5.4
15 23 38 -62 12.9 A. D. W. 9,95

Range 12.0 - <13.2

1920phae.prgj.2225C

Wed. March 2, 1921

✓ a3619 16:8 -47

1. Class R?
Looks like a faint R star but I can not confirm. Several B plates looked up, but the object is too faint.

Appears to correspond with a star ~~on~~ a 2591
Ought to be confirmed

a4356 might conn

a4356 17 10 -47
Covers reg. of Class R on a3619 but does not show faint enough stars.

One R known
one N

Mch. 2, 1921

✓ a6475 18 51 - 27.5

1. Md. Hδ bright
Known a.G Sagittarii. 190129

✓ a4345 11 30 - 50

Nothing

✓ a4346 12 50 - 50

Nothing.

March 2, 1921

✓	a 5536	17 20 -62
	nothing	
✓	a 3609	14 50 -62
	nothing	
✓	a 3560	12 31 -52
	nothing	

March 2, 1921

✓

a 5790 13 50 -62

Hβ bright in
-61°4317 1356.3 -61 50 86

On a 4427 Hβ appears to be bright in this
star but the spectrum is so destitute of
lines that I can not be sure it is Hβ
Hβ also appears to be bright in
-61°4318 1356.4 -61 59 8.8

I can not confirm these two bright
lines.

One pec. K5 spectrum. already
noticed and described.

March 2, 1921

✓ A6933 19 50 −87
Nothing.

✓ A4359 11 50 −42
Nothing.

✓ A4367 11 32 −42
Nothing.

✓ A5807 1 42 −67
✓
Nothing.

✓ A4355 16 10 −47
Nothing.

March 2, 1921

✓ a4353 13 10 — 47

Nothing.

Thursday March 3, 1921

✓ a4427 14 20 −62

Nothing.

✓ a2097 20 29 −2

only bright stars

a9807 17 47 −2

✓ Only bright stars

a2037 17 49 −2

✓ Only br stars

✓ a6924 19 8 −121

Nothing.

✓ a6916 19 10 −27

Nothing.

Monday March 7, 1921

√ A 3616 13h -67

1 Bright nebulae gaseous,

Bright lines seen.

5007	50.
4959	20
Hβ	13
4640 or 86	1
4363	5
Hγ	10
Hδ	7

Hε ^{32} very broad, due to two lines

Approx intensities from

In 76, I state only one brightest band seen. Too bad I did not find this plate.

Image round on A 4420.

Listed as Planetary in Lick

2 Bright line but probably a defect.

March 7, 1921

a6917 20 30 -27

✓ One bright line looks like defect, nothing
but nothing on A 7882

✓ a6934 21 10 -47

Nothing

March 7, 1921

A 41$\overset{1}{\cancel{4}}$4 0 50 −73
Small Mag. Cloud

1. Gas. neb.
Known

2 Gas neb. new
marked on A 6980.
Approx ~~1 16 −73~~
1 20 −74

Meas. by A. D. M. on A 11584

1875	1 20 59	−73 48.1
1900	1 21 36	−73 40.2

Image stellar on A 6980

On Q^B 22155, Hγ of neb. 1 looks stronger than 5007, but 5007 is much stronger on plates taken with the 24-inch.

Tuesday, March 8, 1921

A 4117 20, 9 +35, 0
Cygnus region of Taffe V.

7 objects on plates. All known

Focus very poor.

{A 4111
{A 4108 0 50 -73
Not examined
Not so good as A 4116.

A 4418
Small Cloud, 0 50 -73

Obj. 792 is the O star in cloud. One band seen. It shades towards red.

1. Gas neb. Known
5007, 40 4959, 10 narr Hβ 15 Hγ 10 Hδ 5

2. Gas neb. found on A 4114
5007, 4959 seen Hγ perhaps glimpsed
Looks like 1, only fainter

3 Bright line near 4471.

Wednesday March 9, 1921

A 4112 5 25 – 70

Large Magellanic Cloud

Short dispersion and excellent for faint plates. Considering the weakness of the spectra in plates of long dispersion, I think best to make a revision of all the peculiar spectra in this Cloud.

I will start with the region of 30 Doradus.

1. Rather flat. Br. band of Oa well marked. Not in Cape

945? Int. 1 Oa or Ob.

2. Int. ~~4~~ 3 Br. band well marked also a dark band near Hγ. In Cape?

Oa or Ob. Nebulosity of 30 Dor. well marked

3. Int. 5 Oa. 4688 well marked also a faint band about at Hδ In Cape. Also in 56.

1, 2, 3. also seen in A 4116

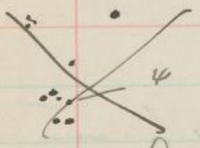
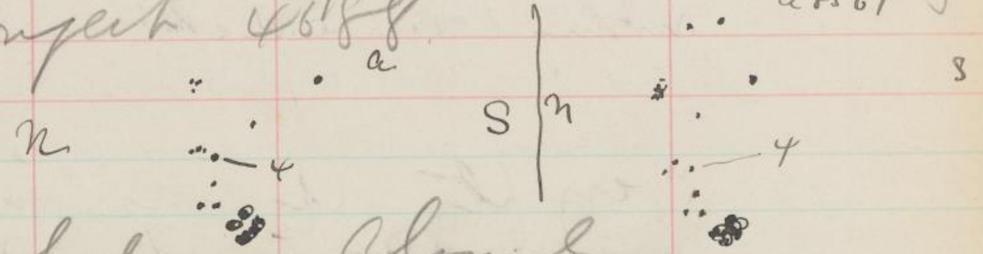
252 in A 2901 5 39.5 – 69 1 – C.P.D. – 69° 462

March 9, 1921

A4172 cont.

4. Preceding portion of 30 Doradus
Scratched etc region but certainly
has bright 4688

a 8561

5. Enmeshed in Cloud
4688 bright >

6. a fainter one in heart of cloud
& S. of 5. 4688 bright >

7. 4688 bright but shows much
less contrast to cont. sp. than
in 1, 2, or 3. Best seen on A4416

No no on A2901. very indistinct

. •7 Br. 4688 also seen on A7585,

8 Lat. 3 4688 brighter strong

938

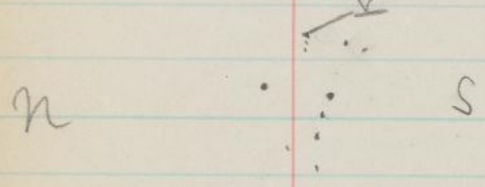
254 on A2901 5 37.7 −69 16

March 9, 1921

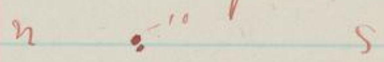
A 4112 cont.

9. Int. 1 4688 bright.
Confirmed on A 4116 short.
nothing seen except one h. band

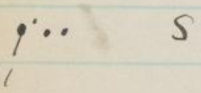
10 very flt, a conglomeration
only one h. band
Can not tell. Precedes 8.
also barely seen on A 4116. marked on A 2170 where it is faint but still brighter than 9.



10 is n.p. of a close pair & the brighter.



11 Int. 5 Hβ, Hγ, Hδ bright
Known



256 on A 2901 -69° 4 26   5 37.2 -69 26
The star s.f. appears to have bright line on A 4116

12. Int. 2 4688 very bright shades to red
255 on A 2902   5 37.6 -69 30
s.f. & brighter of 2.

March 9, 1921

A4112 cont.

13 Int. 1. λ688 brilliant!

261 on A2901 5 35.2 -69 49

(260 on A2901 is too poor focus on A4112)

259 " " shows no b. lines in A4112, corroborating testimony of record Bl. 28, 165. 5 36.8 -69 44 (Omits [illegible])

14 Neb. Int. 1.

On chart plate a distinct star surrounded by nebulosity.

5007 well marked.

other part faint.

250 on A2901 5 40.6 -69 49.

15. Two neb.

5007 + Hγ well marked

249 on A2901 540.6 -69 42 2 neb.

16 Int. 1 5007 seen New?

Not seen on A2901

Well seen & corresponds to a neb. on 8561

Neb. near -69° 48'.

17 Int. 2 5007

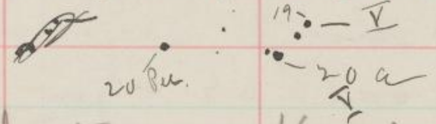
A nebulous star on chart

247 on A2901 5 41.4 - 69 43.

March 9, 1921
A 4112

18 Oa. Int. 1. 4688 bright,
248 on A 2901 5 40.7 − 69 27

19 Oa Int ½. 4688 bright.
preced. of 2 equal stars
246 a Certainly Oa.
Chart plate defines it as 4688.
5 40.9 − 69 27 (1900)



A great group!

20. Int. 5. Hyd. bright. P Cygni Type
246 on A 2901 − 69° 478 5 41.0 − 69 26

(251 on A 2901 probably defect. Not a line seen on A 4112, corroborating Bl. 28, 163)
20 a. Merged with 20 a but really s. following.
Better on A 4116. 4688 bright.

21 Int. 1. 5007?
A nebulous star on Chart plate.
not on A 2901
marked 917 on A

March 9, 921

A4112

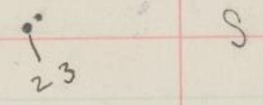
22 Int. 1, Hazy mass w. appearance of br. lines. Agrees strictly w. nebulous cluster

Br. lines not indistinct. M.S. on A4116.

23 Int. 3, Oa

263 on A2901 5 32.0 −71 5.7

Elong. ~~s.~~ n.f. + slightly ~~[illegible]~~ [illegible] into plane. shades to red



24 Int. 3. Oa

268 on A2901 5 24.6 −71 26

shades to red

Not in C.P.D.

25 Int. 2 Oa

279 on A2901 5 23.9 −71 43

Not in C.P.D.

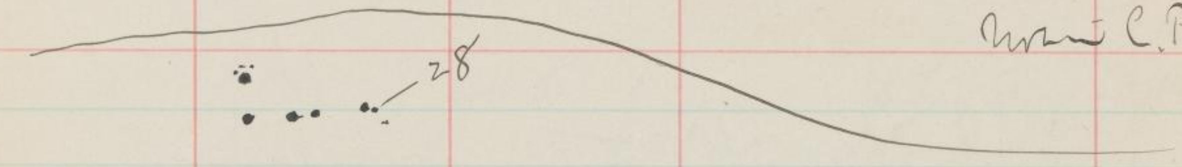
26 2 . 5007 Allen neb. about ~~[illegible]~~ 3' diam.

N.G.C. 1936 269 on A2901 5 22.5 −68 4

Best on 2901

March 9, 1921
A 4112
27. 3 0a
264 m A2901 5 27.1 − 68 55

Star markedly in chart.
No doubt about class.

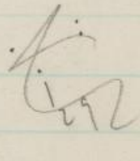


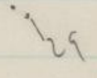
28. Insp. 1. Very fl. star below
2 bright ones
Hyd. br. ?

−68° 382 mag. 9.6.

Sl. s. f. −68° 382 & much fainter

29. Extremely fl.
4686 bright class certain. Lines mapped up with chart.





A 85

30. Insp. 1 Neb
266 m A2901 5 25.6 − 68 33
Hβ ≈ 10
Hγ ≈ 9
4959 + 5007 ≈ 10

30a See 968 on A 7577, p. 170. = −68° 379

March 9, 1921

31 Oa the preceding
familiar of two close stars.

·270 on A2901 -69° 361
Is this double in Cape? No. The Cape
obs. doubtless represents combined light. The
stars are not separated on B plates

← 31

31 a omits 970 on A7577 See p. 171

32 1 Oa

273 on A2901 5 10.2 -69 0

225 on A2900

Too faint on A4109, A2210, 1585, 2880, 2226, 2220.
On A2900 + 2901, there seems to be a neb. in
star field, & S. of this, appears m. 5 10.3 -69 1.

33 1/2 Oa

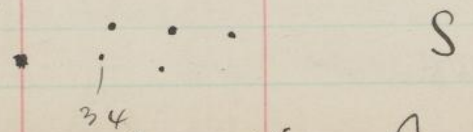
273 on A2901 5 10.3 -69 1 ?

225 on A2900

Immersed in neb. on chart

3
44 1/2 Oa new?

not on A2902



Trace seen on A4116. Certainly O.

March 9, 1921

A4112

35 Bright line 5007 —

274 on A2901 C.P.D. −70°3463 9.6

Ident. O.K. (1900) 5 0.3 −70 20

Peculiar! Only 5007 bright. The other portion is shining quite cont.
Star not hap on chart

Look up on all plates.

5007 is seen on all good plates and appears to belong to a nebula surrounding the D.M. star. The neb. is seen best in long exposed plates.

34a Bright line on A2900 & A7577 and several plates. Burned out on A4112. It matches up with Hβ of a star s.f. C.P.D. −69°3444 5 14 33.5 −69 28 9.4 & somewhat fainter.
carefully matched up as compared w. λ 4686 in 34.

Medium on A11586

March 9, 1921

A 4112

36 Bright portion at 4686?

Uncertain

Probably Class K or M. The bright portion appears blend of cluster & line 4686.

37 Neb.

278 on A2901 and better

4 54.6 - 69 33

238 on A2900.

~~On chart plates neb. precedes a bright star sf of the star near which~~

∴ neb.

38 Neb.

277 on A2901 and better

237 on A2900.

-69° 302 ~~5 44~~ 4 54.6 -69 21

On chart plates, neb. precedes a bright star, which is the Dm. star? A neb. slightly prec. & probably surrounding the Dm star

39 Neb?

Two nebulous stars

Perhaps 276 on A29.01. 4 55.1 -69 21

236 on A2900.

March 10, 1921

a 4106 20 8 + 34.0

1. Class O

2. Class O

3. Class O

4. No. R Y Cygni

March 10, 1921
A 4112 cnt.

40 Very flt. Neb., 4 49.9 –69 21
24' on A2900 and better

41 Bright patch Oa.
Double star. The preceding is brighter & looks longer in trail which is Class O.

March 9, 1921

a2210 5-24-68

Does not show ph. sp.

a2880 5-22-69

no ph. sp. seen

a2220 5-25-70

very poor. Narrow but poor focus

a2226 5-24-71

Same as 2220

2221 Def. too poor
5-44-68

March 9, 1921

a2902 7 02 -67

nothing

a3578 15 50-52

J. Norman Medy

Wed. March 16, 1921.

a2900 nos. of objects N. S on a4112.

230 In Neb. 56 + 76. 4 57.5 – 68 35.

578
581 { on a7577.

Lines seen very indistinctly.
Remark in 76 says it is a neb. on edge of N.G.C. 1770 Cl. + Neb.

On Chart plate this is a double star with nebulosity.
In same group as 41 on a4112

227 Da OC? See 28,173

63

March 16, 1921

A 2900

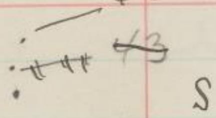
217 Indistinct nebulosity
Seems to be N.G.C. 1935.
◦ Three stars with neb. surrounding
5007, Hβ, Hγ about equally
Near 26 m A 4112 . Lettered
26 a

222 Hyd. bright 5 14.0 − 67 34 (announced)

~~42~~ 45

223 O ? 5 13.8 − 67 31 (announced) Not seen on any other plate so far examined. But the region is on the edge of all the good plates.

~~43~~ η



46

March 10, 1921

A 7577
nos. of objects marked

✓

✓ 914 = 25 on A 4112
25

✓ ✓

✓ 915 = 24 " "
24

✓

✓ 916 = 23 " "
23

✓ ✓

917 = 21 " "
On A 7577 marked on A
apprnt. m.P.F.
539.9 − 70 45 (1875) Hγ, Hβ & 5007 seen
21 almost equally bright. 5007
slightly stronger

Mark on chart & then pos. measured.

918 Mb

919 Class Mb

Mch 10, 1921

A7577

✓ 920 = 14 5h 40.6 − 69 49.
14

921 = n. s

922 n. s.

923 n. s.

924 ~~perhaps 16~~ — (not on A2801)
17 = 253 on A1897 ?
247 on A2901 ?

925 n. S.

✓
✓ 926 = 15 Nov Neb.
15

927 n. s. on A 4112
or perhaps a tr. line

Mch. 10, 1921
A7577

928 Too dense on A4112
Hyd. lines.
See other plates
50
O.K. .260 on A2901
Kum P Cygni type C.P.D. −69°401 5 36.4 −69 45 (1875)

/ 929 = 13
13

930 n.s.

931 Too dense, Hβ br.? on A4112?
Br. line n.s. on A2901
Uncertain. If anything Hβ f. in place marked on chart. There are
~~931~~ two stars in same R.A. the fainter being 1' south. If the
May be a scratch
bright hyd. lines are real they belong to this star southern and slightly fainter star

M.P.T.
−69° 427
5 37.7 −69 34 (1875)

Is this the star
Yes,
Hβ br. on A15031
No. 2232

See A2210 + 2897 where it is said to be confirmed

March 10, 1921

A7577

932 n. S. on A4011

Too uncertain Perhaps Hδ 931

225 on A2901 210 on A2900.

933 = 1

1 ~~248 on A2901~~

256 on A2901

934 18

18 246a on A2901

935 Too faint. N. 8. on A4112

Too vague. Not No. 19 which is a good Oa

248 on A2911

936 20 Hyd. br.

20 ✓ 246 on A2901

937 = 9

9

Mch. 10, 1921
A 7537

938 = 8
8 ✓ 254 on A 2901

939 n. s.
C.P.D. -69°4165 5 37.1 -69 16 10.0

940 n. s. on A 4712 but appears certainly
bright line on A 7537
not conf. on A 2901. 2900 not cov.
This agrees in pos. with Hβ
when put on chart plate

~~941~~
?

5 36 53.5 -69 16.0
C.P.D. -69°409 ~~5 36.9 -69 16 (1875)~~ 9.4
~~-69 69°406 5 36 48.5 -69 14.0 9.8~~
Close inspection shows that this has shorter
λ than Hβ. May be defect, not seen
on other plates.
Omit. Or Class O?

1931, July 2 Conf. on ~~A 1583~~ A 15031 Double on A chart plate
Uncertain ~~which one 406~~ or 409 has which comp. might
No. 2224 bright lines. Rather close on chart plates.
See Bk. 189. class Oc
Narrow Class O lines also seen on A 15029-30

Mch. 10, 1921

941 Neb. near 30 Doradus and probably a part of the M. S. on A4112

942 Same as 941

943 Neb. of 30 Dor.

944 Same as 943 or perhaps
2 2 on A4112
202? on A2211 984 on A2897

945 1 on A4112
1 986 on A2897 5 40.0 − 69 6 (1875)

946 ~~2~~ 3 on A4112
3 252 A2901

947 not found

Mch. 10, 1921
A 7577

948
949
950
951 M stars

952
953
– 58 { not on A X 4112

959 M

960 all blank on A 4112

961 Neb.?
Succession of br. lines
on chart plate a group of
26a stars
Omitt unless seen clearer
217 on A 2900 5ʰ 22.2 – 68 3 ([illegible])
Irregular Neb. Rich.
N' and $H\beta$ seen

March 10, 1921
A7577

962 N. S
269 on A2901 Known Gas. Neb.
5 22.5 _ 68 4

963 Neb. = 26
26
5 23.6 - 68 4 (1875) rough.

964 ? N. S
Too vague
1012 on A7585

965 Neb. 30
30 better than on A6112

966 27
27 980 on A2897
967 Scratch

Mch. 10, 1921

A 7577

968 Precedes 28 on A 4112

Hβ, Hγ bright. just following The brightest star of a group of 34 stars.

30a Hβ, Hγ, br. on A 4121

968

—28 on A 4112

M.P.F. Bl. 96 doubtful ~~Ident. -69°382 5 28.7 -69 7.8 9.6 mag.~~

-69° 379 neb. 5 28 32.0 -69 5.1

Hβ + Hγ belong to the ~~brightest~~ star ~~of the group~~, slightly

Mapped upon A 8561 foll. ~~the~~ -69°379 & in same field, This not in C.P.D.

969 Hβ bright, Hγ slightly br.

Bright star.

Also br. on A 2901 but not marked.

51

Burned out on A 4112

M.P.F. Bl. 96 -69° 383 5 29.2 -69 14

This star is double, seen clearly on A 8561, but much better on A 11586. The bright-lines belong to the south preceding component which is seen to be involved in nebulosity. Best seen on 11586

See p. 203

Mch. 10, 1921

A 7597   5 22.5 − 67   × 7   in N.G.C.?

970 Br. lines barely seen. Not found certainly on any other plate. They agree with a nebulous object on chart.

Omit. :— nebulous group.

not Faint trace of nebulosity seen also on

clearly A4112.

seen.

971 = 31   V

31

971a Hyd. bright

49 Bright lines   Best in A2901. O.K. P Cygni type

M.P.F. Pub. 96. −69°356   5 18.9 − 69 21

Pec. in H.D.; O.K. P Cygni type, S Doradus.

See page 219 for obs. of light.

972 Me

973 M?

974

Thursday, May 12, 1921.

ns A7577 (cont.)

577p6 Bright band
Best on 2900
Class O. marked on chart.
52 Ident. 4 55.7 −67 40
Not in 56.
On chart A11715
t 3, 2 m Sep. I
13.1 12.8 13.0

573
574
575 { on extreme edge.
Best on A2900 where it is in center

577 One br. band. 5 0.1 −68 6 (1875)
Appears to be 4686 of star marked on
53 chart plate.

Better on A2900
n.s. on A2210, A7585

On chart A11715 Sep. I
w 3, 1 4
14.0 13.9 14.0

578 Nr. 41
579. Im. pt. not certain

May 12, 1921
A 7577

580 4 57.5 - 68 35 230 in A 2907
581 Gas. Neb.

A 11715

~~Nucleus = w~~ Sy. I

~~diffuse~~ Neb. all about the nucleus.

54 Difficult to est, as shape of nucleus is elongated.
Perhaps w 3 nucleus.

586 Type V Not yet announced
Marked by W.P.F. One [illegible]
4 56.8 - 69 37.8 (1875)

55 Also seen clearly in A 2900, 2907
A 8561 Sy. I but Sy. IV shielder used.

13.8 w 1, x 3 × 13.7

13.8

A 11715

13.7

13.6 v 3, 0 w 13.7

13.6

cont. p. 214

Sy. IV
Bet. v & w
mag. v not given
~~Type~~ I. no. 55 2 w
13.5

Friday, March 18, 1921

A 5747 broken ~~7~~ 5 20 -62

1. Md. H~~γ~~δ very bright.
approx. 7 15 - 64

Variable
U Doradus.
Known variable, Sp. not known
New Md. spectrum
Spectrum flt. and only seen distinctly from Hγ to violet.

5^h 9.6 - 64 26. (1900)
Var. announced in H.C. 130. H.V. 2934 Leavitt.

Dec. 13, 1901
also on A 5743 4 50 - 62

Hδ bright.

March 18, 1921

a2031 20 29 – 7

Nothing.

Saturday, March 19, 1921

a 3613 19 32 -47

1. Md. var.

New. approx 19 35 - 44

188 (1875) 19 32 43 -44 53.7
(1900) 19 34 30 -44 50.4 a.D.W. 7, 96
12.5 - <15.0

193245 marked Md

Already in my list from this plate

Br. patch w/ faint. May be defect.

a 2021 19 21 - 42

very poor

marked in red as if examined before

March 19, 1921

a 3564 18.5 -52

One R.S. known

a 3594 14 51 -57

Nothing of especial interest

Tuesday March 22, 1921

A 4357 18 50 – 47
May 3, 1900

1 Md. Sp. Mb Hγ Hδ bright

18 48.6 – 4936

No. 190 Known. Fainter A 4350, see p. 111
Known
May 2, 1900

Br. on A 4469, June 20, 1900.

2. Very ft. R? or perhaps M.
Can not be confirmed too faint.

3. Mb or Mc.
Superposed on another sp.

See B 41441 Nos. 45 & 46.

On B plates there are 3 spectra sup. and there is probably a mix-up.

See next page.

March 22, 1921

B 39656 for plates 45 & 46 on

B 4.441

✓ 1 2 K0

45 on B 44441 C.D.M. -48° 12911 9.4 R

C.P.D. ~~C.D.M.~~ - 48° 10052 9.4

18 58 15.9 - 48 49.9

✓ 2 Mb.

-48° 12910 9.2

-48 10051 9.8

18 58 14.5 -48 45.6

✓ 3 K5

C.D.M. - 48 12913 9.4

C.P.D. - 48° 10054 9.8

18 58 18.9 - 48 42.0

No. 46 on B 44441 was a blend of 2 & 3,

March 22, 1921

a 2078 18 50 — 47

Sept. 12, 1896

1. Md. Same object on a 4357, see p. 178.

~~Mb~~ Sp. faint.

Hγ = 10 Hδ = 30.

Evidently not as near max. as on a 4350, 4357.

Thursday March 24, 1921

a7734 20 8–17

Focus too poor

a3603 16 32–52

Nothing
Br. line proves the defect
within pos. of flaw of a7378

Friday, March 25, 1921

Estimates of magnitudes of O stars in Large Cloud. Seq. V H. S. L.

A 8561

1. r1 v 3 s

12.7 12.7 12.7

2 O4 v 2 p.

11.5 11.4 11.4

3 Bright m2 v4 n

10.5 10.4 10.4

4. Diff. In neb.

s1 v 4 t 13.1

13.1 13.1

5 & 6 in neb

March 25, 1921

Q 8561

7	03 v, 4 p		
	11.4	11.2	11.3
√8	05 v 1 p		
	11.6	11.5	11.6
√9.	v 4 van p w		
	14.7	14.6	14.6
√10	t 5 v 1 u q		
	14.0	~~13.6~~ 13.9	13.8
√11	o 4 v 2 p		
	11.5	11.4	11.4
			Hph.
√12	r 1 v 4 D		
	12.7 12.6		12.6

March 25, 1921

a 8561

✓13 ~~q r~~ q5 0 r 3 s

12.7 12.6 12.7 12.7

✓18 s3 2t

13.3 13.3 13.3

✓19 s4 1t

13.4 13.6 13.5

✓20a p3 2q other surrounding.

11.9 12.0 12.0

Hol. star.

20 p3 2q 12.0

March 25, 1921

a 8561

Seq. V

23 Sorfan
q 1 v 3 r
12.3 12.3 12.3

24, 25 Sorfan & rain

Seq. I
27 0 1, 3 p.
11.0 11.0 11.0

28. Hyd. h. Seq. I
p 2, 2 q
11.5 ~~11.7~~ 11.3 11.4

29 O star.... Seq. I
~~2 A 1, 4 x k~~ wrong star marked on print.
~~31~~ 12.1 12.0 12.0

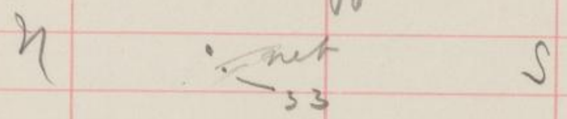
31 Seq. I
~~q 4 — 0~~
p 4, 0 q, 3 r
11.7 11.5 11.7 11.6

March 25, 1921

~~A58~~ A8561

32 Seq. I
t 4 1 u 13.2 12.9 13.0
different shape, difficult.

33 In neb. I Seq.
n 3, 1 t 14.0 14.0
13.9
diff. in acc. of nebulosity.



34 n 1, 3 X Seq. I
13.6 13.7 13.6

41 Seq. II
s 3 v, 2 t
~~12.9 12.6 12.8~~
Seq. I
too diff. in acc. of shape.

Monday, March 28, 1921

a 8561

5
237 on
a 2900 Sep. II O star.

42 m 4, 6 x, 27
shape different

~~14.1 14.0 14.2 14.1~~

232 m
a 2900 Sep. II 4 56.9 − 66 32
f 2, 1 9. J.E. 2145. "Planetary, round" Lick

44 Stellar with mist of neb. to North
neb.

234 on k 1, 2 l Sep. II.
a 2900 Oa 4 57.4 − 66 38
−66°3343 9.1 mag.

43

5 14.6 − 67 34

Sep. I

45 ~~o1~~ n 1, 20 ← Repeat. Image too dense
Hyd. bright lines

See p. 161 See p. 190

46 Sep. I 5 13.8 − 67 30

Doubtful O star

April 23, 1921

List of B plates in Milky Way.

B39280	17 49 - 23	
2	20 18 - 63	
299		
302		
81		39666
2		7
97		8
92		
96		
99		
402		
657		
8		
60		
39648		
9		
52		
54		
55		
61		
62		
3		
4		
5		

Most of these have been classified in centre but a great part of the plate was never examined.

Saturday April 30, 1921

A2169

45	p 4,	19	5 14.0 – 67 34 Hyd. lin. stars	
	11.7	11.6	11.6	
46	m 1,	5 5	5 13.8 – 67 31	
	12.1	12.1	.12.1	Doubtful Oa star

April 30, 1921
A 8561

Sep. I

24 p 5, 1 g near edge + far from Sep. V

12.1 12.1 12.1

Sep. V.

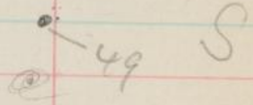
25 p 4 2 g " "

12.0 12.0 12.0

April 30, 1921
A 2897
Comparison with A 4112 and adopted nos.

36 982

~~41~~ 49 983 −69° 356 5 18.9 −69 21
Hyd. bright
Br. Plate,
~~Bound at on~~ A 4112
W edge



✓
~~45~~ 45 992 ~~Neb.~~ Hyd. bright.

7
48 991 C.P.D. −67 433 5 26.3 −67 35
V ~~W edge~~ A 4112

A 11586 Sq. III Band does not show much contrast ~~as far~~ to cont. portion

pin, 498
11.3 11.3

48 = 990 Strong bright band almost no cont. sp.
5 30.4 −67 30 (1900)

Maybe on A 11586 All other objects are already numbered

Sq. III Several faint B stars −67° 464 good B star within H.D!
13.1 b −67° 472 9.3 marked. 8.
13.2 Probably B0.
13.0
mean 13.1 Also fainter B stars

Monday May 2, 1921

Spectra of variables in Mag. Cl. (Large)

Nos.

1011 a4112
prob. off edge.

344 May off.
also off 2857 22
7585 comm, no trace

63
163 12.4–14.2 ✓
a4112 comm but no trace of sp.
a2908 " " " " "

50 a4112 comm, no trace
off edge 4166

very flt. in ~~chart~~ print where marked.

345 Off on north
a2210, 7577, 7585 comm
no trace of sp.
Star quite bright on print.
A short disp. would show it!

May 2, 1921

48 a4112 m. s

49 a4112 bare trace
Looks like K or M, but too ft.
to be sure
Very ft. but all light is bet. Hβ + Hγ.
cf 4116

Perhaps best not to publish sp.

45 a4112 comes but no trace
must have been near min.

a4116 not coming.
11.7 at max.

A bright star to south obliterates the long diaf.

458 Bare trace
K?
Short spectrum with all light between
Hβ and Hγ.

May 2, 1921.

153 Too faint for A4112

88 No trace A4112.

44 Mc. All light near $H\delta$.
Star not on marked chart,
nr 2969
B.r. on A8564 Jan. 25, 1908.

Not belonging to Cloud?

46 Too faint for A4112

119 Certainly seen.
K5 or M
All the light is bet. $H\beta$ & $H\gamma$. Appears
to be of some division of M.

55 No trace on A4112 or 4116

May 2, 1921

Var.

364 Minute of 4112

906 No trace on 4112

96 Minute

452 K5 to M 4112
K5 4116 Best on 4116. Also shows on several long disp. 7577, 2900, and is apparently ~~certainly~~ not later than K5.

735 Not found
135? No trace near 452

376 N.S. 4112 comm

May 2, 1921

Jan.

68 No trace on A4112

151 north

369 north

199 not found on prints.

130 n.s.
131 n.s.

84 north
613 "
1031 "

May 2, 1921

456 On extreme edge 4112
Good on 4116
Me.
Does this belong to Cloud?

601 push off 4112

204 Mb on Q4116
Br. line near Hδ probably a defect.

698 off

948 no trace
469 " "

522 no trace
478
668 " "

May 2, 1921

Var.

	x	y
434 r	14100	3100

new. no. 2662
.4115, 3164
13.2 — 14.0

Really seen on A4112 and undoubtedly a red star.
Visible only from Hβ to Hγ.
K5 —

105 No trace
902 " "

667 No trace
910 " "
249 " "
713 " "

521 no trace
975 " "
976 " "
759 " "
333 " "

404 n.s. Near edge

117 Is it the bright star?

May 2, 1921

449	n.s.
786	n.s.
4	n.s.
5	" "
209	"
47	a blur
735	Well marked K2 or K5 also seen on 4116, and on 7755 Best K5
199	n.s. on 4112 or 4116

May 3, 1921

A: 2969

Est. of mags by M.D.A.

No.			Sep. V
✓ 24	n 2, 24	12.8	
	24,3 S	12.7	12.75
✓ 25	25 = n		12.6

Friday, May 6, 1921

a11586 grating Seg. I

57 See page 170. q 3, 1 2 12.5

12.5 12.5

M.D.A. est. = 12.6

Est. of magn. difficult, due to comp n.f. which is brighter.

✓

Seg. V

m 1, 3 n a.f.c.

10.4 10.5

10.45 m 1, 2 n M.D.A. Independent est.

✓ 1st grating image

50 10.5 10.4 10.6 north of star used.

Magn. 10.4

✓

49 Seg. I 1st diffraction images

k 3, 2 l

P Cygni type

Monday, May 9, 1921

A11586 Estimates of magn.
Current adopted numbering.

Sep. V

✓ 1. q 5, 1 r
12.7 12.5 12.6

✓ 2. p 2, 3 q
11.9 11.9 11.9

✓ 3. m 1, 3 n
upper grating comp. used.
10.4 10.5 10.4

✓ 4 s 3, 2 t
Diff. in acc. of proximity & nebulosity.
~~12.7~~ 13.3 13.3 13.3

5 & 6 Problematical O stars in 30 Doradus.

✓ 7 o 4, 2 p
11.5 11.4 11.4

✓ 8 o 3, 3 p
11.4 11.3 11.4

May 9, 1921

3 2
9 ~~u t, 1, p v~~ many comp. stars taken

u 1, 2 v 13.8 14.1 14.0

10 t 3, 2 u 13.8 13.5 13.6

11 n 2, 1 o ~~10~~ 11.0 11.0 11.0

12 r 3, 1 s 12.9 12.9 12.9

13 v = r 12.6

14 t 3, 2 u max. of star est.
Central star surrounded by a neb

13.8 13.5 13.6
15 Preceding, neb. object

~~u 1, 2 v~~

Film side up
S

15 ~~Film~~ Glass side up
S

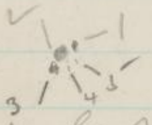
2010 21 — 1 2077

Tuesday May 10, 1921
A11086'

15 & ~~16~~ Group of Stars and nebulae

A2901 shows two distinct nebulae superposed.

The group contains 5 condensations thus arranged,
Glass side up

n  S

x N.G.C. 2077 is probably 1
" 2080 " " 2

at least the bright 5077 0 match these two condensations.

Condensation 1 e.p.: magn. est.

✓ + 1, 4 n 13.6 13.3 13.4

Condensation 2 the brightest

✓ 2 ~~+~~3, 1 ~~2~~ 1' ~~13.5~~ 12.9 12.9 12.9

Condensation 3 same dec. as 2, but following
very hazy, = n
too hazy to be sure. 13.7

May 10, 1921
A 11586

15 Condensation 4 = nr 14.8

4
~~16~~ Condensation 5 is fainter than
7 ✱ which is the faintest comp.
star seen on this plate

✱ 7' condensation 5
15.5

16 Central nucleus with wings

~~c~~ 8 16 film up. 13.6 13.4

✓ t 1, 4 n s condensation 13.3

17 Hazy star, wing of neb. prec. side
• film up)

✓ S/s 3, 1 t 13.3 13.4 13.4

✓18 r 4, v = s
13.0 13.0 13.0

✓19 s 4, 1 t 13.4 13.4 13.4

May 10, 1921

A11586

20 p 4, 1 q

✓ 12.0 12.0

12.1

20a Another star merged with 20 &
n.f. Both estimates on 8861.

✓ q 2, 2 r

12 ~~8~~ 4 12.4 12.4

21 Nucleus The n.f. of a curve of 3
u 3, 1 v hazy stars. Estimate

✓ film n.f. me merged.

∴ This gives the preceding f. 14.0

~~13.8~~ 14.1

S 14.2

~~22~~

22 Probably defective on A4112

A round globular hazy mass on
chart plate, but not the lines
on other plates

May 10, 1921

g? A11586

23 p2, 3n M.D.A.

12.4 12.4

✓ 12.3

24 See pp. 191 & 202

25 " "

Sep. I

26 Star surrounded by neb., nucleus quite starlike

✓ 41, 3f 14.1

141 14.1

Another star of nearly same mag. just separates n.f. of the nucleus. It may also be connected with the nebulosity.

Wednesday, May 11, 1921

a 11586 cont.

27 ✓ ~~p~~ g 3, 2 r Sep. I

11.8 11.8 11.8

→ • film ref

S

28 Defection

29 very flt. band. problematical

? Sep. I

n 2, 1 v

13.2

✓ 30 a big nucleus, v. faint nebulosity.

nucleus

t 3, 2 n

13.1 12.8 13.0

May 11, 1921
A 11586 Sep. I

✓ 30a P Cygni type

t 5, 0 m
Shape of star elongated.
13.3 13.0 13.2

✓ 31 g 4, 1 l
Lower grating comp. meas. 11.9 11.9 11.9

✓ 32 t 3, 1 m
13.8 13.6 13.7

✓ 33 y 1, 4 y
14.1 14.0 14.0

✓ 34 w 3, 1 k
14.0 13.9 14.0

May 11, 1921

34a — P Cygni — Seg. 1

✓ p 3,1 g

11.6 11.4 — 11.5

35

✓ Filamentous

(neb." F

On star.

✓ S

Bright star having neb. near or covering it.

DM star = p 11.3 shape dependent. Estimated from 1st diffraction lower image, very uncertain.

36 K or M probably

a11715

✓ 37 a hazy mass, but not unlike stars of Seg I in shape

Seg. I × 3,1 g 14.3 14.3 — 14.3

May 11, 921

38 Dm star with neb. preceding
to nearer edge

✓ a11715 Seq I
p 2, 1 q Dm star 11.4
11.5 11.4

39 Two neb. about equally bright

✓ Seq I Both about = w
13.7
a11715

40 Mass of neb.
Seq. I t 2, 1 u
✓ 13.0 13.0 13.0
a11715

Seq. I Seq. II?
41 t 1, 2 u difficult
✓ 12.9 12.8 12.8

✓ a11715

42 ~~*3, 1 * y~~ bet. x + y Seq. II

*3, 1 y

Monday, May 23, 1921

A 7577 cont. from p. 173.

589 · 5 5.0 – 70.2

A very ft. br. band which is in the correct position for 4686 of a ft. star.

56

The same thing marked on A 290; but certainly very ft.
Also seen on A 2890.

wrong star

v 3, 2 w Seq. IV
13.5

Seq. IV

u 4 v	13.5	
v 3 w	13.4	13.4

May 23, 1921
A7577

590 Hβ, Hγ br. 5 6.0 – 7.6 (X 1895)
within C.P.D.
57 well seen also on A2890

22, 28. Sep. IV

~~954 & 955~~ 594 & 595 indistinct bright lines but I can not confirm them on other plates.
~~954~~ 594 comes in correct position for 4686 of a star on chart plate but I had rather confirm it before announcing.

Monday June 6, 1921

a 7577 cont'd

orig no.

917 Gas. neb. 5 39.9 − 70 45 (1875)
5007, Hβ seen near?
condensation prominent

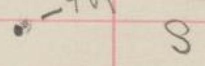
58

Sep. V
u 4, & 3 v
14.1 14.0 14.0
hazy. n.f. of a line of 3

952 }
953 } Large neb.
same In field "Large possibly ring"
as 258 on Lines too much interlaced
a 2901 to estimate

61

969 Hβ, Hγ bright.
5 29.2 − 69 14 neb. carefully ident.
On chart this object consists of
51 2 nuclei, the northern being distinctly stellar
~~62~~



the southern being hazy &
See also p. 170 nebulous. The bright lines
emanate from the s. ~~f.~~ p. & nebulous
object.

Tuesday, June 7, 1921

233 A 2900
4 56.6 −66 3K N.G.C. 1763

Omit

Not sure of N. lines.
76 gives it Hβ, Hγ bright, but
evidently too much a blur on
all plates.
On chart plate, there are several
stars involved in neb.
Sect XIII has no obs. of N. lines

217 5 22.2 −68 3

26a Very indefinite. See Rems in 76.
Given in Sect

240 4 52.0 −67 6

59 Neb. about star.

231 4 57.3 − 66 33

60 Faint. 5007 + Hγ seen, hazy + ill-defined. Best in A2889
too diffuse to est. mag. Precedes ab. star
N • neb S

Wed. June 8, 1921

30 Doradus.	nebular lines on all plates.	

2
63

Saturday, June 18, 1921

S Doradus 5 18.9 −69 21
No. 49 (Currents)

Am 1791
m
Aq 258

The star appears very certainly fainter on Aq 258 than on Am 1791.

If really variable, it is the only known example of a variable of P Cygni type of spectrum

except perhaps +11°4673 See H.B. 762.

Var.

no	p.
179	9
180	2
181	
182	41
183	47
184	64
185	90
186	129
187	134
188	176
189	108, 122
190	121
191	114
192	51