Wednesday, January 2$\overset{3}{\cancel{4}}$. 1900 $\frac{22^h}{\cancel{10}}$

√ X 49908 $_2^3$ o Sag.
1K. very thin image

X 49909 $_2^3$ ζ Tucanae
Not ζ² Tucanae. 1st type spectrum on plate. too faint to classify.

X 49910 $_2^1$ ν Phoeni.
nothing seen.

√ X 49911 $_2^5$ η Cent.
Hβ dark is sharply defined and superposed on a bright band. The edges of the bright band are faintly dark. The brightness towards red is a little more intense than that towards violet.
Hγ dark is sharply defined. The Orion lines are very broad.

January 23, 1900

✓ X9912 $_2^4$ η Lupi.

B3A. Lines a little wide or rather hazy. Faint traces of X4149 and X4641 seen. Triplet near Hδ not seen.

X9913 qual. 1.

✓ X9907 $_2^5$ θ Scorpii

Narrow lines probably like α Carinae.
Compared with X7813, α Carinae this sp. is seen to be like α Carinae

✓ 49906 $_2^4$ π Scorpii
Lines double. Br. comp twr. red.

✓ 49905 $_2^4$ ζ Cent.
Lines closely double
Can not determine position of the brighter component.

X9904 qual. 1.

January 23, 1900.

✓ X9903 $_2^4$ α Arae
Hβ bright with a faint dark line superposed. Hγ triple with ~~du~~ bright edges.
Hδ dark well-defined with hazy edges. Orion lines = B3A, and are wide almost double.

✓ X9902 μ¹ Scorpii
μ¹. Lines double. Stronger component is twr. violet.

✓ μ² B2A. Lines sharp.

✓ X9901 $_2^5$ π Scorpii.
Br. comp. twr. violet.
Lines widely double.
Lines doublet are 4925, (Hβ hazy) 4471, 4387, Hγ, 4144, 4120, Hδ, 4026, (4009 ?) Hε.
The br. comp. is at least three times as intense as the fainter

✓ X9900 $_2^4$ β Lupi.
Lines single, well-defined, almost as sharp as the lines in ζ Cent. which appear on the edge of the plate, from Hβ to Hγ. The line 4712 looks hazy or double.

January 23, 1900.

✓ X 9897,^{4} ε Cap.
B5A.
Lines hazy.
As compared with X 5692, the hydrogen lines are much wider on X 9897, and appear to show change not due to exposure since on 9896, taken the same night, the lines are narrow.

✓ X 9896,^{4} A.G.C. 22297.
Lines sharp.
Hβ not distinctly seen, but appears to be very faintly dark.

✓ X 9895,^{4} κ^{1} Apodis.

κ^{1} Hβ strongly bright.
This is an excellent example of a star having a variable Hβ line. The first peculiarity noted about this Hβ was that it was absent or very faint (see X 6794). Perhaps other spectra showing Hβ faint or absent may also have Hβ bright at times.

January 23, 1900.

X 9895 κ^{1} Apodis. (cont.)
~~Edge of [illegible] bright Hβ appears like a dark line.~~ Both edges are slightly dark.
4471, 4387 & Hγ, 4144 are double. The *stronger* component appears to be towards the violet.

✓ κ^{2} B8A.

✓ X 9894,^{3} γ Phoen. S.M.P. 369.
K or K5M. Very ~~thin~~

✓ X 9893,^{3} λ Hydri
K5M.
Compare with 9784

✓ X 9890,^{3} S.M.P. 7910.
K, possibly K2M
G band not dissolved.
Lines 4383 & 4405 stand out prominently as in α Tauri.

Wednesday, Jan. 24, 1906 3h

√ X9930 $_2^4$ α Par. Iso

Red end. Line 4925 seen possibly "4" and "6" ~~also~~ glimpsed.
Lines very sharp.
A number of very faint dark lines are seen in extreme red, but they are too faint to be measured. They may be defects.

√ X9931 $_2^3$ α Lucanae. Iso
Too poor.

√ X9932 $_2^3$ π Hydrae

K. very narrow.

√ X9933 $_2^4$ α Gruis.

4471 > 4481
B5A? lines very hazy ~~4144~~ 4120 barely seen. 4128-4131 and 4144 about equal.

Jan. 24, 1906.

√ X9934 $_2^4$ α Gruis.
4471 $\overset{?}{>}$ 4481
4144, 4128-4131, 4120 flt. and hazy. All lines wide.

√ X9938 $_2^4$ ζ Cent.
Lines a little wide and hazy.

√ X9939 $_2^{3i}$ α Arae
Hβ bright
Sp. too poor to study closely.

√ X9941 $_2^4$ α Arae
Hβ bright with dark edges.
Hγ & Hδ extremely wide and ill-defined.
Some of the Orion lines look double. All are wide and very hazy.
This spectrum certainly shows changes in the width of lines.

√ X9942 $_2^3$ ζ Cent.
Lines hazy.

√ X9943 $_2^3$ α Arae
Hβ br. with dark edges—little stronger tow. V.
Orion lines wide and hazy.
Hγ slightly tipped, edges.
Image narrow.

Jan. 24, 1$\overset{9}{8}$00

√ X49944 $_2^4$ π Scorpii.
Lines double. Brt. tow. red.

√ X49963 $_2^4$ δ Sag. Iso.

Two exposures, one is quite dense and the red end is well shown. Lines 4925 is present, also line "4" (λ 5015) is faintly seen.

√ X49964 $_2^5$ α Pav. Iso.

These two-prism short plates are taken with the same ~~number~~ two prisms as γ Velorum and have the same dispersion as that designated "two prisms short"
Lines 4922 & 5015 seen.

4922 Int. 15? Region so thin that it is hard to estimate

5015 3.

5046 1.

No other lines seen.

Jan. 24, 1900.

√ X49965 $_2^4$ β Hydri.
Iso.
Red end in poor focus.
Sp. G.

√ X49966 $_2^4$ α Erid. Iso.

4922 & 5015 seen, of about same intensities as in α Pav.
No lines seen in extreme red.

X49967 $_2^2$ α Scorpii Too poor

√ X49968 $_2^3$ λ Sag. Iso.
K
Red end not clear.

√ X49969 $_2^3$ β Indi
Iso
Too thin

√ X49970 θ Erid. Seed. 1.

X49971 $_2^3$ η Lupi.
Lines wide. Image very thin.

Jan. 24, 1900.

✓ X 49972 2^4 α Arae.

Hβ bright with a faint dark line superposed and with dark edges on both sides.
Hγ very broad and complex.
Centrally there is a narrow dark line on each side of which appear hazy bright spaces (extremely faint) and on the extreme edges are hazy dark bands.
Hδ is wholly dark, the centre looks well defined but the edges are very hazy.
The Orion lines are broad.
4144 well marked.
4120 very faint.
4128-4131 barely seen.

✓ X 49973 2^4 α Pav. Ixo.

Red end thin.

✓ X 49974 2^4 α Gruis Ixo.

Lines in red not well seen.
Image too thin.

Jan. 24, 1900.

X 49975 2^2 λ Sag.
Too poor.

✓ X 49976 2^4 γ Gruis. Ixo.
Red too thin.
Three lines marked on plate.
One is line 4387. It looks triple on this plate. Lines 4481 & 4471 are distinctly single.
See remarks on special lines following Table D. Under line 4387, it is stated that the solar lines 4383, 4385 are present. On superpos~~ed~~ing X 9976 on α Pavonis it is seen that the helium line in α Pavonis corresponds to the line of greatest λ in γ Gruis and that the additional lines are the solar ones above referred to.
The second line marked is the well-known double 4128-4131.
The third is the line K. The image of the line K is very thin and hazy.
On X 9241, γ Gruis, K looks double.

Jan. 24, 1900.

✓ X 9944 $_2^4$ α Erid. Isv.

Red end well seen.
Lines 4922, 5023, & 5048 seen.

✓ X 9945 $_2^4$ α Arae
Hβ bright with a dark line superposed and with slightly dark edges.
Hγ has a central dark line, then two faint bright spaces and then two hazy dark bands.
Other hydrogen lines very broad and hazy.
Orion lines broad.

✓ X 9946 $_2^4$ η Sag.
Mb.

✓ X 9947 $_2^4$ α Pis. Aust.
Hyd. lines hazy, K line hazy towards red. 'Solar lines' fairly narrow.

Thursday, Jan. 25, 1900 0 ✓

✓ X 9948 $_2^4$ η Lupi.

Lines double. 4387, 4120 are certainly double!

✓ X 9949 $_2^3$ η Arae.

K5M? Image too thin.

✓ X 9950 $_2^4$ α Arae
Hβ bright with dark central thread and with dark bands on each side.
At Hγ the bright spaces resemble two bright lines superposed on a wide dark band.
All the Orion lines are broad.
Bright streaks are seen as in μ Centauri.

✓ X 9951 $_2^3$ β Cor. Aust.
G5K? Image very thin.

✓ X 9952 $_2^4$ α Scorpii.
Very thin image except at extreme red where the lines are blurred.

Jan. 25, 1900

✓ X 9953 $_2^4$ ζ Sag.
A2 F. Lines not sharp.

✓ X 9954 $_2^4$ α Indi
K.

✓ X 9955 $_2^5$ α Pis. Aust.
Lines fairly well-defined. K has not the haziness on edge of Jo. & that is frequently seen in ~~this~~ spectrum

✓ X 9956 $_2^4$ π Scorpii.
Lines double, Br. tow. violet.
4922, Hβ, 4471, 4387, Hγ, 4144, 4120, Hδ, 4026, 4009 Hε. Other hydrogen lines very wide.
Sep. = 10.
Br. = 3 times ft.

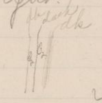
✓ X 9957 $_2^4$ α Arae
Hβ bright with a distinct dark central thread. This double reversal is well seen here.
Hγ has a distinct dark central line then two bright lines and then dark hazy edges.

Jan. 25, 1900.

X 9957 α Arae (cont.)
Hδ looks double.
Orion lines very wide, 4922 double?
Several others appear double.
4120 is very faint.

✓ X 9958 $_2^4$ κ Pav.
B3 A.

✓ X 9959 $_2^4$ α Arae
Hβ doubly reversed.
Hγ appears to consist of 2 dark lines whose edges of greater wave-length are bright.



The extreme edge of sh. λ is dark and hazy.

4387 looks double. All lines very broad.

✓ X 9960 $_2^4$ λ Sag. Iso.
K. Poor focus

✓ X 9961 $_2^4$ α Pav. Iso.
4922 & 5023 seen

Jan. 25, 1900

✓ X 9982, 4 α Phoen. Iso.
Poor focus at red end.

✓ X 9889, 3 S.M.P. 7009.

Ma – Breaks at 4762 and 4954 are slightly more marked than ~~those~~ at F.

X 9888, 4 S.M.P. 6979

S.M.P. 6979 + Mb (2)
S.M.P. 65~~94~~95 + A
A.G.C. 27100 + A
or S.M.P. 6929

X 9887, 3 ε Cor. Aust.
Probably not ε Cor. Aust.
Identify.

✓ X 9886, 3 S.M.P. 6278
Iso thin.

✓ X 9885, 4 k Scorpii.

B. A. Pec
Lines fairly well-defined.

Jan. 25, 1900

✓ X 9987, 4 δ Sag. Iso.
Poor. Lines wide.

✓ X 9884, 4 A.G.C. 22297.
Hβ appears to be a very faint dark line.
Lines 4553 & 4568 stand out prominently. 4481 is also more intense than in ordinary B.A stars. Lines narrow.

✓ X 9883, 4 ι Phoen.
Image very hazy. Fine lines barely seen. Hyd. lines fairly well-defined.

✓ X 9882, 3 S.M.P. 7573
Mb.

✓ X 9881, 3 S.M.P. 7168
K5M.

✓ X 9880, 3 S.M.P. 6857.
Iso poor. 2nd type.

Jan. 25, 1900

✓ X 9879,^{4} S. M. P. 6572.

A^3 F H. Poor image

✓ X 9878,^{3} ζ Ap.

K,

✓ X 9877,^{3} κ^2 Ap.

Very poor images.

K^1 - Hβ ~~not distinctly seen~~, bright

Hyd. Lines broad, Orion lines are narrower than the hydrogen

✓ K^2 - Too poor. 1st type

In K^1 the line 4471 is much narrower than Hγ. This is different from X 6794 and 6801 where the Orion lines are wider than the hydrogen.

Hβ appears blue dark with bright edge on the side of greater wave-length.

✓ X 9876,^{4} A. G. C. 20695

Oe5 B

✓ A. G. C. 20649

Oe5 B.

Jan. 25, 1900

✓ X 9875,$_2^4$ α Pis. Aust.

A2 F,

Lines show little contrast to the continuous spectrum. Image thin.

✓ X 9874,$_2^3$ α Tuc,

K2 or 5 M,

X 9873,$_2^2$ β Indi. Too poor

✓ X 9872,$_2^4$ α Indi.

K. Good image.

✓ X 9871,$_2^4$ α Arae.

Hβ bright, double reversal not distinctly seen.

Hγ shows the central dark line with bright spaces on both sides, and then dark hazy edges, similar to other plates.

All lines broad.

λ 4120 extremely faint.

✓ X 9870,$_2^4$ η Lupi.

Lines very hazy. 4471 double.

Saturday, Jan. 27, 1900 1^h

C 1663 θ Persei
F8 G.

C 3076 η Aquarii
B8A. Broad lines

C. 6277 η Aq.
B8A. Lines hazy, and very indistinct.

C 6390 η Aquarii
B8A. Orion lines indistinct & hazy.

C 6075 H.P. 557
A Pec. lines sharp.

C 6081 H.P. 555.
Lines sharp. Solar lines less intense than in α Cygni.

Monday, Jan. 28, 1900. $21^h 30^m$

Time of exposing X plates.

X α Canis Majoris exposed 30^s
X 3896 δ Phoenicis " 204^m

Limit 30^s to 204^m.

X 8174 A.G.C. ~~8+~~ 10534 was exposed 242^m, but as there are two exposures on the plate, each had probably 121^m.

Monday Jan. 29 1900 0^h 3^m

Measures of lines in β Crucis 48361 between H_ε and H_δ.

Scale D 1337

3970.2 H_ε	0	Diff. in λ	
		5.2	
3975.2	0.3		This line makes H_ε look double, but may be due to focus
3982.8	1.9	7.6	double
	2.1		
		12.1	
3994.9	3.8		
		14.6	
4009.5	6.0		
		16.9	
4026.4	8.4		
	13.7		A very faint double
40~~70~~69.4	14.8		
		2.6	
4072.0	15.2		
		3.9	
4075.9	15.7		
	16.1		faint
4084.9	16.9		faint
		4.3	
4089.2	17.3		
	18.6		Very faint
H_δ	19.2		

Wednesday, Jan. 30. 1900 23^h

48476 ζ² Scorpii

Identification of bright lines between 4471 & 4543 in A.G.C. 22748 and A.G.C. 22843.

Measured on A.G.C. 22748 with reticle 1/5 mm.

4471	0		4471.8	
Br.	4.0	=	$\overset{19.2}{4491.0}$	4471.8
"	8.8	=		$\overset{42.2}{4514.0}$
4543	16.5		4543.6	

16.5) 71.8 (4.8
580
1380
1320

4.8
4.0
19.20

4.8
8.8
384
384
42.24

Measured on A.G.C. 22843 with reticle 1/5 mm.

4471.8	0	bright on edge of pr. λ
bright.	8.8	
4543.6	17.0	

Evidently line 4514.5 is bright in both these spectra.
Line 4491 is not seen in this spectrum

Jan. 30. 1900

The bright lines just measured in A.G.C. 22748 and 22883 do not correspond to the bright lines in μ Centauri.

By superposing A.G.C. 22748 on θ Arae 48657 and β Crucis X 8361, the bright streak between 4471 and 4514 appears to have a little shorter wave-length than the faint Orion line 4490.6.

X 6598 gives perhaps the best image of A.G.C. 22748 of any plate. Line 4514.5 is here wholly dark, and the bright line 4490 is not seen.

Monday, Feb. 5, 1900 2 30

X 6455 H.P. 1368 or A.G.C. 9181.

This is one of the plates on which Hβ in this spectrum was found to be brighter than Hβ bright in ω Canis Majoris. The images on this plate are very dense but there are also secondary images, narrow ones, of each star. On this image which appears to have been overlooked before, Hγ is bright as well as Hβ. Hγ consists of a dark band on which is superposed a central bright line. Hδ appears dark with a bright line on the edge of sh. wave-length, but this may be a defect, the image is too narrow to be well seen at this end. The Hγ bright line is distinctly seen.

X 6432 H.P. 1368
The secondary images are too faint.

Feb. 5, 1900.

C10832 H.P.1368
Hβ is a well-defined dark line
" br. in ω Can. Maj.

C10846 H.P.1368
Hβ dark – image very faint.

C10852 H.P.1368
Hβ dark
" br. in ω

C10841 H.P.1368
Hβ dark
" br. in ω

C11597
H.P.1368 not on plate

Feb. 5, 1900.

X6210 A.G.C. 9181.
This spectrum is B5A, except that 4481 seems fainter than in most B5A stars. But 4128-4131 = 4120 and K > 3927. K is well-defined while the Orion lines are rather broad

4
X44~~1~~17
A.G.C. 9181 appears on this plate to be B3A but the focus is poor and the region of line K is not well seen.

A.G.C. 9198 ω Canis Majoris, shows a bright line on edge of Hγ, wave-length of line 4471.8.

X 4518 A.G.C. 9181
Image too indistinct to decide whether it is B3 or 5A.

X8308 A.G.C. 9181.
Image too faint. But λ4481 is well seen

X8309 A.G.C. 9181.
Like X8308

X8300 A.G.C. 9181.
Hβ distinctly dark and well-marked
Sp. B5A

Wednesday, Feb. $\overset{6}{5}$. 1900. 22^h 31^m

✓ X 9990 $^4_2$ α Arae.

Hβ bright, with dark hazy edges, and with a narrow dark line superposed.
4471.8 seems slightly bright on the edge of greater wave-length. This may be the space between 4471 and 4481.
Hγ is complex. It consists first of a broad hazy dark band, on which is superposed a faint bright band which has a dark line superposed on it. The dark central line is here more conspicuous than the brightness. The brightness is just the same intensity as the continuous spectrum.
Other hydrogen lines are very broad.
Orion lines very broad.
The shorter wave-length side of Hγ here seems to be divided up into at least three dark lines.

Feb. 6, 1900

✓ X 10001 $^4_2$ α Col. Iso
No lines seen in red.
Hβ wide, no brightness seen.
All lines wide. Image thin at Hβ.

✓ X 10013 $^4_2$ α Car. Iso
Image dense. Focus not very good for red. Violet fairly clear.
D lines not included.

✓ X 9978 $^4_2$ α Triang. Aust. Iso.
Too poor.

✓ X 997$\overset{9}{8}$ $^3_2$ α Lucanae. Iso
Too poor.

✓ X 9980 $^4_2$ α Phoen. Iso.
Too poor

X 9981 $^1_2$ α Pis. Aust. Iso.
Too poor.

✓ X 9982 $^4_2$ α Hydr. Iso.
Focus very poor for red,
All lines hazy.

✓ X 9984 $^5_2$ α Pav. ~~Iso~~
B3A.

Feb. 6. 1900.

✓ X 9985 $_2^3$ θ Erid. Iso.
No lines seen ~~at~~ in red end,
very poor plate.

✓ X 9986 $_2^4$ β Leporis Iso.
No lines seen in red.

✓ X 9987 $_2^4$ β Pav. ~~Iso~~.
Sp. Ar F K < H.

✓ X 9988 $_2^5$ α Telescopii.
B 3 A? 4481 is about
as intense as in B 5 A.
4128–4131 are seen separate,
both faint. Lines sharp as
in γ Velorum.
Note that 4481 is more intense
than in ordinary. B 3 A stars.

✓ X 9989 $_2^5$ γ Gruis.
4481 slightly > 4471
4128–4131 well seen.
4144 faint.
Region of K hazy and in poor focus.

Feb. 6, 1900.

✓ X 9991 $_2^5$ σ Sag. Iso.
Lines broad
No lines clearly seen at red end
except 4922.1. Traces of 5015
& 5046 may be present.

✓ X 9992 $_2^5$ γ Gruis. Iso.
4481 = 1.3 (4471)
No lines of gr. λ than Hβ.

✓ X 9993 $_2^3$ ζ Tucanae.
Too thin.

✓ X 9994 $_2^3$ λ Sag. Iso.
Too poor.

✓ X 9995 $_2^5$ α Pis. Aust. Iso.
Lines in red in very poor focus

✓ X 9996 $_2^4$ α Erid.
B 3 or 5 A. Lines broad.
Orion lines indistinct.

✓ X 9999 $_2^4$ β Gruis Iso.
Shows the breaks at red end

Feb. 6. 1900.

✓ X10000$_2^3$ α Phoen Iso.
K. Poor of red end.

✓ X10002$_2^4$ θ Erid.
a & F?
K line seem ~~thick~~ intense as compared with the faintness of the solar lines. Star is double both components being bright. No Orion lines found. Lines a little hazy.

✓ X10003$_2^3$ β Col Iso.
Too poor.

✓ X10006$_2^4$ α Hydr.
F.
Lines broad.

✓ X10007$_2^3$ α Horologii.
K.

✓ X10008$_2^5$ ζ Can. Maj.
Not ζ Can. Maj.
~~Probably δ² or η Can Maj.~~
Lines very sharp. ~~Spectrum nearest like that of γ Orionis.~~
Spectrum is seen to be B & A, lines sharp. Resembles β Crucis except that 3944 and 4481 are here m

Feb. 7, 1900. 0^h

X10008 (see preceding page)
Record checks for ζ Can. Maj. but it is not that spectrum. It is probably ε Canis Majoris. Compared with X8940 ε Can. Maj. these ~~spectrum~~ spectra ~~is~~ are exactly like.

✓ ¢ X10011$_2^3$ υ Ceti
Too thin.

X X10012$_2^3$ ε Leporis.
Not ε Leporis. First type.
Plate too thin to classify spectrum with certainty. Omit number.

✓ X10014$_2^4$ α Arae
Denser image
Hβ doubly reversed. The dark line superposed on the bright Hβ is faint but well seen.
The double reversion of Hγ is well seen. The central line is thin and dark. The brightness on each side of this central dark line is hazy like a band, not like a line. The wide dark edges extend on each [illegible] of the brightness.

Feb. 7, 1900.

X10014 α Arae (cont.)
Hβ looks double.
4387 looks double. All lines broad
Two images on plate.

✓ X10015 $_2^4$ β Scuti.
K? Too thin.

✓ X10017 $_2^3$ τ^4 Erid.
Mb. Too thin.

✓ X10018 ^{4} θ Erid.
A2F? Very thin.

✓ X10019 $_2^4$ σ Sag.
No lines seen in red for B3A. Lines broad. Iso.

✓ X10020 $_2^3$ γ Gruis. Iso.
No lines seen in red.
Very poor.

✓ X10021 $_2^{32}$ θ Erid.
Too poor.

✓ X10022 $_2^3$ τ Sag.
K. Too thin.

Feb. 7, 1900.

✓ X10023 $_2^3$ ε Pav.
Too thin. λ4481 very sharp

✓ X10025 $_2^4$ θ Erid.
Good image. K = 0.5 H, but the solar lines are faint.

✓ X10026 $_2^4$ α Sag.
Probably like γ Gruis. Image too faint.

X10027 $_2^2$ β Scuti. Too poor

X10028 $_2^3$ ν Octantis
✓ K? Too thin

X10029 $_1$ b Aquar. Too poor

✓ X10030 ^{32} α Col.
Hβ has thin central brightness.

✓ X10031 $_2^3$ ξ Cap.
Too thin

✓ X10032 $_2^4$ α Tucanae
K. Too thin

Feb. 7, 1900

√ X10033 $_{2}{}^{5}$ γ Luc.
For F5 G. Too thin

√ X10034 $_{2}{}^{4}$ δ R Hydri
A.

√ X10035 $_{2}{}^{4}$ α Retic.
K.?

√ X10036 $_{2}{}^{4}$ η Sag.
Mb. Image thin.

√ X10037 $_{2}{}^{4}$ α Luc.
K?

√ X10050 $_{2}{}^{4}$ σ Sag.
K.

Feb. 7, 1900. 23h 30m

√ X10079 ,^{3} γ Mensae.
Too poor. Probably ~~first~~ second type

√ X10080 ,4 S.M.P. 1310 ξ Col.
A.G.C. 7011 + K.

√ + " 6931 Fainter star on plate appears also Whic sp. K. Identify.

⊥ √ X10081 ,4 S.M.P. 1685
Ma. Good image.

√ X10082 ,4 S.M.P. 2171
A3F
Solar lines rather faint for A3F but K line is about as intense as in that class.

+ X10078 ,4 η² Pictoris.
Two images on plate

η² √ (1) 2nd type. Prob. K5 M, may be K. Line 4227 not seen

η¹ √ (2) Probably F5 G.

Feb. 7, 1900.

✓ X10076, ^{4} S.M.P. 216.
G.

✓ X10077, ^{4} ε Cap.
This is undoubtedly a double star. The solar lines are almost as distinct on this plate as the Orion lines.
Line 4387 looks triple. This is probably due to the presence of the solar lines 4383 – 4385.
Line 4481 looks double.
Hydrogen lines are not sharp on this plate.

Thursday Feb. 8, 1900 0^h

✓ X10052 $_2^4$ α Gruis.
B5A.
Lines broad and hazy.

✓ X10053 $_2^3$ ι Gruis A.G.C. 3140
K.

✓ X10054 $_2^3$ ζ Cap.
G. Rather thin.

✓ X10055 $_2^3$ ε Phoen.
K? Too thin.

✓ X10056 $_2^4$ θ Ind.
A2F. Lines a little hazy.

✓ X10057, ^{3} S.M.P. 142 ι Hydræ.
Too poor. Max. from bright bands I, I-II and II. Light breaks not clearly seen. Focus too poor.

✓ X10058, ^{3} S.M.P. 146 ρ Phoen.
Too poor.

✓ X10059, ^{3} S.M.P. 220 κ Tuc.
Too poor. I-II

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✓ X10060 $_1{}^4$ η² Pictoris
Too poor

✓ X10061 4 S. M. P. 216.
F8G. Very poor focus.

✓ X1003~~7~~9 $_2$ θ Erid.
A2F. Lines a little hazy.

✓ X10038 $_2{}^3$ ι Gruis.
K. Too thin.

✓ X10040 $_2{}^4$ δ Sag.
K.

✓ X10041 $_2{}^5$ α Gruis.
B5A.
Lines broad,

✓ X10042 $_2{}^4$ γ Tucanae.
F5G? Too thin.

✓ X10043 $_2{}^4$ ~~κ~~ φ Erid.
B8A, Lines broad.

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✓ X10044 $_2{}^4$ β Cor. Aust.
K? Too thin.

✓ X10045 $_2{}^5$ γ Gruis.
Excellent. Shows the iron and solar lines at 4383–4387, A well-marked line appears of gr λ than 4481 (some distance from 4481) Is this a solar line?

✓ X10046 $_2{}^4$ α Doradus
Peculiar. 4128–4131 are the only lines of marked intensity except the hyd lines.
4481 seen.
4471 not seen.
Very few lines. Some extremely faint lines are probably solar.

✓ X10048 $_2{}^5$ β Gruis.
Mb. 4762 & 4954 bright edged next break is faint

✓ X10049 $_2{}^4$ γ Tuc
F5G.

Feb. 8, 1900.

✓ X10062 4 S.M.P. 337.
No lines seen except the hydrogen lines. These are very broad.

✓ X10063, 3 ζ Phoen.
2nd type, (very poor.
Only the bright bands I & II stand out.

✓ X10064, 4 S.M.P. 142
Poor. Probably K5M

✓ X10065, 4 S.M.P. 220.

Focus very poor. F5G?

T X10066, 3 γ Mensae.

✓ K or K5M
Very poor focus. Bright bands I and I + II are seen and G band.

✓ X10076, 4 G S.M.P. 216.

+ X10067, 4 S.M.P. 1388
K

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X10068, 4 S.M.P. 2277
✓

S.M.P. 2277 ✓ (1) K.
A.G.C. 10856 + (2) B3A. Hβ off the plate.

✓ X10069, 3 ξ Tel.
Ma.
Break at 4762 distinctly seen though the image is faint.

X10070, 4 S.M.P. 142

✓ Probably K5M. Breaks are not distinctly seen. Image extends well into the red.
Band I-II not intense enough for Ma.

✓ X10071, 4 S.M.P. 337.

Too poor.
A or B8 or 9A.
K hazy and faint.
4481 faint but narrow.
4471 not clearly seen.
Lines near Hδ very hazy.
Probably A.

Feb. 8, 1900.

✓ X 10072, 4 S.M.P. 146.
Image very hazy. Appearance of bright bands throughout the spectrum.
From this plate, spectrum might be in any class from A5 F to F5 G.

X 10073, 2 χ Phoen. Too poor.

+ ✓ X 10074, 4 S.M.P. 1293

S.m.P. 1293 (1) K

β Pictoris (2) A5 F?

A.G.C. 7034 (3) ft A5 F?

Saturday, Feb. 9, 1900 22h 30m

Measures of lines in ε Canis Majoris X 8940 Isd.

Line	Measure	
Hβ	0	
4712	11.6	
4705	12.2	
4697	12.8	
4685	14.1 Very ft.	
4675	14.7	
4661	15.8	
not in Table D.	16.2 Very ft.	Very faint line not in Table IV.
4649	16.9	
4641	17.4	
	17.8 Very ft.	Comp. of sh. λ of 4641.
4630	18.6	
4619	19.4	
not in Table D. 4611	19.9 Very ft.	~~Not in Table IV.~~
	20.4	double. Not in Table IV or Table D.
	20.6	
4603	21.1	These three Equal in intensities.
4598	21.5	4603 is much fainter in β Crucis than in ε Can. Maj.
4591	22.0	
4576	23.4	
4568	24.1	
4553	25.4	
4531	27.7	
4481	32.2	

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Measures of ψ 8940 cont.

	Measure		ψ 8361 β Crucis		
4471	33.2		0		
		1.9			
4452?	35.1		1.8		
		2.3			
4447	35.6		2.2		
			2.9 fh.		
		3.7			
4437	36.7		3.4		
		5.5			
4417	38.7		5.6		
4415	38.9	5.9	5.8		
$439\overset{5}{8}$	40.9	Very ft.			
4387	41.9				
4373	43.4				
4367	44.0				
4350	45.9	Double			
4346	46.2				
h γ 4340.7	46.8			λs derived by dividing the intervals.	
4334 ~~Approx. 4337~~	47.2	Very ft.		Approx. 4337.	
4327	47.8			Approx. 4332	
4320	49.2			" 4320	
4318	49.4			" 4319.	
4304?	50.9			" 4306	
4294?	51.9			" 4298	This line is fainter in β Crucis than in ε Can. Maj.
4285	~~52~~ 53.0			" 4289	
4276	54.1			" 4280.1	
4267	55.2			" 4271	
4254	56.8			" 4257	
	~~57.3~~				
4247	58.2	Very ft.		" 4246	
4242	58.8	& "		" 4241	
4237	60.0	" "		" 4231	

4471.8 = 38.2
4447.7 = 35.6
24.1
2.4
10λ = 1 scale

35.1
33.2
1.9

4471.8
19.0
4452.8

4447.7
4437.9
1.2) 9.8
8.2
~~8.2~~
0.9
7.3 8
~~16.4~~
~~23.78~~

~~4447.7~~
~~23.8~~
~~4423.9~~

4447.7
7.4
4440.3

Feb. 9, 1900

Measures of ψ 8940 (cont)

Not in Table 4190	64.8	faint	Approx. 41~~80~~ 92
4186	65.1	very faint	4189
4169	67.2	faint	" ~~4189.~~ 4172
	67.9	"	" 4166
4154	69.0	"	" 4157
4152	69.2		" 4155
4144	70.6		
	72.0	faint	
4120	73.6		
h δ	76.1		
	77.8		
	78.4		
4075	79.8		
	80.2		
	80.5		
4026	86.9		
4009	89.4		
3995	91.6		
h ε	95.2		
3994	96.2		
h ζ	108.4		

4154.7 = 69.0
~~4169.2~~ = 67.9
4169.2 = 67.2
4186.2 = 65.1

4169.2
4154.7
1.8) 14.5 (8.1
14 4
10

8.1
0.7
5.67

4169.2
5.7
4163.5

Feb. 10. 1900 8ʰ

Examination of later plates of κ^1 Apodis. On X 6794 and X 6801 the spectrum was seen to be peculiar, and the request was sent to Peru for photographs to be taken. The following plates have come.

√ X 9830,⁴ κ^1_2 Apodis.

κ^1

Hβ bright on edge of gr. l.

The brightness = 3

Line 4471, double, fainter comp. towards red.
All the lines look wide or double but the two components are not seen as distinctly as at 4471, This component may be line 4481, Hydrogen lines look double as well as the Orion. This is different from X 6794 or X 6801, where only the Orion lines were broad.
The ~~spectrum~~ system is evidently binary one star being of Orion type with Hβ bright, and the other as yet undetermined.
Orion lines seen. 4471, ~~4415~~-4417, 4387, 4144, 4026, 4009. Faint traces near 4649.

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X 9830 κ^1_2 Ap.
√ κ^2 Ap. B8A.

X 9812,⁴ κ^1_2 Ap.
√ κ^1 Hβ bright = 3
Spectrum very nearly like ~~that on~~ X 9830. Lines look double,
4120 seen, very faint.
Hγ double.
Br. components of lines seem to be towards the violet.

√ κ^2 ap = B8A.
√ X 9596,⁴ κ^1_2 Apodis
Hβ bright = 1
Clock irregular.
There appears to be a dark line at Hβ also, but the image is too faint to determine whether Hβ bright is superposed on a dark line or whether one edge of Hβ bright is dark.

√ κ^2. Only the hydrogen lines and 4026 ~~still~~ seen.

Feb. 10, 1900

49895,4 κ² Apodis.

✓ Hβ bright = 5

no dark bands seen at Hβ, or very faint if present.

Hγ dark and double.

4144 double

4471 double, fainter comp. towards red or this may be λ4481.

4387 double,

✓ κ² = B8A. Lines 4471 & 4481 well seen.

✓ 49877,3 κ² Ap.

Hβ bright? Image very faint at red end.

All lines wide. Image ft.

κ² Probably B8A.

✓

Wednesday, Feb. 14, 1900 0h 30m

List of the lines seen in β Orionis 47966.

λ	Int		
5015	5 ?	Too hazy.	~~Orion~~ Helium
4922,1	12		"
Hβ	40		Hyd.
4712	3		Helium?
4584	2		Solar.
4576	1		Orion
4568	1		"
4553	1		"
4549	2		Solar.
4481	10	4522.9 2 4508.5 2	Or. + solar
4471	10		Helium
4387	5		"
4307	1		Orion
4352	3		Solar
Hγ	40		Hyd.
4267	5		~~[illegible]~~ Carbon
4233	4		Solar.
4179	2		"
4173	2		"
4163	2		"
4154	2		Orion
4144	7		
4131	8.		
4128	8		
4120	6		
Hδ	40		

Friday, Feb. 15, 1900   22h

Line in β Orionis bet. K and 3964.6. This line has been measured in γ Orionis and the λ 3936.1 found. See Bk. VII, p. 118.

This line is measured in β Orionis in C.S.M. 17, p. 7.

	λ	meas.
	3964.6	78870
	Unk.	82134
K.	3933.8	82418
	30.8	

3264
284
3548

30.800 | .0086
28384
24160

284
.0086
1704
2272
2.4424

3933.8
2.4
3936.2

? Unknown.

Feb. 16. 1900   0h

47966 β Orionis. Intensities of lines

λ	Int.	
5015	10	He
4922	10	"
$H\beta$	20	"
4712	3	
4629.9	1	
4584	2	
4576	1	
4568	1	
4553	2	
4549		
4522.9	1	
4508.5	1	
4481	10	
4471	10	
4437.9	1	
4415-17	1?	ft. trace seen.
4387	6	
4367	1	
4352	2.5	
$H\gamma$	40	
4267	5	
4233	4	
Ft. solar	2	
lines	2	
	2	
	2	

Feb. 16. 1900

47966 β Ori

4144	6	
4131	8	
4128	8	
4120	5	
Hδ	40	
4075	2	
4026	9	
4009	5	
3994	4	
Hε	30	
H	15	
3964 K	5	
K	17	
3926	5	
3920	4	
3918	4	
Hζ	30	
3872	3	Image of line clear
3867	3	" " " "
3863	6	" " " "
3856	~~3~~6	" " " "
3854	~~1~~4	" " " "
Hη	35	Image too faint
3819	15	

Wednesday, Feb. 20, 1900 23^{c}

– Leporis γ 6204.

Line that was identified as Orion line 4387.8 seems to have shorter wave-length and may perhaps be the solar lines 4383–4385. In plates taken with one prism slight differences in wave lengths can not be detected.

Wednesday Feb. 21. 0h 30m

α Andromedae 47987 Lines seen
compared w. 47966 β Orionis.

	Int.
Hβ	80
4481	5
4471	5
Hγ	8
4267	4
4233	3
ft solar lines	2
4144	2
	3
4131	5
4128	5
4120	1 very ft.
Hδ	80
4026	3
Hε	80
K	5

Calcium line H is separated from Hε.

Thursday Feb. 22. 1900 2h

Lines in ζ Orionis × 8115.
Iso. plate

y	1
x	2
Hβ'	4
5015	Image too thin. Trace seen
4922	" " " " "
Hβ	30
4712	5
4685	5
4649	30
4675	1
×4661	1
4568	1
4553	3
Hγ' 4543	~~3.5~~ 4
4481	1
4471	25
4415-4417	2
4387	6
4350	× 2
~~4373~~	~~2~~
4363	2
4357	2
Hγ	25
4267	1
4254	1

Feb. 22, 1900

Lines in ζ Orionis (cont.)

4200	3
4186	3
4144	x
4120	4
4116	10
Hδ	25
4096	6
4089	20
4075	2
4072	5 seen as a hazy band.
4069	
4026	22
4009	2
Hε	25
3964	2
K	4 fine.

Image too hazy beyond K.

Friday, Feb. 23, 1900 0h

✓ 410118 S. M. P. 2277
very poor image on the edge of the plate. Probably K5M, though it may be K, G band off the plate.

✓ S. M. P. 2300 or A. G. C. 10856

Good image. B3A. Hβ dark & well defined. Hγ has a bright band on the side of shorter λ. 4471 has a fainter br. band on the side of gr. λ. These look like defects and probably are. Similar bright bands are seen on one plate of κ Scorpii.
A narrow image ~~appears~~ of S. M. P. 2300 appears above the one showing bright lines and shows no trace of the bright lines.

On X10068 there is no trace of these bright lines in S. M. P. 2300

Feb. 23. 1900.

✓ X 10087 S. M. P. 1066.

η¹ Pictoris ✓ + (1) F5G

η² " ✓ + (2) K5M. Image seen from G band to Hβ

Faint break seen at 4712.

✓ + X 10088 S. M. P. 1416.

Mb (1)

✓ X 10094, 4 S. M. P. 1775.

$B\overset{3}{5}A$.

Lines a little hazy. 4120 very faint, and 4128-4131 is seen and appears twice as intense as 4120, but both are faint.
4481 is hardly intense enough for class B5A.

Feb. 23, 1900.

X 10098, 3 η¹,² Pictoris

✓ η¹ F5G

✓ η² K or K5M. Too poor.

✓ X ~~0101~~ 10101, 3 S. M. P. 1293.

β Pictoris ✓ Narrow image. A2F?

S. M. P. 1293 On edge. K? Not all on.

X 10102, 4 S. M. P. 1066.

✓ η¹ F5G

✓ η² K or K5M.

✓ X 10103, 4 ~~S. M. P. 1310~~ β Columbae

K. S. M. P. 1310 not on plates

✓ X 10092, 4 S. M. P. 1293.

Sp. K.

✓ β Pictoris A2 or 3 F. Solar lines ft.

Feb. 23. 1900

X 10089 S.M.P. 2303 – Vel.

√ γ Velorum, poor focus.
$H\beta$ not seen distinctly.
$H\gamma$, $H\delta$, $H\epsilon$ dark. $H\delta$ is the most intense as a dark line.
$H\gamma$ is barely seen while the unknown dark band of slightly shorter λ is well marked. On other plates of γ Velorum, $H\gamma$ has been distinctly seen. Does this spectrum change? or is it due to the quality of the plate?

√
S.M.P. 2303 A faint edge on the preceding side of γ Vel. Orion type. B3A?

A.G.C. 10741 + Prob. B3A. 4120 ft. 4009 ff. $H\beta$ not seen, may be due to faintness of the image at end of greater wavelength.

" 10873 √ + B3A. or B5A. Lines 4128–4131 seem slightly more intense than in B3A, but line 4481 is not any more intense than in B3A.

Feb. 23. 1900.

X 10089 (cont.)

A.G.C. 10941 + F5G. very ft.

√
" 10953 + B3A. 4120 ft.

√
" 10986 + B3A

√
" 10989 + Probably B3A.

√
" 11024 + $H\beta$ bright. Sp. probably B3A
Brightness of $H\beta$ = 1 image ft.

This plate is not in catalogue as having $H\beta$ bright.
Looked up on the following plates
B 13063 $H\beta$ dark?
B 13064 $H\beta$ not seen
" 12657 " " "
" 13038 " " " $H\gamma$ + $H\delta$ hazy.

BI 8888 $H\beta$ bright!

Feb. 23. 1900

X 10109 ,^{4} S.M.P. 1866.
η^1 and η^2 Pictoris
√ η^1 F5 G
√ η^2 K5 M.

√ X 10121 ,^{3} λ Hydri
K5 M.

+ X 10117 ,^{3} S.M.P. 1685

√ Probably Mb. Image thin but breaks are distinctly seen. Seems to be intermediate between ordinary Ma and Mb class.

X 10116 ,^{2} S.M.P. 2321.

Feb. 23. 1900

√ X 10114 ,^{4} β Columbae.
Sp. K.

√ X 10113 ,^{3} S.M.P. 1214 γ Mensae.
Several very narrow, burned-out images on the plate. Too poor to classify. Several bright lines which are probably defects.

√ X 10112 ,^{3} S.M.P. 369 γ Phoen.
Too thin. K or K5 M.

√ X 10111 ,^{3} κ Tuc.
very poor. Prob. F5 G.

√ X 10110 ,^{3} S.M.P. 2415
K or ~~K5 M~~, very poor.

√ X 10107 ,^{3} S.M.P. 7009
Ma.

Feb. 23. 1900

X10109,4 η^1_2 Pictoris.

✓ η^1 – F5G? very poor focus
✓ η^2 K or K5M " " "

✓ X10120, 4 ε Capricorni.
Hγ well-defined and narrow.
4387 hazy.
~~4407~~
4415 – 4417 seems more intense than in ordinary B3A or B8A plates. This may be due to the solar lines 4415 – 4417.

Line of ~~sh~~ greater λ than 4481 is almost as intense as 4481. This is probably line 4490.

Lines 4173 and 4179 are present.

Hβ dark and rather broad.

Saturday Feb. 2~~3~~4, 1900. 2^h

X10105 and 10106.
Both exposures & nos. on same plate.
✓ X1010~~5~~6 S.M.P. 2433
B2A. lines hazy, may be due to focus.

✓
A.G.C. 11424 A Vel. Good image B3A.

✓ X1010~~6~~5 S.M.P. 1649
+ Sp. K or K2M.

✓ X10100 S.M.P. 2321
+ A3F good image.

✓ + X10094 S.M.P. 775
B3A.

Feb 24, 1900.

✓ 41007̶5 I Carinae (broken)

K.

Monday, Feb. 26, 1900 0^h

4100~~88~~ 77 ✓ S. M. P. 216 + S. M. P. 369.

S. M. P. 216 not on plate. β Phoen. appears to have been photographed instead of S. M. P. 216.

✓ β Phoen. K.

✓ A. S. C. 965 K.

A second type spectrum appears on the plate, and is probably that of ~~A~~ S. M. P. 369.

✓ S. M. P. 369. Thin Sp. K.

Feb. 26. 1900.

✓ X10093 S.M.P. 2313 B Carinae

S.M.P. 2313 F5G. fair image

✓

A.G.C. 10613 + B3A

✓

" 10641 + Ma

✓

" 10639 + Probably B8A. * Traces of 4471 &
4481 are seen. 4387 seen, 4144 very
faint 4026 well defined.

" 10561 Only partly on the plate.
G or G5K. Omit unless seen
on other plates.

✓ X10119 ; δ Pis. Aust.

K.

δ Pis. Aust. Also on plate. Sp. A. K line very
✓ hazy and indistinct.

Feb. 26. 1900

✓ X10122 β Phoenicis

K

✓

A.G.C. 965 K. ft. image.

✓ X10108 S.M.P. 337 φ Phoen.
very poor focus. K line not
seen distinctly. 4026 and 4481
barely glimpsed. This spectrum
looks like one of Vogel's stars
which show only the hydrogen lines.

✓

A.G.C. 1973 + K. image rather faint.

Feb. 26. 1900 23^h

✓ X10124,^{4} A.G.C. 8034 ~~S.M.P. 1996~~

F5 or 8 G & poor focus.

✓ X10125 A.G.C.12593 Z Velorum

B3 or 5 A

Lines seen, Hβ, 4471, 4387, Hγ, 4144, Hδ, 4026, Hε, Hζ, Hη,

✓ X10130,^{3} S.M.P.1649

K? Very thin.

✓ X10131,^{3} S.M.P.2171

A3F

✓ X10132,^{3} S.M.P.2729

G.

✓ X10133,^{3} S.M.P.7009

Too faint. From bright bands it would be Ma

Tuesday, Feb. 27. 1900 1^h 30^m

✓ X10146 $_2^3$ κ Vel.

Iso. Very poor. No lines seen in red

✓ X10135,^{3} S.M.P.1214

Too poor. Small type

✓ X10136,^{4} S.M.P.1293

β Pictoris A2 F or A3 F.

S.M.P.1293+ ✓ Fainter star is K.

X10137,^{3} S.M.P. 1388

✓ Too poor. K?

✓ X10138 ^{4} S.M.P. 1943.

A.G.C.9733 (1) F_8G

✓ S.M.P.1943 (2) Like A.G.C. 14295

K may be here a little weaker than H, but the plate is too thin to show clearly the region of the line K

Feb. 27, 1900.

✓ X10139,^{4} / S. M. P. 2707

B5A. good example.
Lines a little broad.

✓ X10141 ^{3} S. M. P. 142
Too poor.

X10142,^{3} S. M. P. 25~~4~~3

e'₂ Carinae
e' On the plate from Hβ to Hγ.
✓ e² K, like α Bootis, good

✓ X10143,$_{2}^{ai}$ ι Carinae
Iso.
Red end in very poor focus.
The b lines are the strongest

X10144, α Columbae
✓ Very poor. Hβ not seen bright.
No lines seen in red end.

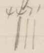
Feb. 27, 1900.

✓ X10134 ^{8}/ S. M. P. 1214
Too poor. Very narrow.
Prob. 2nd type.

ψ Phoenicis.
✓ X10123,^{4} ~~S. M. P. 369~~

Mb.

✓ X10140,^{ai} ε Capricorni
Narrow, poor image.
Hβ is very faint, perhaps due to the thinness of the image at end of gr. wave length.
Region of 4471



4471 is hazy, and has two fine lines on side of gr. λ. One is probably 4481, and the other is at λ 4490 approximately.
Lines 4172 + 4179 are nearly as intense as 4144.

February 28, 1~~8~~900 22h

Intensities of hydrogen lines in stars of Orion type having bright lines.

	μ Centr. X5633	η Can. Maj. X6224	J Velorum X4710	J Velorum X6376	ω Can. Maj. X6210	A.G.C. 9181 X6210	J Vel. X7376	A.G.C. 17717 X6448	ω Can. Maj. X6455	A.G.C. 9181 X6444
Hβ	10	8	2	0	5	2	0	6	2	4 5
Hγ	5	3	0	0	1	0	0	5	0	2
Hδ	3.5	2 Hδ < Hε	0	0	1 ?	0	0	1 ?	0	0
Hε	2	3	0	0	0	0	0	0	0	0
		4144 & 4120 appear slightly br. on edge of gr. λ! also the helium line 3926.8 has a br. edge on side of gr. λ.	Other hyd. lines broad. Orion lines narrow	Orion lines much narrower than hydrogen Hβ has the very slightest look of doubling		Is this spec. peculiar. Line 4069, 4072, 4079 are indistinctly seen, yet in general aspect the type is B5 A.		Image ft. at violet	Image turned out. Est. made on ft. image which is very narrow	Image too dense, Estimate made of the fainter image.

These two estimates are probably of no value except to show that Hβ is brighter in A.G.C. 9181 than in ω Can Maj.

February 28, 1900

Cont. of preceding

	ω Can. Maj. & A.G.C. 9181 X6432	ω Can. Maj. X4417	A.G.C. 9181 X4417	δ Cent X8295	μ Cent. X8362	α Arae X8574	α Arae X7809	α Columbae X8214	μ Cent. X7597
Hβ	Images	4	0	10	10	8	8	1	15
Hγ	too dense	1	0	6 (doubly reversed)	7	2 2	2, 2	0	12
Hδ		0	0	1	3	0		0	5
Hε		0	0	0	2	0		0	3
							Hδ looks triple, with the central dark comp. better defined than the outer components.	Hγ has a slight triple look, or as if a well-defined dark line is superposed on a hazy dark band	

February 28. 1900

Cont. of preceding

	V' Puppis	ρ Carinae	δ Cent	V' Puppis
	X8365	X8451	X8332	X8891
Hβ	6	5	10	4
Hγ	3 doubly reversed.	2	5	3 doubly reversed
Hδ	0	0	2	0
Hε	0	0	0	0

Hβ h. ~~is sharply defined on 1 edge of sh. r, each~~ is double, the comp. of sh. λ being brighter & more sharply defined. Hγ lies near end of sh. λ of the dark band mark. It is uniform

From Book V p. 31.		Bk. V, p. 34.	Bk. V. p. 38	p. 39
V' Puppis	V' Puppis	A. G. C. 17717	o Puppis	r Puppis
8263	8258	6448	8352	5340
5	5	5	2 or 3	4
2 or 3	2 or 3	3	1	2
1	1	0	0	1
0	0	0	0	0

February 28, 1900.

Cont. of preceding

	Bk. I. p. 47.	V, 90.	V, 93	V, 99,
	A.G.C. 19273	ω Can. Major.	ζ¹ Scorpii	ζ¹ Scorpii
	4 5108	8274	5058	8476
Hβ	3	3	1 - 2	3 on Edge of pl.]
Hγ	0	2	0	
Hδ	0	1 or less	0	
Hε	0	0	0	

	ξ Can. Maj.	κ Can. Maj.	κ Can. Major	p Carinae	o Puppis
	7297	8273	8299	6271	5388
Hβ	3 edge of pl.)	5	5	5 or 6 ~~4 or 6~~	2
Hγ	? Focus poor	2	3	0	0
Hδ	? " "	0	0	0	0
Hε		0	0 Image thin	0	0
			Hδ shows dark line superposed on hazy dark bands.		Lines very hazy.

Thursday March 1. 1900 1^h
cont. of preceding

	ν Puppis 5340	o Puppis 8337	o Puppis 8352	p Carina 8357	p Car. 8369	A.G.C. 19273 4767
Hβ	5	3	3	5	6	2
Hγ	3	1	1	1	2	1?
Hδ	2	0		0	0	0
Hε	1?	0		0	0	0
		All lines very wide and hazy.	Lines very indistinct	All lines hazy.		

α Arae

		mean
Hβ	8, 7, 7, 6, 6, 5,	7
Hγ	2, 2,	2
Hδ		
Hε		

μ Cent

				mean
Hβ	10	10	15	10
Hγ	5	7	12	6
Hδ	3.5	3	5	3
Hε	2	2	3	2

p Carinae

					mean
Hβ	5	5.5	5	6	5
Hγ	2	0	1	2	2
Hδ	0	0	0	0	0
Hε	0	0	0	0	0

A.G.C. 19273

			mean
Hβ	3	2	2
Hγ	0	1?	0
Hδ	0	0	0
Hε	0	0	0

δ Cent.

			mean
Hβ	10	10	10
Hγ	6	5	5
Hδ	1	2	2
Hε	0	0	0

ζ' Scorpii

Hβ	1.5	3
Hγ	0	0
Hδ	0	0
Hε	0	0

A.G.C. 17717

Hβ	6	5	5
Hγ	5	3	4
Hδ	1?	0	0
Hε	0	0	0

κ Can. Maj.

Hβ 8
[illegible] ~~3 [illegible]~~
5
5
4)21
5
3)18
6

Hγ 3
2
3
3

Hδ 2

Hε 3

ω Can Majoris

				mean
Hβ	5	~~3~~	4	4.5
Hγ	1		1	1
Hδ	1?			
Hε				

V' Puppis

					mean
Hβ	6	5	5	4	5
Hγ	3	2.5	2.5	3	3
Hδ		1	1		1
Hε					

o Puppis

Hβ	2	3	3	3
Hγ	~~[illegible]~~	1	1	1

ν Puppis

Hβ	5	4
Hγ	3	2
Hδ	2	1
Hε	1?	0

Friday, Mch. 2, 1900. $0^{h}\ 30^{m}$

Stars found on later plates not already in Table H.

√		S.M.P.	H.P.	Mag. A.G.C.	Mag. H.P.
	A.G.C. 20695	5201			
√	„ 20649	5186			
√	„ 20640	—		6.3	
√	„ 20775	5228			
	~~„ 18232~~	—		6.4	
	~~„ 14536~~	—		6.6	
	~~„ 10873~~ +	~~2309~~			
	„ ~~10986~~ +	~~2351~~			
	„ 10920 +	—		6.3	
√	„ 10781 +	—		6.7	
√	„ ~~15269~~	~~3679~~			
√	„ 18859	~~?~~		6.6	
√	„ 18819	4685			
√	„ 29544	—	3802		5.87
	„ ~~17939~~	—		6.6	
√	„ 22293	—		5.9	
	„ 12593	2825			
	~~„ 9733~~	—	1431 = Aquar		4.51
	~~„ 25886~~	6653			
√	„ 17472	—		6.6	
√	„ 17504	4352			
√	„ 17518	4362			
	„ 6931	1244			
	„ 10856	2300			
	„ 7034	1315			

Mch. 2, 1900

	A.G.C.	S.M.P.	H.P.	mag. A.G.C.	mag. H.P.
	10953 +	—		6.6	
	10989 +	—		7½	
	11024 +	—		6.8	
	11424	2490			
✓	965	178			
	10613	—		6.7	
	10641	2224			
	10639	2223			
✓	1973 +	355 ~~444~~		~~7 3/4~~ 5.9	
	~~9697~~	~~1961~~			
	~~8834~~	~~1530~~			
		2744			
		~~6954~~			
✓	27100 +	6929			
	10853 +				on 49418.

Mch. 2, 1900.

B $\overset{3}{\cancel{\$}}$397 for the spectrum of θ Muscae

Wide bright band 4633 is the only bright band distinctly seen, Hydrogen lines or some of them, appear to have slightly bright edges. Orion lines are not seen on this plate.

Position of θ Muscae and companion in A.G.C.

θ Muscae 13^{h} 0^{m} $4^{s}.51$ 64° $38'$ $12''.6$
4.34 11.5
4.38 11.4
3) 13.3 3) 2.5
4.41 11.8

A.G.C. 17839 13 0 4.27 64 38 18.4

∴ θ Muscae ~~is~~ follows 0.14 and is N. $\overset{6}{\cancel{4}}''.8$

X5846 and X5844 chart plates, show θ Muscae double

Mch. $\overset{3}{\cancel{7}}$, 1900.

Measure of Separation of 4633 in A.G.C. $\overset{22}{\cancel{2}}$843 on X8476.

D1339

4688	0
4633	3.9
4633	4.4
4542	13.0

D1339

4542	0
4633	8.3
4633	9.0
4688	12.8

with Reticle on end of eye-piece

Reject. Division of scale so fine that line are obscured.

4542	0
4633	21
4633	22.5
4688	32.0

Reticle. Could not see the ends of lines clearly. Reject

4688	0
4633	9.5
4633	12.0
4542	33.2

Monday, March 4. 1900. 22h

Separation of 4633 in A.G.C. 22843 on 48476

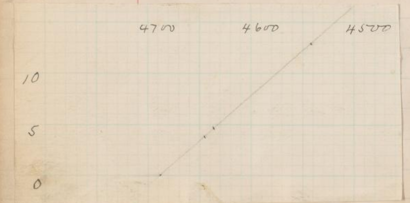
D 1339.

4688	0	
4633 (1)	~~8.2~~	3.8
4633 (2)	~~9.0~~	4.5
4542		12.9

4542	0	
4633 (2)	~~3.8~~	8.2
4633 (1)	~~4.5~~	9.0
4688	~~12.9~~	12.8

Measures reduced to 4688 = 0

					Mean
4688	0	0	0	0	
4633 (1)	3.9	3.8	3.8	3.8	3.8
4633 (2)	4.4	4.5	4.5	4.6	4.5
4542	13.0	12.8	12.9	12.8	12.9



Approx. λs 4636 and 4645 are obtained for values 3.8, and 4.5

Mch. 4. 1900

48476 superposed on 48657 θ Arae

Plates superposed so that Hγ in A.G.C. 22843 matches Hγ in θ Arae.

The two lines of 4633 in A.G.C. 22843 then fall near the Orion lines 4641.1 and 4630.6. The bright 4633 of gr. λ nearly coincides with 4641.1 but has slightly gr. λ. Its approx λ is 4643. The bright 4633 of shorter λ falls between 4630.6 and 4641.1 4,630.6, (3) 4141.4, that is, three tenths away from 4630.6.

$$\begin{array}{r} 4641.1 \\ \underline{4630.6} \\ 10.5 \\ \underline{.3} \\ 3.15 \end{array} \qquad \begin{array}{r} 4630.6 \\ \underline{3.2} \\ 4633.8 \end{array}$$

Therefore the approx. λ of the shorter λ 4633 is 4634.

wave lengths 463$\overset{6}{5}$, 4645 from curve
" 4634, 4643 from superposing

∴ the separation of the two components in line 4633 is equal to 9 wave lengths.

Mch. 4. 1900.
Examination of C plates of
β Scorpii

C 2641   1 pr.

4649 < ~~44~~4471
4116 present, not seen distinctly separate from 4120, but 4120 is stronger than in β Cent.
This looks like γ Arae.

C 2702   (3 prs)
Lines double.
4026, Hδ, 4120, Hγ, 4387, + 4471 are double with the fainter comp. tow. the violet.
The companion of 4120 may be the line 4116.

C 6735   (2 prs.)
Plate taken for ω Scorpii and β Scorpii is on plate only from 4922 to λ a little less than 4471.
Lines wide + hazy.

Mch. 5, 1900 0^h

β Scorpii
C 6779   (2 prs.)
Taken for ω Scorpii. β is on plate from red end to line 4144.
Lines 4387 and 4471 are distinctly double with the the stronger component towards the violet.
This star must be a spectroscopic binary.

C 1283   (1 pr.)
Lines very hazy.

X 5921, 5   taken for ω' Scorpii
β is on the edge of the plate.
Lines fairly well-defined.

X 7433 3   4   ω' Scorpii
β is on from red end to Hδ.
Orion lines are very faint and hazy.
4471 looks double

Mch. 5, 1900.

X4832 ^{5} ω Scorp.
β is on from red end to 4471
Hβ is ~~fairly~~ well-defined.

X5929, ^{4} ω¹ Scorpii.
A very little of the red end of β on edge, ~~but~~ of plate; Hβ and 4922 seen, single.

C 2631 β Scorpii
Lines hazy.
Hβ and Hγ appear to show a well-defined line superposed on a hazy line or band.
Sp. = B1A.

C 1906 ω² Scorpii.
β Scorpii is on the plate from 4026 ~~to~~ violet end.
Lines hazy.

C 12037 β Scorpii. Iso,
Lines wide. Image very narrow
D³ seen?

Mch. ~~5~~ 6. 1900. 1^{h}

X6154, ^{5} A.G.C. 10390 (missing plate)

A.G.C. 10390 B3A. Lines well-defined.
Traces of triple line seen near Hδ.

" 10534 I Puppis Lines double.
Bγ two, violet.
Separation wide. = 1.0.
4649 not double.
4712 not distinctly seen.
Hη, 3819.2 even seen double.

At the position of the oxygen triplet, there is the appearance of a double line.

X6301 (Missing plate) Broken.
V Puppis Lines single
4649 seen, also the ox. triplet λ4089.
4712 not distinctly seen.

a.G.C. 10392 B3A

" 10646 B3A

" 10705 K? very poor

Mch. 6. 1900.

X6301 V Puppis.

A.I.C. 10566, Superposed. Both spectra appear
" 10568 like B3A.

" 10605 A2F. Lines sharp.

" 10618 Plate broken across this spectrum.

" 10558 B3A.

Thursday, Mch. 8, 1900 0h

Measure of line in α Carinae (Slide 1805) bet. $H\gamma$ and $H\mu$.
Scale D1339
$H\gamma = 0$
Unk. 0.4
$H\mu = 1.0$

Scale div. to $\frac{1}{100}$ of an inch.
$H\gamma = 0$
Unk 0.5
$H\mu$ 1.8

Mch. 8, 1900.
Measures of line in α Carinae
Scale div. to 1/100 of an inch

Hμ	0	0
Unk	1.3	1.3
Hν	1.8	1.8

Hν = 3711.8
Hμ 3721.9

1.8) 10.1 (5.6
9 0
1 1 0

5.6
1.3
168
56
7.28

~~3711.8~~ 3721.9
7.3
3714.6

~~Approx λ = 3715~~

Mch. 13. λ of this line also determined in Bk XII. p.186.

3713.6 Bk XII.
3714.6
3714.1 Approx λ = 3714.

Monday, Mch. 12. 1900 1st

Approx. λλ of three ft. bright lines of gr. X. Phase 5086 line in δ Centauri X9197, Superposed on α Scorpii X8729.

α Scorpii above δ Cent.
Line marked "z" on X9197 falls on line 5167 of "b" in α Scorpii.

"y" falls on or near solar line 5275.7

"4" falls bet. 5298.0 & 5328.5

5298.0 (4) 5328.5
5298.0
30.5
.4
12.20

5298.0
12.2
approx λ = 5310.2

Mch. 12. 1900.

Measures cont. as on prec. page.

α Scorpii below δ Centauri

z falls on or near 5167

y " " " " 5275

x falls half-way bet. 5298 & 5328

5328.5
5298.0
2)30.5
15.2

5298.0
15.2
5313.2

From prec. page 5310.2
2)3.0
1.5

approx λ of "x" = 5311.7

Mch. 12. 1900.

Breaks in red in β Geminis X8734, as determined by superposing on X8729, α Scorpii.

1 is at 5763
2 " " ~~5857~~ 5816. } approximately.
3 " " 5857

These three breaks are seen also on γ Crucis X4180.

Measures on C1184 to identify λ5857.

~~5763~~ 5781-85 0
5857 5.0
5896 7.2

5
2.2

2.2 / 5 = 1.7 / 2.9

2.2 : 5 = 1.7 : 2.9
2.9
198
44
6.38

5
8.5

Measures on X8729

5781-85 0.
5857 2.9
5896 4.6

2.9
1.7

5896
5783

7.2)113(15.5
72
393
360
330
288
42

15
77.5

4.6)113(24.1
92
210
184
60

24.1
2.9
2169
482
69.89

5783
70
5853

5783
77
5860

Tuesday, Mch. 13. 1900 1^h

X9559 A.G.C. 206~~59~~95.

A.G.C. 20695 Oe5B

A.G.C. 20649 Oe5B.

" 20640 Poor, faint, B3A.

" 20~~6~~775 Too thin.

X9638, 4 k Scorpii

B1A. with some lines unusually intense.

Wednesday, Mch. 14, 1900 $1^h 30^m$

X9684 $_2^5$ λ Crucis.

B3A. Lines double, best seen at 4471. (Line marked by Mr. F.)

β Crucis also on plate.
Good of the sharper lines, the fainter ones are burned out.

X9674 $_2^4$ λ Crucis

Lines hazy.

β Crucis also on plate.
Excellent image.

X7524 $_2^4$ β Crucis

λ Crucis on edge.
λ 4387 is double.
Other lines wide and hazy, perhaps double.

Mch. 14, 1900.

X3975 ^{5} β Crucis.

λ Crucis, Lines fairly well-defined in general. 4026 + 4009 have slight double appearance but this may be due to focus.

X7633 $_{2}^{3}$ β Crucis.

Four images of β Crucis. One image shows the lines widely double; the next image shows them double but separation is less marked. The image near top of plate shows them single. Focus

λ Crucis too poor.

X3976 ^{5} β Crucis.

λ Crucis. Lines a little wide

X4192 β Crucis.

λ4471 + 4649 bright on edge of gr. λ.

λ Crucis – too poor.

Mch. 14. 1900.

X7632 $_{2}^{5}$ β Cruc.

λ Crucis – hazy lines, very thin image

X3975	shows λ Crucis	
" 3976	" " "	
" 4192	Image " "	too poor
" 6295	" " "	" "
" 7364	λ Crucis	not seen
" 7402	" "	" " !
" 7524	" "	seen
" 7632	" "	"
" 7633	" "	too poor.
" 7644	" "	not seen. !
" 8255	" "	too poor.
" 8261	" " –	"
" 8361	" "	not seen.
" 9186	" "	too poor.

Friday. Mch. 15. 1900 23h 30m

X 9820 ° & S.M. P. 6019 broken (Slide 2019)
Sp B8A.

Chart plate on which κ Crucis and adjacent stars are classified is X 9214, broken, Slide 2011.

~~May~~ Mch 16. 1900

Comparison of Miss Maury's general catalogue with the H. P. to see if all the stars down to 5.0 mag. are classified

Not in Miss Maury's catalogue

	H. P.	Mag.		
?	17	4.94		Magn. in Rev. H. P. 5.15
✓	28	4.92		
✓	40	4.30	θ Androm.	
✓	42	4.65	σ Androm.	
R	62	4.78		Part II Magn. in Rev. H. P. 4.96
✓	83	4.39	π "	
✓	90	4.58	ε "	
✓	100	4.80	ξ Cass.	
✓	102	4.97	π "	
✓	109	4.93	φ¹ Ceti	
✓	127	4.42	ν Androm.	
✓	143	4.89	υ² Cass.	
✓	150	4.65	η Androm.	
?	158	4.06		In Part II
✓	162	4.46	ε Pisces	
✓	182	4.30	φ Androm.	
✓	189	4.43	θ Cass.	
✓	196	4.92	χ Pisces	
✓	197	4.73	τ Pisces	
✓ ✓	198	4.59	φ "	
	209	4.71	υ "	

Mch. 16, 1900.

Cont. of prec. list

	H. P.	mag.			
?	210	4.71		Magn in Rev. H.P	6.10
✓	214	4.94	ξ Androm.		
✓	218	4.84	ψ Cass.		
✓	228	4.80	ω Androm.		
✓	241	4.93	χ Cass.		
✓	248	4.24	υ Androm.		
✓	259	4.94	τ "		
✓	265	4.67	υ Piscis		
✓	271	3.56	τ ~~Persei~~ ceti	!!	δ = -16° bright star omitted
✓	272	4.42	ο Piscis		
✓	282	4.77	χ Ceti		
✓	286	3.85	ζ Ceti −11°		
✓	294				
	303				
✓	314				
✓	331				
?	334			✓ Magn. in Rev. H.P.	4.77
✓	352				
✓	381				
✓	384				
✓	385				
✓	389				
✓	400				
?	404		ω Fornacis	In Part II	
?	409			Magn. in Rev. H.P.	5.02
✓	420				
✓	432				

Mch. 16. 1900

Cont. of prec. list

	H.P.				
✓	436				
✓	438				
✓	439				
✓	446				
	448		Is this β Fornacis		In Part II
✓	449				
?	453		In Part II. τ² Erid.		
✓	465				
✓	472				
✓	473				
✓	477				
✓	493				
✓	495				
✓	503				
✓	505				
?	512	3.77	α Fornacis −29°		In Part II
✓	515				
✓	519				
?	522		Magn. in Rev. H.P.		5.08
✓	524				
?	528		" " " "		✓ 4.92
✓	529				
✓	532				
?	552		Magn. Rev. H.P. ✓		4.94
?	553		" " " ✓		4.76
~~?~~	~~554~~	~~3.77~~	~~ξ [illegible] 5+9°~~		
✓	557				
✓	567				

Mch. 16. 1900.

H.P. Cont. of preceding list.

✓ 571
✓ 581
✓ 596
Added list 604 3.68 δ Erid δ = −10°
P 605 ~~Magn. in Rev~~ δ Fornacis In Part II
P. 607 ~~Magn. in Rev. H.P.~~
~~612~~
✓ 619
✓ 623 τ^6 Erid. In Part II
P 627 τ^7 " " "
✓ P 639
✓ 644
✓ 645
P 646 τ^8 Erid In Part II
P 659 Magn. in Rev. H.P. 5.07
P 660 τ^2 Erid. In Part II
✓ 670
✓ 671
✓ 682
✓ 707
✓ 712
? P 714 ~~a Erid Magn. in Rev. H.P. In Part II as X Erid.~~ 5713
✓ 716
✓ 719
✓ 721
✓ 722
✓ 735
✓ 737 3.86 γ Tauri δ = +15

Mch. 16, 1900

H.P. Cont. of preceding list

P. 740 3.32 In Part II as X Eridani υ^4 Erid. δ = −34°
✓ 760
✓ 764
✓ 765
P. 766 In Part II as d Eridani
✓ 768
✓ 773 3.67 ε Tauri δ = +18
✓ 783
✓ 787
✓ 789
✓ 793
P. 796 In Part II υ^1 Eridani δ = −30°
✓ 798
~~799~~
P. 802 3.80 In Part II υ^2 Eridani δ = −30°
✓ 805
✓ 808
✓ 813
✓ 819
✓ 830
✓ 836
✓ 841
✓ 856
✓ 859
~~862~~
✓ 865
✓ 875
✓ 883

Mch. 16. 1900

H.P. cont. of prec. list.

✓ 884
✓ 888
✓ 891
✓ 894
✓ 914
✓ 917
✓ 922
✓ 927
✓ 928
✓ 931
✓ 942
✓ 943
✓ 944
✓ 959
? 963 In Part II
✓ 964
✓ 966
✓ 973
✓ 977
✓ 987
✓ 988
✓ 997
✓ 1000
✓ 1003
✓ 1007
? 1011 3,78 In Part II Col. δ = −35° 34′
~~1026~~
~~Added to list~~ ✓ 1032 2,98 ζ Tauri δ = +21

Mch. 16. 1900

Cont. of prec. list.

H.P. ~~1037~~
✓ 1037
✓ 1040
✓ 1041
✓ 1044
? 1048 2.72 In Part II Col. δ = −34° 8′
✓ 1063
✓ 1071
✓ 1073
? ✓ 1084
? 1085 Magn. in Rev. H. P. 5,01
? 1088 2.93 Part II Col. δ = −35 49
~~111~~
? 1110 4.08 Part II Col. δ = −35
✓ 1114
✓ 1116
✓ 1117
✓ 1121
~~✓~~ ? 1125 Magn. in Rev. H. P. 5,18
✓ 1130
✓ 1134
~~1153~~
? 1155 Magn. in Rev. H. P. ✓ 4,73
✓ 1161
✓ 1168
✓ 1170
✓ 1177
✓ 1200

Mch. 16. 1900.

Cont. of prec. list.

	H.P.		
?	1203	Part II δ Col.	
✓	1216	3.98 [illegible] Geminorum	
✓	1217		
?	1222	In Part II	
?	1224	Magn. in Rev. H.P.	5.08
✓	1231		
?	1235	In Part II	
✓	1238		
✓	1239		
✓	1242		
✓	1251		
✓	1253		
?	1254	Magn. in Rev. H.P.	✓ 4.97
✓	1261		
✓	1270		
✓	1283		
✓	1284		
?	1287	Magn. in Rev. H.P.	5.04
P	1300	3.92 Part II κ Can. Maj.	−32°
✓	1305		
P	1308	Part II	
✓	1309		
✓	1310		
P	1315	Part II	
✓	1318		
?	1325	Part II	
P	1333	3.49 Part II	−27°

Mch. 16. 1900

Cont. of prec. list

	H.P.		
✓	1336	×3	
✓	1349		
? ✓	1367		
	~~1368~~		
?	1374	Part II	
?	1375	Part II	
?	1380	Part II	
?	1381	" "	
?	1384	Magn. in Rev. H.P.	5.16
✓	1391		
✓	1392		
✓	1397		
✓	1398		
✓	1406		
✓	1413		
✓	1416		
?	1420	Part II	
✓	1421		
?	1429	Magn. in Rev. H.P.	5.06
?	1431	Part II	
✓	1433		
✓	1436		
✓	1441		
✓	1443		
?	1472	Part II	
?	1476	Magn. in Rev. H.P.	5.11
✓	1481	/	
?	1496	Part II	

Mch. 16. 1900
Cont. of prec. list

	H.P.			
✓	1501			
✓	1503			
✓	1504			
✓	1509			
✓	1516			
✓	1524			
✓	1539			
?	~~1595~~	Magn. in Rev. H.P.	5.04	
✓	1597			
✓	1600			
✓	1602			
?	1604	3.55 o^2 Argus.	−32°	Part II
✓	1610			
?	1621	Part II		
✓	1633			
✓	1639			
✓	1653			
✓	1656			
✓	1675			
✓	1687			
✓	1688			
?	1690	Part II		
✓	1692			
✓	1693			
✓	1704			
✓	1706			
✓	1710			

Mch. 16, 1900
Cont. of prec. list

	H.P.		
✓	1714		
✓	1717		
?	1726	Magn. in Rev. H.P.	5.14
✓	1732		
✓	1739		
✓	1741		
✓	1743		
✓	1746		
✓	1756		
✓	1759		
✓	1789		
✓	1792		
✓	1795		
✓	1796		
✓	1840		
?	1842	Part II	
✓	1844		
✓	1850		
✓	1872		
✓	1903		
✓	1908		
?	1921	Magn. in Rev. H.P.	5.05
✓	1924		
✓	1931		
?	1946	Part II	
✓	1956		
?	1971	Magn. in Rev. H.P.	5.07

Mch. 16, 1900

Cont. of prec. list

H.P.

? 1991 Magn. in Rev. H.P. 5.07

P 1994 3.76 ξ Hyd. −31° Part II.

✓ 2002

✓ 2003

✓ 2016

✓ 2017

~~2018~~

✓ 2022

P. 2035 β Hydrae (#18) − 33° Part II.

✓ 2051

P 2060 Part II α Corvi

✓ 2094

✓ 2098

✓ 2110

P✓ 2133

✓ 2136

✓ 2137

✓ 2160

✓ 2186

✓ 2218

✓ 2224

✓ 2226

✓ 2227

? 2246 Magn. in Rev. H.P.

✓ 2247

✓ 2248

✓ 2269

Mch. 16, 1900

H.P. Cont. of prec. list

✓ 2283

✓ 2292

✓ 2297

✓ 2299

✓ 2304

✓ 2315

✓ 2333

? 2344 Magn. in Rev. H.P. 5.06

? 2349 Part II

✓ 2352

✓ 2373

~~? 2379 1.73 θ Cent. −35°~~

✓ 2385

✓ 2388

✓ 2390

✓ 2395

✓ 2396

✓ 2398

✓ 2403

✓ 2404

✓ 2408

✓ 2409

✓ 2413

? 2417 Part II

✓ 2428

✓ 2449

✓ 2450

Mch. 17, 1900 3^h

Cont. of prec. list

H. P. ✓ {2452 } ζ Boötis 3.84
✓ {2453 }
? 2454 Magn. in Rev. H. P. 5.03
?. 2459 " " " ✓ 4.93
✓ 2466
P 2477 Part II
✓ 2489
✓ 2499
✓ 2520
✓ 2521
✓ 2531
✓ {2559
✓ {2560
✓ 2561
✓ 2588
✓ {2590 3.96 δ Serpentis +11°
✓ {2591
P 2605 Part II
✓ {2614
✓ {2615
✓ 2618
✓ 2621
~~2632 3.84 β Serpentis~~
✓ 2633
P 2637 Part II − 33°
2640 Part II
✓ 2643
✓ 2649

Mch. 17, 1900.

H. P. P 2651 Part II
✓ 2652
✓ 2655
✓ 2657
✓ 2658
? 2659 Part II
~~2670~~
✓ 2687
✓ 2694
? {2706 6.53 Magn. in Rev. H. P.
? {2707 5.33 ✓
✓ 2711
✓ 2714
✓ 2715
✓ 2732 −28°
✓ 2744
✓ 2748
✓ 2750
? 2752 Magn. in Rev. H. P. 5.28
✓ {2755
✓ {2756
✓ 2757
✓ 2759
✓ 2762
✓ 2766 2.82 +61°
✓ 2769
✓ 2771
P 2775 Part II
? 2776 Magn. in Rev. H. P. 5.29

Mch. 17, 1900

Cont. of prec. list

H.P. ✓	2780				
✓	2813				
p	2818	2.15		ε Serp.	−34° Part II
✓	2820				
✓	2821				
✓	2826				
✓	2832				
✓	2842				
✓	2843				
	~~2844~~				
✓	2859				
✓	2877				
✓	2882				
p.	2895		Part II		
✓	2897				
p	2909		Part II		
p.	2916		Part II	d Oph.	
✓	2918				
✓	2921				
p	2924	2.84	Part II	Serp.	−37°
p	2927		Part II		
p	2932	1.68	Part II	"	−37°
✓	2933				
✓	2945				
✓	2946				
✓	2949				
✓	2956				
✓	2960				

Mch. 17, 1900

H.P. ✓	2964				
p	2972		Part II	X Sag.	
✓	{2985				
✓	{2986				
✓	3004	4.00			+37°
✓	3006				
✓	3013				
✓	3014				
✓	3018				
✓	{3026				
✓	{3027				
✓	{3028				
✓	{3029				
p	3035		Part II	W Sag.	
p.	3036	3.05	Part II	γ Sag.	−30°
p.	3039		Part II		
✓	3044				
p.	3074	2.97	Part II	η Sag	−36°
p.	3076		Part II		
✓	3077				
✓	3081				
✓	3089				
✓	3091				
✓	3093				
p.	3095	2.12	Part II	ε Sag	−34°
✓	3102				
p.	3105		Part II		
✓	3110				
p.	3111	3.06	Part II	λ Sag.	−25

Mch. 17, 1900.
Cont. of prec. list.

H. P.

✓ 3116
✓ 3119
✓ 3126
✓ 3134
✓ 3151
✓ { 3167
✓ { 3168
✓ { 3169
✓ { 3170
✓ 3172
✓ 3174
✓ 3177
✓ 3178
✓ 3206
✓ 3209
3213 Part II
✓ 3214
✓ { 3215
✓ { 3216
3218 3.53 Part II ξ Sag. −21°
? 3224 R Lyrae var.
✓ 3231
✓ ~~3237 2.89 ζ Sag.~~ −30°
3240
✓ 3242
~~3258 3.48 τ Sag.~~ −27°
✓ 3271

Mch. 17, 1900
Cont. of prec. list.

H. P.

? 3296 Magn. in Rev. H.P. 5.03
✓ 3300
✓ 3304
✓ 3313
✓ 3345
✓ 3349
✓ 3366
✓ 3368
✓ 3372
3373 Part II
✓ 3380
3381
✓ 3389
✓ 3394
✓ 3397
✓ 3399
✓ 3402
? 3403 Magn. in Rev. H.P. 5.10
✓ 3443
✓ 3444
~~3446 ω Sag. Classified~~
3467 Part II
✓ 3456
✓ 3458
? 3461 Part II
✓ 3463
~~3477 σ Sag.~~ −28°
✓ 3481

Monday, Mch. 1~~7~~8, 1900   22h
Cont. of prec. list.

H.P.
✓ 35~~4~~06
✓ 3513
✓ 3532
✓ 3534
✓ 3545
✓ 3569
✓ 3575
✓ ? 3587   Magn. in Rev. H.P. ~~4.89~~
✓ 3594
✓ 3599
✓ 3608
✓ 3616
? 3638   Part II
✓ 3643
~~3647~~
✓ 3653
✓ 3655
? 3661   Part II
✓ 3662
? ✓ 3665
✓ 3666
✓ 3668
✓ 3701
✓ 3712
✓ 3673
✓ 3687
? 3715   Part II
✓ 3723

Mch. 18, 1900

H.P.
✓ 3726
✓ 3735
? 3742   Part II
✓ 3745
? ~~3747~~
✓ 3756
✓ 3761
? 3765   Magn. in Rev. H. P. 5.14
~~3783   b Cap.~~   −22°
✓ 3808
~~3809   ε Cap.~~
✓ 3811
✓ 3819
✓ 3824
✓ 3833
? ✓ 3834   Part II
✓ { 3840
3841 }
✓ 3842
✓ 3847
✓ 3855
✓ 3856
✓ 3861
✓ 3889
✓ 3898
✓ 3901
✓ 3903
~~3908   μ Pis. Aust~~   −33°

Mch. 18, 1900.

H.P.

✓ 3917

✓ 3925

✓ 3935

✓ 3940

~~3942~~

✓ 3944

✓ 3952

✓ 3953

✓ 3959

✓ 3965

✓ 3978

✓ 3980

P. 3983 β Pis. Aust. −32° Part II

✓ 3985

✓ 4011

~~4015~~

✓ 4018

P 4038 γ Pis. Aust. −33° Part II

✓ 4045

✓ 4051

P 4052 Part II

✓ 4071

✓ 4077

✓ 4079

P. 4083 Part II

✓ 4084

✓ 4085

P 4096 Part II

Mch. 18, 1900.

H.P.

✓ 4098

✓ 4106

✓ 4109

✓ 4119

? 4121

✓ 4127

✓ 4132

✓ 4143

✓ 4149

✓ 4151

✓ 4157 b³ Aquar.

✓ 4176

✓ 4180

✓ 4183

✓ 4187

✓ 4188

✓ 4190

✓ 4194

0. 4197 Magn. in Rev. H.P. 5.09

P. 4205 Part II

✓ 4233

✓ 4237

P. 4248 Part II

✓ 4252

? 4259 Add to list

Wednesday, Mch. 20, 1900 $22^h 30^m$

✓ X10104 S.M.P. 1583

Sp. K.

Thursday, Mch. 21, 1900 $22^h 30^m$

✓ X10127, ^{3} γ Hydri.

K5M, Thin image.

X9266 κ Crucis. (in cluster)
Lines 4026, 4144, 4387 and 4471 seen as in B3A spectra. Numerous fainter lines are present which doubtless belong to the superposed spectra. From an examination of chart plate 9124, A.G.C. 17517 appears to be the only superposed star bright enough to show lines. I think I can identify Hγ & Hβ of A.G.C. 17517. A.G.C. 17517 is magnitude 8 1/4 in A.G.C. and it appears upon consideration doubtful whether these faint lines are due to its spectrum.

Wednesday, Mch. 27, 1900 22h 30m

4 plates X 9661, 9632, 9772 and 9750 taken for S. M. P. 6979, were not exposed long enough, and show ~~only~~ two adjacent spectra, A. G. C. 27237 and A. G. C. 27100.

✓
A. G. C. 27237 X 9661
A. 4481 and several solar lines seen
✓
" 27100 A or A2 F. More solar lines appear to be present than in A. G. C. 27237.

✓
" 27237 X 9632
A? Thin

✓
" 27100 A? Thin

✓
X 9772
"K 27237 A

✓
" 27100 Not on

X 9750
" 27237 A! too thin

Thursday, Mch. 28, 1900 22h.

✓ X 9925 $_2^4$ α Pis. Aust.
Isochrom.
Hyd. lines hazy. Solar lines well-defined
Poor of the red. ~~except~~ No lines seen except magnesium line

✓ X 9924 $_2^5$ α Gemis.
Iso,
B 5 A. Lines broad.
Red end too thin

✓ X 9929 $_2^0$ β Gemis.
very poor. Only a small portion of the spectrum seen.

Saturday Mch. 30. 1900 $23^h 30$

✓

X 7430, + A.G.C. 14295.
This plate was among the unidentified plates. It was taken for J Velorum.

F_5G. sharp lines

Thursday April 5, 1900 $0^h 30^m$

X 6390 μ Crucis.
Line 4471.8 of the companion star A.G.C. 17542 is well shown on this plate.

X 6471 μ Crucis.
Images over-exposed.
The lines 4009.5 and 4026.4 and 4471.8 are seen besides those of hydrogen in A.G.C. 17542.

This spectrum can therefore be classed as B3A.

The bright Hβ is not distinctly seen in this spectrum on any plate except 4814. It is such a faint bright line, however, that it is not safe to assume it to be variable, but rather to suppose the differences due photographic

Saturday, April 7. 1900 1^h

48119 ε Orionis shows the presence of the calcium line H. This is not distinctly separated from Hε, but almost so. Hε is very hazy towards edge of shading while the other hydrogen lines are not. On close inspection, a faint line is seen in the position of H.

Thursday, April 12. 1900

Copy of the remark nos. for several stars in Table XV. This table goes to the printer to-morrow and these nos. will have to be changed when all the remark nos. are corrected.

	Remark
ε Aurigae	40, 157.

157 is the remark for ι Scorpii, b Velorum + υ Carinae.

	Remark
35 Cygni	161.

161. The spectrum is like that of β Doradus.

	Remark
δ Canis Maj.	40, 163.
α Orionis	188.
α Herculis	189.

Remark for β Gruis.

Saturday, April 14, 1900

Count of stars in Table XVI, to see if it agrees with Table XVII

	Page	No.		Page	No.	
22	1	22	22	25	23	23
22	2	22	22	26	26	26
19	3	19	19	27	23	23
26	4	26	26	28	21	21
22	5	22	22	29	23	23
22	6	22	22	30	28	28
22	7	22	22	31	24	24
21	8	22	22	32	21	21
22	9	22	22	33	22	22
27	10	27	27	34	25	25
26	11	26	26	35	22	22
23	12	23	23	36	23	23
24	13	25	25	37	22	22
23	14	23	23	38	22	22
23	15	23	23	39	22	22
21	16	21	21	40	20	20
	17	25	25	41	27	27
	18	23	23	42	26	26
	19	20	20	43	30	30
	20	23	23	44	22	22
	21	24	24	45	22	22
	22	24	24	46	26	26
	23	23	23	47	25	25
	24	25	25	48	24	24
		554	554		569	569

554
569
1123

2 too many,

No of Plates

169	118	153
161	60	138
136	75	173
119	68	114
151	83	198
109	131	61
43	109	837
121	153	2177
90	117	2947
72	148	5961
58	151	
107	107	
39	127	
66	187	
222	333	
78	177	
76	198	
61	87	
85	114	
51	127	
92	127	
71	130	
2177	2947	

no of Plates

2 plates added to ξ Puppis makes 5963

1 plate added to α Erid. 5964

1 added to α² Cent. 5965.

1/3

1

14	18
16	20
16	16
6	16
13	18
16	18
20	18
15	17
18	10
16	13
15	12
15	17
19	17
16	15
20	10
23	18
12	15
16	19
13	17
16	19
16	14
21	13
20	35 ~~1~~ 0
21	464
20	
19	
16	
16	
464	(81~~5~~4)

2

6	5
5	8
5	4
14	5
7	4
4	5
1	4
6	8
3	7
5	5
7	10
4	9
1	10
1	5
5	4
4	5
5	12
11	4
7	6
9	3
6	4
6	2
1	7
2	136
1	134
2	
3	
134	270

270 (2) ②
81~~1~~4 ①
38 ③
112~~3~~2

No. of ~~plate~~ stars phot. with (1) (2) & (3) prisms.

Given to Mrs. Fleming for the printer, May 24, 1900 as far as Table XXII

Tuesday, April 17, 1900

Order of tables in Part II. Vol XXVIII
(Copy from loose sheet)

Table XV Typical stars of Part I.
" XVI Classification of spectra in order of classes.
Remarks on Spectra.
" XVII " " " " " " R.A.
" XVIII Additional plate nos.
Remarks on Stars
" XIX Table of Orion stars with bright hydrogen lines.
" XX Composite spectra
" XXI Spectroscopic binaries
" XXII Wavelengths and intensities of lines in Classes Oa to B.
" XXIII " " " " " " " B to A.
" XXIV " " " " " of greater wlgth than Hβ.
" XXV. ~~γ Velorum.~~
" XXVI. ~~H. P. 1311.~~ Wave lengths of Orion lines between 4812.0 and 5875
" XXVII ~~ζ Puppis.~~ γ Velorum
~~" XXVIII~~ ~~η Centauri~~ H.P. 1311
" XXIX β Orionis. ζ Puppis
" XXX Index to Bayer letters.

Shall table be put in giving differences in constellation, designations and positions in H. P.? No, these differences are included in remarks on stars.

April 17, 1900.

Double stars classified, not given as 2 in Tables XVI and XVII

β Scorpii, A. G. C. 21805, A. G. C. 21806 mag 7½ is probably superposed but no trace is seen of it. C plates show double lines. May these be due to the companion?

θ Muscae given double in A. G. C but not in H. M. P. Which shall be used?

Wednesday, April 18, 1900

Stars in Tables ~~XVI~~ & ~~XVII~~ given double in A. G. C.

					Comp.	mag.
	A. G. C.	✓	1069	ζ Phoenicis	1067	8
	"	✓	1210	κ Tucanae	1212	7
	"	✓	2693	ω Fornax	269~~4~~2	8
	~~"~~	✓	~~3223~~	~~θ Eridanus~~	~~3224~~	~~5¼~~
Too ft.	"		6141	— Leporis	6140	9¾
" "	"		6487	— Orionis	6488	9
" "	"		6512	— Orionis	6511	10
" "	"		8109	— Can. Maj.	8107	9¼
" "	"		8495	— " "	8496	8½
	~~"~~		~~8570~~			
" "	"		9165	— " "	9163	9
	"		~~9247~~	~~— Canis Major~~	~~9250~~	~~7~~
" "	"		9288	π Puppis	9286	8¼
" "	"		9313	τ Canis Maj.	9314	9¼
" "	"		965~~4~~2	σ Puppis	9654	9
" "	"		9900	"	9898	9½
" "	"		10203	ζ Volans.	10204	9½
	"		10779	— Carina	10771	7¾
R. 88.	"		10923	ε Volans	10924	8
"	"		10973	— Puppis	10974	7.0
" 220.	"		10986	— Vela	10985	7¾
Too ft.	"		11424	A Vela	11423	8½
" "	"		11751	Vela	11753	9½
R	"		12221	b₁ Carina	12224	7¼
R 221	"		13389	υ Carina	13390	7½

Cont. on page 144

April 18, 1900.

ζ Orionis A. G. C. 6614 not given double in A. G. C. but is double in H. P.

Stars not put down unless positions for 1900 are same. For instance β Col. A. G. C. 6896 has comp. A. G. C. 6897 (mag. 9½) in same R. A. and 1' south. Too faint.

A. G. C. 8227 has comp (7¾ mag.) 1' n.

no trace of A. G. C. 10771 on X 6174. Remark unnecessary?

R. A ~~differs two tenths~~. On B 8949, sp. of A. G. C. 10771 is seen, but too ft. to determine class.

Cont. from page 142

				Comp.	Magn.	
Torpt.	A. G. C.	14145	J Vela	14143 14144	9 9	
" "	"	14319	δ Antlia	14318	9½	
" "	"	14483	Carina	14482	8¼	
" "	"	14489	Carina	14490	8½	R. A. differs one tenth. Dec. differs one minute.
" "	"	14566	"	14568	9	
" "	"	14664	"	14665	8½	
" "	"	14691	"	14693	10	
R. 222	"	14910	26 Carina	14912	7.6	R. A differs one tenth. Dec. differs one minute
Torpt.	"	14965	Carina	14969	8½	" " " " .
" "	"	15986	Hydra	15988	8¼	
" "	"	17840	θ Musca	17839	8¼	
224.	"	18833	k Centaurus	18834	6¾	
223	"	18855	l Centaurus	18854	8	
225	"	19406	– Centaurus	19407	7¾	
Torpt.	"	19849	α Circinus	19847	8½	
" "	"	19890	b Centaurus	19886	9½	
R 175	"	19997	m Hydra	19998	7	
R 200	"	20566	– Lupus	20565	7¾	
" Too far?		20572	ζ Lupus	20567	7¾	R. A. differs one tenth. Dec. differs one minute.
R 226	"	20713	μ Lupus	20714	7	
Torpt.	"	20787	– Lupus	20788	9	
" "	"	20806	ε Lupus	20807	9½	
" Too far.		21078	κ₂ Apus	21079	7¾	No haze seen. R. A differs one tenth. Dec differs, 1' 29".1 one minute . Too far N.
R. 51.	"	21653	η Lupus	21655	7¾	
" 35	"	21805	β Scorpius	21806	7½	

Cont from page 144

				Comp.	Magn.
	A. G. C	22246	ε Norma	22244	7
R	"	22824	— Scorpius	22822	7½
Sorpt.	"	25197	— Sagittarius	25196	8¼
R 103.	"	26485	β' Sagittarius	26486	7
Sorpt.	"	28544	α Microscopium — ~~Capricornus~~	28546	9½
" "	"	28557	— Capricornus	28558	9¼
R 227	"	29216	θ Indus	29213	7¼
Sorpt.	"	30594	δ Tucana	30593	10
" "	"	30657	δ₂ Grus	30656	9
R 228	"	30704	β Piscis Aust.	30705	7
Sorpt.	"	31184	δ Piscis Aust	31183	9

R. A. differs on tenth. Dec. differs one minute

Saturday, April 21, 1900

Comp. of lines in α Circini X 8487 with those in α Carinae X 7813

Line 4867.9 fainter in α Circini than in α Carinae.

4395.3 & 4400.2 to 4401.6 are not seen in α Circini though fairly well marked in α Carinae.

4435.2 is more intense than in α Car. & equal to same in Class F & G.

4422.8 is also more intense than in α Carinae.

4455.0 is also more intense than in α Carinae.

4469.2 is ~~either absent or~~ very faint in α Cir.

April 21, 1900.

List of doubles with comp. of 8½ or brighter.

A.G.C.	1069.	No remark.
	1210	" "
	2693	" "
	8495	" "
	9288	" "
	~~10779~~	~~" "~~
	10923	" "
	~~10973~~	~~remark?~~
	10986	No remark
	11424	" "
	12221	remark.
	13389	no remark
	14483	" " Remark 20
	~~14489~~	~~" "~~
	14664	No remark.
	~~14910~~	~~no remark~~
	14965	" "
	15986	" "
	17840	remark
	18833	no "
	18855	" "
	19406	" "
	19849	Remark.
	19997	remark
	20566	No remark
	~~20572~~	~~Several remark.~~
	20713	No remark

April 21, 1900.

Cont of preceding list

A.G.C.		
	~~21708~~	~~no remark~~
	21653	~~x~~ ″
	21805	remark
	22246	″
	22824	″
	25197	General remark.
	26485	remark
	29216	x no remark
	30704	″ ″

2~~7~~1 that will have to have remarks concerning fainter companion star.

April 21, 1900.

Stars double in H.P.

ω Fornacis (A.G.C. 2673) not given double in H.P.

H.P. 1021 given double in Table XVII, but not in H.P. Look up for errata in H.P.

c Orionis given as name of two stars in H.P. but not in Table XVII

H 1458 in Argo in H.P.

H 2417 = k Hydrae in A.G.C.
″ = — ″ ″ H.P.

Saturday, April 27, 1900   21^h 30^m

Doubles looked up.

X6~~450~~604 ζ Lupi examined for A.G.C. 20567 (7$^{\text{mag}}$ 3/4).
This spectrum is seen ~~being~~ completely joined to ζ Lupi, but not superposed. A.G.C. 20567 is clearly of sp. G or G5K.

Shall remark be made?

18.96   43.4
11.77   17.4
precedes 7^s.19   26".0 south.

So it appears, that a separation of 7^s in right ascension is sufficient exactly to separate the two spectra on these plates when medium width is given to the images.

April 27. 1900.

X5881 β Pis. Aust.
shows line K double, fainter comp. ~~two.~~ ~~south~~ north of stronger comp.

Star A.G.C. 30705 mag 7. is south 29".7.
This can not therefore be the line K of the 7th mag. star.

No trace of this companion star is seen.

Wednesday, May 2, 1900

X9122
A.G.C. 14483. A.G.C. 14482 superposed. $H\gamma$ of fainter spectrum comes bet. $H\gamma$ and 4471.8 of brighter.

4471.8 also seen in sp. of A.G.C. 14482. This line appears at first glance to be 4543 ($H\gamma'$) of A.G.C. 14483 but it does not exactly match this line in A.G.C. 20695 when superposed.

May 2, 1900

α Gem. X8116 and α Lyrae X8090 compared.

Line K is about the same. Lines bet. $H\epsilon$ and $H\delta$ are clearly double on X8116, α Gem. More lines are present in α Gem than in α Lyrae bet. $H\epsilon$ and $H\delta$. Lines in other parts of the spectrum seem to be about equally numerous but they are much broader and hazier in α Gem. They are not double in α Gem, except between $H\epsilon$ and $H\delta$. Can this be due to focus? If so, why is not K double or lines in other parts of spectrum?

May 3. 1900

V Puppis plates taken from
Nov. 10. 1893 to
May 16, 1899.

Friday, May 4, 1900.

ε Normae.

X 6373
Comp. star not seen

X 6597 (dense image)
Comp. star not seen

X 6865.
Comp. star seen on preceding side and north.

Is this star A.G.C. 22244 variable?
If not, why does it not appear on X 6597 which is denser than X 6865?

May 4. 1900

X5117 θ Eridani
Search for the comp. star of mag. 5 1/4. This star is separated from the brighter star in r.a. just about the same as the comp. of ε Normae is from ε. See prec. page.

on X5117, a faint edge is seen, but it seems impossible to decide whether this is the companion, or is caused by irregularity of the clock. There are no other spectra on this plate. The type of the edge seems the the same as that of θ Eridani. The separation of this edge is just about the same as that of A.G.C. 22244 from ε Normae.

May 4. 1900.
Corrections to make in papers now gone to printer.

Correct no. of plates.
Correct no. of stars photographed with 1, 2, & 3 prs.

May 4. 1900.

No. of Prisms

1	816	816
2	268	269
3	37	37
	1121	1122

Add 1 to number photographed with 2 prisms, as only one no. of pts. is entered for α_2 Crucis, whereas both plates are numbered.

May 9. 1900 23h

δ Or. × 3856

Scale D 1339.

Hξ	0.0	0.8	3704.0	0.8)7.8	9.8
Hν	0.8	1.1	3711.8	1.1)10.1	9.2
Hμ	1.9	0.9	3721.9	0.9)12.3	13.7
Hλ	2.8	1.4	3734.2	1.4)16.0	12.7
Hκ	4.2	1.8	3750.2	1.8)20.6	11.5
Hι	6.0	2.4	3770.8	2.4)27.3	11.4
Hθ	8.4	1.9	3798.1	1.9)21.1	11.1
3819	10.3	1.5	3819.2	1.5)16.3	10.8
Hη	11.8		3835.5		

May 9. 1902.

ζ Orionis C. 2447.

Mk.	0.0		
3634	4.2		
Hζ	10.7		3704.0
Hν	11.2		3711.8
Hμ	12.0		3721.9
Hλ	13.2		3734.2
Hκ	14.4		3750.2
Hι	16.1		3770.8
Hθ	18.2		3798.1
3819	19.9		3819.2
Hη	21.2		3835.5

4.2
6.5
0.5

0.8) 7.8
15.6
10.7
109
156
157.01

3704.0
157.1
3546.9

Compared with meas. of δ Or. on p. 74 Bk 7.

0.5 : 16.5 = 0.8 : 6.8

6.5
0.8
5.20

6.5
3.40

The lines measured in δ Orionis appear to be 3634 as present in ζ Orionis and 3613, which is not seen in ζ Orionis.

Thursday, May 10, 1902. 2ᵈ

48119 ε Orionis

~~H~~ 4254	15.8
Hγ	26.0
	28.0
	28.8
4144	37.7
4120	41.8
4111	42.8
Hδ	45.8

4200.7

4186.2

2.8) 14.5 (5.1
14 0
50
0.8
4.08

4186.2
4.1
4190.3

47911 β Ceti

Hγ	0
4254	15.5
	27.8
4186.2	28.5
4144	36.9
4120	41.8
Hδ	45.7

~~15.6~~

4186.2
4254.7
~~131.5~~
13.0) 68.5 (5.3
65
3.5
0.7
3.71

4186.2
3.7
4189.9

4254.7
4144.0
21.4) 110.7 (5.1
107 0
370

36.9
15.5
21.4

28.5
15.5
13.0
5.1
130
650
66.30

4254.7
66.3
4188.4

May 9,

β Crucis X 83~~7~~61.

4387	0
Comp. ~~Ap.~~ 4378.6	1, X°
" 4367.6	2.2
" 4350.9	4.0 bisects double line
" 4344.6	4.7 dbl?
Hγ	5,1

4387.8
4340.7
5.1) 47.1 (9.2
45 9
1 20

4387.8
9.2
4378.6

9.2
2.2
184
184
20.24

4387.8
20.2
4367.6

9.2
4.0
36.80

2.2
~~4.0~~
8.80

~~4387.8~~
8.8
~~437~~9.0

4387.8
36.9
4350.9

4.7
9.2
94
423
43.24

4387.8
43.2
4344.6

May 11, 1900

ε Orionis X 8119 microm. Measur. 17. p. 94.

~~Hγ~~	0	76857
4922	6.8	74721
5046. ~~4088~~	16.8	70574
Hβ'	52.9	60258 (from p. 85. Bk 17)
?	~~72~~ 67.1	
	71.7 very faint	
	77.6	
	86.5	~~XX~~ D³?

corresponds to microm. 55781
77.6 " " 52483
86.5 " " 49667

nearest measures on p. 94 Bk. 17 are
54610 15653
52788 5739
50075 D³ 5875

~~60258~~
~~76857~~
~~3401~~

76857
60258
16599

76857
74721
6.8) 2136 (314.1
204
96
68
280
272
80

1 scale div = 314.1 microm.
16.8
25128
18846
3141
5276.88

3,4.1
52.9
19269
6282
15705
16526.89

76857
16526
60331

76857
5277
71580

314.1
717
21987
3141
21987
22520.97

76857
22521
54336

314.1
77.6
18846
21987
21987
24374.16

76857
24374
52483

314.1
67.1
3141
21987
18846
21076.11

76857
21076
55781

314.1
86.5
15705
18846
25128
27189.65

76857
27190
49667

May 12, 1900

Micrometer meas.
from Bk 17, p. 94

Int. 1	D³	50075	
1?		52098	
2		52788	
1		53164	
		~~147~~	
1½		53707	
		54095	
		54610	
		65409	
~~6~~ 2	"6"	70574	13.8
4	"4"	71582	11.4
1	"3"	72105	
1	"2"	74023	6.1
5	"1"	74721	4.8
10	Hβ	76857	0

~~74721~~

76857
74721
4.8) 2136 (445.0
192
216
192
240
240

76857
52098
24759

76857
70574
13.8) 6283.0 (455.3
552
763
690
730
690
400
414

1 scale div. = 455.3 microm

May 12, 1900

76857
71582
11.4) 5275 (462.7
456
715
684
310
228
820
798

455.3
445.0
462.7
3) 1383.0
461.0

1 scale div = 461.0 microm.

To find approx. microm. values for scale readings 49.3, 50.1, 51.2, and 52.1, as measd in VII, p144.

461.
49.3
1383
4149
1844
22727.3
76857
22727
54130

461
50.1
461
2305
23096.1
76857
23096
53761

461
51.2
922
461
2305
23603.2
76857
23603
53264

461
52.1
461
922
2305
24018.1
76857
24018
52839

Int.	Scale	approx microm.	Nearest microm. from 17, 94.	λ's derived	
2 8a	49.3	54130	54095	5677.5	?
3 8b	50.1	53761	53707	5697.7	1½
2 8c	51.2	53264	53164	5721.8	1
3 8d	52.1	52839	52788	5738.2	2
				5773.4	very ft. line near 8d

also 5653.9 is a very ft. line near 8a

Monday, May 14. 1900   0h

Lines seen or measured on certain plates with scale and not given in Table XXIV

X 8739 λ Scorpii, shows ft. line of shorter λ than 4999.3. Measured in Bk. ~~X~~ VII, pp. 100, 146. intensity 1.

X 9991 σ Sag. shows the region of the 8a, 8b, 8c, 8d, group quite distinctly, but no lines are visible.

X 8745 γ Gruis shows a ft. line int. 2, which is not seen in β Crucis β Centauri and θ Carinae, but which when superposed on X 8729, α Scorpii ~~shows~~ falls upon the band, 5587 to 5589. It thus seems to be the same line as has been found in ε, δ, & ζ Orionis.

May 14, 1900

X 9186 β Crucis.

Measured for lines bet. 4712 & Hβ.

	Meas.	Int.		Meas.	Int.		comp.	measd micrm Feb. 17.94
Hβ	0.0		Hβ	0.0		76857		
	2.8	2		2.8	2		78138	78042
	3.3	1		3.3	1		78367	78405
	3.9	1		3.9	1		78641	78680
	4.5	1		4.5	1		79016	
	9.1	1		8.8	?			
4712.8	12.4	5		12.3	5			
4619.2	18.2	10		18.1	10			

4861.5
4712.8
148.7

82530
12.4) 5673 (457.5
496
713
620
930
868
62

457.5
2.8
36600
9150
1281.00

76857
1281
78138

457.5
3.3
13725
13725
1509.75

76857
1510
78367

457.5
3.9
41175
13725
1784.25

76857
1784
78641

457.5
4.5
22875
19300
2158.75

76857
2159
79016

Tuesday, May 15. 1900

Estimates of intensity of hydrogen lines in the violet.

X 3851 ε Orionis

	A
H_{θ}	25
H_{ι}	25
H_{κ}	20
H_{μ}	17
H_{ν}	10
H_{ξ}	10
H_{o}	1

Friday, May 17, 1900 2 7 h

η Centauri ✡

✓ X 9519

Hβ dark superposed on a faint bright band. Other hydrogen lines narrow. Orion lines very broad.

✓ X 9515

Hβ dark superposed on a bright band which is more intense toward red. Orion lines very broad. Hγ ~~very~~ fairly well defined

– X 9510

Hβ dark, sharp, sup. on a very faint bright band. Edges of this bright band appear like faint dark lines. Hγ well defined Orion broad. Hβ = 0.3 Hγ.

✓ X 9505

Hβ almost invisible. Two extremely faint dark lines glimpsed. Hγ little broad. Orion broad.

✓ X 9495

Hβ dark, double sup. on a faint bright band, dark line towards red A >. Orion double? Hγ well defined.

– X 9$\overset{280}{\cancel{820}}$

Hβ dark sup on ~~dark~~ faint bright band. Several ft. dark lines near

May 17, 1900

$H\beta$ towards violet.

✓ X 9609

$H\beta$ triple. central line strongest. Spaces slightly bright.

✓ X 9666

$H\beta$ almost invisible. Two or three ft. dark lines.

✓ X 4156

$H\beta = 0.2\ H\gamma$.

$H\beta$ dark and very ft.

✓ X 5759

$H\beta = 0.2\ H\gamma$.

$H\beta$ dark, edges slightly bright.

✓ X 9224

$H\beta$ dark, double. Bright space. Line towards red >.

✓ X 9583

$H\beta$ dark well defined, sup. on bright band. Several ft. dark lines seen towards violet, one towards red.

May 17, 1900

✓ X 8493

$H\beta$ dark faintly bright towards violet. Hydrogen lines narrow Orion broad. $H\beta = 0.9\ H\gamma$

X 9527

$H\beta = 0.2\ H\gamma$. sup. on bright band. Ft. dark line towards violet.

✓ X 7508

$H\beta = 0.7\ H\gamma$ Rather broad. All lines broad or double.

✓ X 9861

$H\beta = 0.5\ H\gamma$. Bright on edge of gr. λ. Orion double.
$H\gamma$ slightly " " " " " ".

✓ X 9548

$H\beta = 0.4\ H\gamma$. Sup. on bright band, more intense towards red. Ft. dark line towards violet.

✓ X 9539

$H\beta = 0.1\ H\gamma$. No bright band. Ft. dark comp towards violet Orion double.

May 17, 1900.

✓ X 9531

$H\beta$ = 0.4 $H\gamma$. Sup. on ft. bright band.

✓ X 9141.

$H\beta$ = 0.3 $H\gamma$. Edge of sh. λ slightly bright. Orion very broad

✓ X 9619

$H\beta$ = 0.4 $H\gamma$. Sup on bright band edges of which appear like dark lines. Orion broad or double.

✓ X 9052

Image very narrow

$H\beta$ appears like three dark lines, central one more intense
Orion lines double.² Central $H\beta$ = 0.3 $H\gamma$.

✓ X 8505

$H\beta$ = 0.8 $H\gamma$. and bright edge of gr λ.

✓ X 9312

Image very narrow.

$H\beta$ = 0.7 $H\gamma$ single & dark. Orion lines badly seen.

May 17, 1900.

✓ X 9576

$H\beta$ = 0.1 $H\gamma$. Edges bright.

✓ X 9207

$H\beta$ = 0.1 $H\gamma$. Triple. Spaces bright

✓ X 9053

$H\beta$ almost invisible. One or two very ft dark lines seen. Space between bright.

✓ X 9162

$H\beta$ = 0.2 $H\gamma$. Edge of sh λ, bright

✓ X 9602

$H\beta$ = 0.4 $H\gamma$. Bright on edge gr. λ.

✓ X 9499

$H\beta$ = 0.3 $H\gamma$. Bright on both edges. Ft. dark line towards violet.

X 9911.

$H\beta$ = 0.5 $H\gamma$. Bright on edge gr λ. Slightly bright towards violet.

May 17, 1900.

A $\dot{X}$9290

✓ Hβ = 0.4 Hγ, bright on both edges. & dark lines towards violet.

Wed. Oct. 2. 1900 $2 s^{2}$

Exam. of plates taken in 1899, which I had not arrived before I left in May.

X10147 β Col. qual 2.

X10149 $_{2}^{3}$ β Col? K? Iso

very thin image.

X10148 $_{4}$ δ Vel. Iso.

A. poor focus.

X10150 $_{2}^{4}$ η Can. Maj. Iso.

B5A. poor focus.

X10157 θ Car. qual. 1.

X10152 $_{2}^{3}$ β Lep. Iso.

G or G5K. Thin image.

Oct. 2, 1900.

X10153 $_2^4$ γ Vel. Iso.

Very good of red end.
Line Hβ', 5410, is here distinctly seen dark superposed on a bright band. It is similar to Hβ in this spectrum. On X8572 which was measured, the dark line is not seen at Hβ'. Shall this plate be measured and results included in table and discussion of γ Vel.? Another dark line is distinctly seen of gr. λ than Hβ' which is not included in the table now made out for γ Vel.

X10156 $_2^4$ δ Can. Maj. Iso.

Good focus. F8G Pec

X10157 ε Car Dual. ε

X10158 $_2^3$ π Puppis
Very thin. 2nd or 3rd Type.

Oct. 2, 1900.

X10159 $_2^4$ λ Vel. Iso

K.

X10160 $_2^3$ μ Vel. Iso

Birkm. Sl. 2029.
G? very thin image.

X10155 $_2^3$ ζ Puppis. Iso

Hβ' sharply photographed.

Dispersion (long) same as 10153 γ Vel.

X10154 $_2^4$ ε Can. Maj.

B2A.

October 12. 1900.

Cast proof p. 170 has an error.

No. of prs. for α Aurigae should be 3 not 1

No. of prs. for β Hyd. & ε Scorp. corrected to 3. This will change the count of stars phot. w. 2 and 3 prisms.

Cast proof p. 167 has an error.

A.G.C. 20570 κ Lupi B9A, should be 2 pr. instead of 1.

Cast proof p. 164 has 2 errors.

λ Scorp. B2A for 2 prs. read 3
υ " B3A " " " "

Oct. 13. 1900

Page 171 cast proof has an error.
A.G.C. 24703 ε Telescop. Class K. for 1 pr. read 2.

A.G.C. 29216 θ Indi for 1 pr. read 2.
Class A5F. p. cast proof

A.G.C. 12593 must be corrected in Table XVI cast proof.

For – Vel. read z Vel.

Correct number of plates on which spectra have been examined.

✓ Correct number of stars phot. w. 1, 2, and 3 prs.

See if Star 450 is printed right.
It should be u (English) not μ

Tuesday Oct. 29, 1900 23^h

γ Cass on C plates examined to classify star in Index.

C 5125 2 pr. γ Cass.
compared w. C 6433 δ Or. 2 pr.

Image of γ too faint in region of gr. λ than $H\beta$
$H\beta$ bright.

4712 very faint in γ, just a trace of a hazy line
4685 fainter than in δ Or. but certainly seen
4675 about equal to 4685. More intense than in δ
4649 nearly equal to same in δ
4641 Present in γ, not seen in δ
4641-4471 Numerous faint dark lines, wide & hazy, are seen in γ in this region which are not distinctly present in δ Or. Three faint bright streaks are also seen.
4471 about equal to same in δ
4387 " " " " " "
$H\gamma$ bright, superposed on a dark band which is distinctly seen on both sides of the br. $H\gamma$. The faintest possible dark line is superposed upon the bright $H\gamma$, making a slight double reversal.

Oct. 29, 1900.

$H\delta$ Very peculiar. The first appearance is that of two dark lines well separated while the space between is of about the same intensity as the cont. spec. A faint trace of a fine dark line is seen crossing this ~~[illegible]~~ space.
4144 a little fainter than in δ
4120 " " " " " "
4116 " " " " " "
4089 decidedly " " " "
4075-4069 This triplet does not appear to be wholly present in γ. There is a hazy band at or near this point, but does not extend as far tow. gr. λ as 4075. It is very hazy and difficult ~~to est.~~

4026 about same as in δ
4009 More intense than in δ

$H\epsilon$ Same appearance as at $H\delta$, only the dark lines are wider apart.

K Not seen in either
3926 faint hazy band

$H\zeta$ wholly dark & broad
faint band bet. $H\zeta$ & $H\eta$

Oct. 29. 1900

C 5125 γ Cass. cont.

$H\eta$ dark and broad
3819 dark and of same intensity as $H\eta$.
$H\theta$ wide & dark
$H\iota$ " " "
$H\kappa$ " "
$H\lambda$ barely glimpsed.

C 5125 γ Cass compared w. C 6154 ξ Persei to determine whether add. hydr. lines are present. 4342 & 4200 are prob. present but extremely faint and hazy.

Friday Nov. 1, 1900 22 30

C 884 γ Cass. 1 pr. superposed on C 2244 ζ Or. Class B. The dark lines in γ Cass. resemble those in γ² Velorum in haziness and indistinctness. Line 4649 is of about same intensity as in Class B. Region of $H\delta$ is indistinct, but 4120 & 4116 both appear to be present. 3819 is of same intensity as in Class B.
The dark lines are more indistinct than in any Orion star or the hyd. lines unnamed in the ζ series but if the same notation is employed, the best class for γ Cass is B Pec.

C 4376 γ Cass Eryth.

Red end very faint. When this plate is superposed on C 11808 δ Or. line 5410 ($H\beta'$) seen on latter plate is not vis. in γ Cass. A dark line of greater λ is seen in γ Cass. Image is ~~so~~ thin at region of 5410 but nevertheless, $H\beta'$ would be visible unless very faint. If present, therefore, in this sp. $H\beta'$ is extremely faint.

Nov. 1, 1908.

C 700 P Cygni 1 for.
Very peculiar. Strong br. bands accompany the hydrogen and several Orion lines, noticeably 4026 + 4471. I have seen nothing like this on the X plates.
Line K is much more intense than in most B or B, A stars. All the dark lines appear to be narrow. In ~~this~~ these narrow lines, this sp. resembles γ' Scorpii

C 5006 P Cygni 2 pos. super. on 6084 ~~ξ Persei~~ ε Orionis for Orion lines
Hβ br. + dark. Dark line is tow. violet. br. line is 3.0 as intense as dark.

4712.8 br. & dark. Dark = 2.0 bright. Br. is tow. red.
4649 hazy, less intense than 4641
4641 sharply defined. Lines from 4641 – 4553 are sharp and well marked.
4553 This more intense than any line from 4553 ~ Hβ.

Space bet. 4649 + 4641 appears bright. This may be due to the

Nov. 1, 1908

C 5006 P Cygni (cont.)
sharply defined edge of 4641.
4471.8 Br. + dark. Both about equally intense
Three lines bet. 4387 + 4471

One is very near 4415–4417 and may be ~~that~~ these lines or one of them. This br. on edge of gr. λ.
Another is bet. 4415 + 4387, another near 4437 but has ~~less~~ shorter λ. These lines are all slightly br. on edge of gr. λ.

Hγ br. + dark. br. is tow. red, and is more intense than dark
4144 dark
4120 dark
4116 Not certainly seen. There is a dark line present, but it seems to have gr. λ than 4116 and lies nearer ~~to~~ 4120

Hδ br. + dk. Dark line is a little more intense than br.
4096 dark
4089 dark

Nov. 1. 1900

C 5006 P Cygni (cont.)

4026 ~~Hε~~ dark ~~+ br.~~

4009 dark

3994. "

Hε "

3964 "

If this spectrum can be classed by means of my notation, it is B1A Pec. or possibly B2A Pec.

C 741 P Cygni 1 pr.

On this plate 4471. & appear bright with a dark thread superposed that is, doubly reversed.

Nov. 1. 1900.

C 1615 φ Persei ½ pr.

The system of dark lines in this spectrum does not seem as closely allied ~~to~~ Class B as in γ Cass; for instance 4387 is not seen nor 4120, nor 4712. It may be classed B Pec. or simply Pec showing that it has bright lines / or ?.

Hγ is very sharp and narrow, and appears very different from the other hydrogen lines. Edge of gr. ? of this sharp Hγ may be bright.

C 2900 π Aquarii 1 pr.

B1A

Tuesday, Nov. 6. 1900   0.h

Exam. of C plates of ν Sag.

C 4822 ν Sag. 2 po.
Too poor.

C 4909 ?
Nothing on plate.

C 4903 2 po.
Very narrow & poor image.
Hβ not seen
Hγ less intense than 4387.
No bright lines.
A dark line seen having λ about 4760, but no line seen corresponding to Hβ in superposed spectra.

C 5185 2 po.
Hβ very faintly seen.
Image ~~thin~~, and not seen except in region from Hγ to Hβ.
Hβ is dark, no bright lines visible.

Nov. 6. 1900.

C 5050 ν Sag 2 po.
Hβ dark & very well defined
No bright lines.
Orion lines 4471., 4387, 4144, 4120, seen.

C 5030 2 po.
A dark line is visible near Hδ & of gr. λ which is not 4116, and is probably solar.
Hβ dark
Hγ = 4387
All lines dark

C 6918 1 po.
All lines dark
Hβ well seen.
Hγ > 4387
Hγ and Hδ are broad.
4471 & 4481 are narrow.

C 5011 2 po.
Image thin. All lines dark. Hβ distinctly visible. 4471 & 4387 are broad. Numerous lines seen, probably solar.

Nov. 6, 1900.

C 6831 ν Sag.
$H\beta$ absent. λ4922 is distinctly seen. This sp. resembles ~~that~~ of η Centauri, and adds one to the list of stars having $H\beta$ variable. The star is in list having $H\beta$ bright from B plates.
4387 > $H\gamma$
Numerous solar lines seen.
It is difficult to class the two components from such faint photos. One might be B8A Pec, like β Orionis. This would account for lines 4471, 4387, 4128–4131, and the other spec. might be A or A2F. The Orion spectrum may have $H\beta$ var. The line bet. 4120 and $H\delta$ seems the anomalous or to belong to 2nd ~~stt~~ type stars.

Sat. Nov. 10, 1900   0h

Differences in Nomenclature of stars in H.P. & Vol. 28 part II.

No	H.P		Part II	
23 ✓	158	— Ceti	α Sculptoris	Not in Part I.
47 ✓	331	— Ceti	ν Fornacis	" " "
53 ✓	404	— Ceti	ω "	" " "
70 ✓	512	— Eridani	α "	" " "
143 ✓	1023	θ Orionis	θ¹ Orionis	
144 ✓	1024		θ² "	
146 ✓	1025	c "	c "	
151 ✓	1026		— "	
~~176~~ 222 ✓	1315	— Canis Maj.	τ Canis Major.	(Not in Part I
230 ✓	1333	— " "	σ " "	" " " "
248 ✓	1370	— " "	ω " "	IV b L " "
261 ✓	1381	—	τ	Not in " "
272 ✓	1416	— Argus"	— Puppis"	" " "
277 ✓	1431	— Argus	— Puppis	" " "
284 ✓	1465	K "	k "	IV a, b, " "
285 ✓	1446		— "	
291 ✓	1458	— "	— "	Not in Part I
293 ✓	1461	— "	— "	" " "
294 ✓	1462	τ "	l "	VIII ac. " "
296 ✓	1464	— "	— "	Not in Part I
303 ✓	1472	o "	o "	Not in " "
307 ✓	1474	ξ "	ξ "	XIV P " "
319 ✓	1492	l "	j "	XIV ac. " "
323 ✓	1500	— "	f "	In Part I
341	1515	2 "	R "	XII a " "

Nov. 10, 1900.

Differences (cont)

Star No. ~~162~~	H.P.			
396✓	1621	o³ Argus	γ Pyxidis	Not in Part I
431✓	1690	— "	θ "	" " "
437✓	1700	— Hydrae	g Hydrae	" " "
537	1932	χ "	χ¹ "	" " "
539	1933	— "	χ² "	" " "

As far as No. 657
Vol. 28, Part II

Nov. 28 —

704	2417	— Hydrae	k Hydrae	Not in Part I
709	2427	— "	l "	" " "
723	2456	— " ~~Lib~~ Hydrae	— Librae	" " "
726	2463	— Hydrae	m Hydrae	" " "
731	2477	& – "	ε Hydrae	" " "
738	2507	— Lupi	— "	" " "
739	2514	γ Scorpii	σ Librae	In Part I
761	2540	δ Lupi	f Lupi	Not in Part I
781	2585	— Scorpii	I Librae	" " "
786	2595	— "	υ "	In Part I
788	2601	o "	τ "	" "
821	2737	— "	o "	Not in Part I
862	2895	— Oph.	ξ Oph.	" " "
870	2909	— "	b "	" " "
878	2927	— "	c "	" " "
955	3213	— Sag.	ξ¹ Sag.	" " "
956	3218	ξ "	ξ² "	" " "

Nov. 28, 1900

Cont. of preceding list.

	H.P.			Not in Part I
981	3370	— Sag	h¹ Sag.	
982	3373	h "	h² "	" " "

As far as Star No. 1021.

1112	4205	— Piscis Aust. –	δ Sculptoris	Not in Part I

Jan. 19, 1901

Count of no. of stars phot. with 1, 2, and 3 prisms.

195	31	13	6
196	30	17	3
197	34	11	5
198	36	9	5
199	35	14	1
200	38	9	3
201	39	11	0
202	34	16	0
203	33	17	0
204	42	8	0
205	47	3	0
206	42	8	0
207	37	12	0
208	37	11	2
209	39	9	2
210	36	14	0
211	28	18	4
212	31	17	2
213	37	10	3
214	32	17	1
215	36	13	1
216	39	8	3
217	20	2	0
	813	267	41

267 + 1 = 268 α² Crucis only counted once

813
267
41
1121 + 1 = 1122
α Crucis

Jan. 24, 1901

Notes on entries made in Revised H. P. from Vol. XXVIII

		Part I	Part II	Entered
✓	H. P. 315	K5M	Ma	Ma ~~K5M~~
✓	333	K	K2M	K2M
✓	487	A2F	A3F	$A\cancel{2}^{3}F$
✓	530	G5K	K	~~G~~K
✓	625	B5A	B8A	$B\cancel{5}^{8}A$
✓	II 88 (Pleione)	B5A	B8A	$B\cancel{5}^{8}A$
✓	H. P. 1021	B1A	B1A	B1A
✓			B1A	B1A
✓	1025	B1A	B3A	$B\cancel{1}^{3}A$
✓	1024	B2A	B1A	$B\cancel{2}A$
✓	A. G. C. 6487 II	B2A	B5A	$B\cancel{2}^{5}A$
✓	6503 II 153	B2A	B3A	$B\cancel{2}^{3}A$
✓	6512 II 154	B1A	B3A	$B\cancel{1}^{3}A$

✓ Should #1100 β Aurigae have Pec.?

✓ H. P. 1312 – not entered. Shall I put G5K or K2M.

" 1368 ~~not~~ entered. from Part II

✓ 1445 & 1446 not entered.

		Part I	Part II	Entered
✓	H. P. 1462	A	A2F Pec	$A^{2}F$ Pec.
✓	1474	G Pec	G	~~G Pec.~~
✓	1492	G	F8G	F8G G

Cont. on p. 199

Jan. 25, 1901

Correction –
Star 207 Part II is in H. P.
H.P. 1294 magn. 6.15 –
This makes it necessary to omit
Remark giving A. G. C. magn.
Can this be done?
Correction made and remark left as it is.

Star 215 A.G.C. 8594, position differs
in Part II. and in M. P. Record II.
6^h 49.0 −18 49 Part
−18 48 Record Book

A. G. C. 8017 is given double in
A. G. C. comp. 8 1/4.
Should have been underscored
in Part II.
Shall this be corrected?

A. G. C. 25500, S.M.P. 6572 is given double in Table VII,
S.M.P. combined w. S.M.P. 6573 (mag. 9) mag. 4.76.
Not double in A. G. C. nor in Table X
S.M.P. from which the copy was made.
Shall this be underscored in Part II?

S. M. P. 3110 is bel. given double in first table of
S. M. P. not in last. Not double in A. G. C.
comp. mag. 9.

Cont. [illegible]

Jan. 25, 1901
Notes on entries, cont. from p. 197.

		Part I	Part II	Entered
	H. P. 1500	K	G5K	K
	3779	G5K Pec	G Pec	~~Not entered~~ G Pec
	" 2514	Ma	Mb	Mb
	" 2674	B1A Pec	B~~1A~~	~~B~~ ~~Not entered~~ "
	" 2738	B	B1A	Not entered
β Lyrae	" 3193			Not entered.
υ Sag.	3321			" "
P Cygni	3577			" "
	3717			

K5m Entered as sp. of H.P. 3717 and not as 3717 + 3718 combined since R124 says that there is an appearance of a 1st type sp. superposed.

π Apus. 3960 Not entered

Jan. 26, 1901

Corrections to Part II.

S.M.P. 3380 is given double in Table VII of S.M.P. mag. 5.82 is that of 3379 ($9^m.5$) and 3380 combined.

Feb. 12, 1901, $21^h 30^m$

List of stars having Hβ bright and variable, of which photographs are needed.

				mag.
	H.P. 1368	7^h 10.2	−26° 10′	4.54
J Vel.	S ~~3307~~ 3317	10 17.2	−55 33	4.44
η Cent.	S 4941	14 29.2	−41 43	2.54
κ′ Ap.	S 5263	15 20.6	−73 2	5.61

and ν Sag. H.P. 3321 19^h 16.0 −16 8

Feb. 16, 1901

Estimates of intensities of bands and lines in of γ Vel. X 10153.

Br. band 1 10

1a 3 dark line on edge of sh. λ of band

1b 3 " "

Br. band 2 6 50 this band is very black.

2a { 1
2
1 } a faint dark line superposed on a still fainter bright band.

3 4

$H\beta'$ 4 { 2
3
2 } $H\beta'$ is dark & superposed on a bright band.

5 1

From this point to $H\beta$ this plate is very thin and no bands are distinctly seen.

$H\beta$ { 2
6
2 }

Feb 16, 1901

Cont. of estimates

(9) a faint bright band
2

10 ~~pm~~ 20 There is a faint dark line superposed on this bright band nearly centrally but if anything slightly towards the end of shorter wavelength.

The space between this band and band 11 appears somewhat like a dark band.

11 very black & wide. Its brightness appears to ~~except~~ exceed that of α γ ~~33~~ 88 in H. H. P. 1311.
125

The edge of sh. λ of this band appears darker than the continuous spectrum. This was measured as a black band ~~in~~ on X 8573 but not on this plate. I see no marked difference in the appearance.

Feb. 18, 1901

Cont. of the preceding

$H\gamma'$ 15 2. There is a very faint brightness on the edge of gr. λ of this dark line. It was not measured on this plate, nor is it so noticeable as on X 8513.

16 (a) 2 – wide, ill-defined.

16 (b) Line 4514. Measured on X 8513, but not on this plate.

~~17~~ 19 Line 4471. 3, with a slight brightness towards the red.

21 (a) Dark line or band Int = 3

21 (b) Bright band 5

$H\gamma$ 25 5 wide br. band on side of sh. λ.

26 Bright band on side of sh. λ of $H\gamma$
5

27 5

Feb. 18, 1901

27 (a) 3

27 (b) $H\delta'$ dark.
1.7 very poor focus, line indistinct and hazy.

$H\delta$ Wide focus very poor. Fine lines blurred. Can not est. intensities

$H\epsilon$ Too hazy.

Feb. 22, 1901

Examination of plates of γ Velorum to see whether the spectrum changes.

2 prs. Plates X 7505, 8472, 8478; ~~X~~8513 ~~X~~ 8514, 10153 examined.
No change is observed except slight differences due to conditions of exposure.

X 4070, + 6266 (1 pr.) superposed.
No change observed.

Feb. 23, 1901

Identification of lines in the spectrum of Anderson's Nova in Persei disc. Feb 21, 1901 C 13151 (Nova) superposed on C 13148

	No.	Int	
	1	1	
	2	5	
	3	7	approx λ 5710.
	4	* 2	
	5	1 ?	
	6	1 ?	
	7	1 ?	
	8	1 ?	
(4922)	9	2 ?	Image very thin.
Hβ	10	40	Br. on edge of gr. λ
4712	11	3.	This line appears to match exactly w. the helium line ~~4 4~~ 4712
4661	~~12~~ 12	3	hazy. matches O iron line in δ Orionis
4649	13	1	
4576.	14	1	silicium group, hazy but surely seen.
4568	15	1	
4553	16	2	
4531?	17	2	
4514?	18	2	
4481.	19	20	May be magnes. line
4471	20	2	
	21	1	
	22	1	
4387	23	2	
	24	1	

Feb. 23, 1901

Lines in Nova Persei (cont.)

Hγ	25	40	
4267?,	26	2	
	27	5	Broad hazy band. prob. 4128 – 4131
Hδ	28	30	very wide.
4026	29	3	very hazy & wide.
Hε	30	20	
Hς	31	10	
	32		
	33		
	34		
	35		

Feb. 23, 1901

C 13152 Nova Persei

Appearance of lines 2, 3, 4, has changed, or is diff. from that on C ~~[illegible]~~ 13151. Line 4 is much less intense here and is barely seen on this plate.

Estimates of intensities in the nova on C 13152 – superposed on C 13146, ε Orionis. Hβ in the nova appears ~~to be~~ much thicker than Hβ in ε Orionis. The continuous spectrum is ~~darker~~ denser in ε, so that it is difficult to compare the relative intensities of the two Hβ's, but I think Hβ in the nova is more intense than in ε.

Lines numbered as on p. 207.

No.	Int.	?	
1	1.5		Region thin, but line certainly seen.
2.	5		Space bet. lines 2 & 3 is slightly hazy
3	6		
4	1	'	very hazy & indistinct. This line is seen distinctly on C 13151.
5, 6, 7, 8	Image too thin to show this region clearly		

Feb. 23, 1901.

Cont. of preceding

9 Image too thin

10 Hβ 45 Bright band on edge of gr. λ, seen best with naked eye. Int. of br. band = 5

11 (4712) 3 hazy.

12 (4661) 5

13 (4649) ~~464~~ 2 seen best w. naked eye.

14 not seen distinctly, there may be a faint line here

15 " " " " " " " " "

16 (4553) 2 very hazy.

17 (4531?) 3 not seen in ε Orionis

18 (4514?) 3 " " " "

19 (4481) The strongest line or band in the spectrum except the lines of hydrogen. If not of same λ as the magnesium line 4481, it is very close to it. ε Orionis, the superposed spectrum shows this magnesium line very indistinctly

20

20 (4471) 1 This helium line appears to be present but is almost lost in the hazy edge of the band 4481.

21 2 Does not match anything in ε Orionis

22 (4415?) 1 very hazy & faint

Feb. 2~~3~~4, 1901. 0^h

Cont. of preceding

23 (4387) 4. Double? ~~D~~

24 1

25 Hγ 40

26 (4267?) 3

27 10 hazy band, may be 4128-4131

28 Hδ 40 hazy. ~~4026~~

29 4026 4

30 Hε 35

31 Hζ 25

Feb. 25, 1901

Spectrum of Nova Persei photographed Feb 24 1901
The spectrum is entirely different from that of the Nova on Feb. 22, and now resembles Nova Aurigae.

C 13160. Identif. of lines by superposing on C 11804 α Orionis

D This line is well seen in the Nova. Its intensity is not so great as in α Orionis, but the image is fainter in the nova than in α Or. at this point.
Int = 10.

(1) — 10. Does not match solar line
(2) — 10 " " " "
5227. 10 Falls on solar line 5227.1
(These 3 bands are near together)

b 50. As intense as $H\beta$
Bright band between b & 5227.

Feb. 25 1901
Cont. of preceding
(3) 20 bright towards red

(4) 15 bright tow. red.

$H\beta$ 50, bright band to red = 40

(5) Dark line of slighter sh. λ than $H\beta$. Int = 4. This does not match a line in α Orionis.

Numerous faint hazy dark bands or lines and numerous bright bands between $H\beta$ & $H\gamma$. Two wide dark bands near position of 4471 & 4481 are seen. Superposing on plates showing 4481 prove that the band of gr. λ is at λ 4481 approx. This conspicuous dark band was seen on C 13151 & 13152, plates of the nova taken Feb. 22, see pp. 207, & 210 preceding.
4481 20 bright to red
The other band has sh. λ than 4471, approx. it is 4461. Int = 20

Feb. 25, 1901.

Cont. of prec.
2 or 3 other dark bands are seen bet.
4461 & Hγ.

Hγ 20, bright band to red = 50
the brightest band in the spectrum

3 distinct br. bands bet. Hγ & Hδ

Hδ 15 br. to red = 20

Br. & dark lines both faint bet
H~~x~~δ & Hϵ.

Hϵ 100 br. to red = 20. On
this br. band, is superposed a
narrow sharp, dark line, which
appears to be Hϵ of another spectrum.

K 100, bright to red = 15. A narrow
dark line is present which appears
to be the line K of another spectrum.

Feb. 25, 1901

Hζ $\overset{5}{8}$0

Broad dark band bet. Hζ & Hη.
Is this the same as in ζ Velorum?
No, the band in ζ Velorum
is much nearer Hζ.
Int = 50.

Hη Barely seen

Hθ " "

Spectrum 2.

When this plate is superposed
on C11860 ζ Urs. Maj. the fine
lines referred to on prev. page as
being Hϵ and K of another spectrum
match Hϵ and K in ζ Urs Maj.
When these lines are matched the bright
bands to the red of Hδ, Hγ & Hβ
fall in the position of the hyd.
lines Hδ, Hγ & Hβ of ζ Urs. Maj.
The helium line 4026 appears to
be present in Sp. 2. The anomalous
band bet. Hζ & Hη does not match
any known line or band.

Feb 26, 1901

Examination of spectrum of Nova Persei taken Feb. 25 1901
C13168 shows 2 spectra, apparently.
Bright bands towr. red of dark hyd. lines seem to be bright hydrogen lines of a component star. These bands show doublet reversal. $H\beta^{br}$ has a faint dark line superposed. $H\gamma$ bright has two dark lines as in α Arae. $H\delta$ may have three dark lines superposed. H_ϵ and K^{each} show a distinct narrow dark line superposed on the wide bright band.

Differences as compared w. C13160, taken Feb. 24, 1901.
$H\beta^{dark}$ is narrower on C, 3168 and the^n dark line to violet of $H\beta$ is more marked on C13168.
On C13168 there is also a dark line in same position with respect to D (sodium line) as the dark line of Sh. J than $H\beta$. This dark line near D is not distinctly seen on C13160.

Feb. 26, 1901.
C 13153 Nova Persei, taken Feb 23, 1901.
Continuous sp. crossed by dark lines agreeing ~~most~~ nearly with spectrum taken Feb. 22.
Lines seen. Image does not extend to λ5710

4922	1?	Image very faint.
$H\beta$	10	" " "
4661	3	
—	2	
—	2	
4481	10	
—	1	4387?
$H\gamma$	20	
—	1	
4128-4131	15	
$H\delta$	25	
$H\epsilon$	25	
K	20	
$H\zeta$	5	

This plate is poor but shows a marked diff. in the K line from the appearance on plates C13151 & 13152. Line K was not seen on the latter plates, while it is nearly as intense as H_ϵ on C13153

[Exam. of plates cont. in Bk. XI]

Andromeda. α, 56.

Apus δ, 18.
κ^{1}_{2}, 4.5., 18, 48, 49, [illegible]

Aquarius
η, 20.

Ara, α, 3. 7, 10, 12, 13, 14, 15, 18, 28, 33, 34,
η, 13

Bright lines, 24.

Canis Major a. G.C. 9181, 25, 26, 27,
δ, 32 ε, 45, 46, [illegible]

Carina, α, 29, e^{1}_{2}, 74
β, 70,
θ, 68,

Capricornus
ε, 4, 38, 66, 75, ζ, 35, 39

Centaurus
η, 1. ζ
ζ, 2. 7

Cetus

Columba, α, 29, 35, 74, β, 32, 61, 65,
ξ, 37.

Cor. Aust. β, 13. 41,
ε, 16.

Crux β, 22.

Dorado, α, 41,

Eridanus, α, 9. 12, 31,
θ, 30, 32, 34, 35, 39, 40,
τ^4, 34 φ, 40,

Grus α, 6. 7, 10, 39, 40, β, 31. 41,
γ, 11. 30, 31, 34, 41,
ι, 39. 40,

Horologium, α, 32

Hydra,
π, 6.
Hydrus α, 29. 32, β, $\overset{9}{8}$, δ, 36
λ, 5, 39, 64,

Indus, α, 14, 19, β, 19, 34, 35,

Intensity of bright hyd. lines, 76 – 85.

Lepus β, 30, ε, 33
—, 55
List of stars of magn. 5.0 or brighter not contained in Pub. I. Vol. 28, 107–129.
Lupus β, 3
η, 2. 9, 1$\overset{3}{2}$, 19,

Mensa γ, 37, 42, 65, θ, 88

Octans, ν, 35
Orion. β, 51–54. δ, 57, 58,
Pavo, α, 6. 8, 10, 15, 29, β, 30.
ε, 35

Perseus θ, 20

Phoenix, α, 16, 32, β, 69, 71,
ι, 17.
ν, 1 χ, 5, 42, 65, ρ, 39.
$\phi\,{}_{\eta}\overset{42\,43}{71}$ ψ, 75,

Pictor β, 61.
η², 37, 60, 61, 64, 66,

Piscis Aust. α, 12, 14, 19, 29, 31,
~~γ, 12~~ γ, 70 δ, 70.
Puppis, ν, 95, 96,
Reticulum, α, 36.

Sagittarius α, 35 δ, 40. λ, 9, 15, η, 12, 36, ζ, 1~~3~~4
o, 1, 36, σ, 8, 17, 31, 34,
τ, 34

Scorpius, α, 13. β, 92 μ^{1}_{2}, 3
θ, 2. π, 2, 3, 8, 14,
k, 16. A.G.C. 22843, 89, 90, 91, ω², 94,
ξ¹, 23.
Stars classified on later plates, 86.
Telescopium α, 30. ξ, 43

Triang. Aust. α, 29.

Tucana α, 6, 19, 29, 35, 36,
γ, 36, 40, 41,
ζ, 1, 31, κ, 39, 65, "

Vela, –, 62, γ, 62,
λ, 72, κ, 73

Times of exposing X plates, 21.

A.G.C. 22297, 4. 17.
S.M.P. 7910, 5.
" 7009, 16
" 6949, "
" 6276 "
" 7573, 17
" 7168, "
" 6857, "
" 6572, 18

A.G.C. 20695, 18.
H.P. 551, 20.
" 555, "
S.M.P. 1685, 37.
" 2171, "
" 216, 38.
" " 40.
" 337, 42
" 142, 42
" 220, "
" 216, "
" 1388 "
" 2277 "
" 142, 43.
" 337, "
" 146, "
" 1293 "
" 2277, 57.
" 1416, 60
" 1775, "
" 1293, "
" 1685, 64
" 2321, "
" 2415, 65
" 7009, "
" 2433, 67
" 1649, "
" 2321 "
" 1775, "
" 216, 69
" 369, "
A.G.C. 8034, 72
S.M.P. 1649, 72
" 2171 "

S.M.P. 27[illegible], 72
" 7009, "
" 1214, 73
" 1293, "
" 1388, "
" 1943 "
" 2707, 74
" 142 "
" 2543 "
" 1214, "