May 21, '97.

Continuation of examination of F stars
See Bk I, p. 213.

K Retic 7079,4
K = 1.1 H' = 4 Hδ
Solar lines all rather indistinct
Hyd. lines slightly hazy.
G band seen. Almost continuous but it may be due to poor focus.

K Retic. 5927,4
G band seen. Focus very poor.
Hyd. lines hazy.

K Retic. 5787,4
G band seen

η Crucis 7362,4
K = 1.1 H' = 3 Hδ
all a blur at G band
Hyd. lines hazy.

I Puppis 7391,4
K = H = 3 Hδ
Hyd. lines hazy,
No trace of G band.

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ι Centauri 7403,4

K = 1.2 H = 5 Hδ

Hδ often looks narrower in these plates than Hγ

G band faintly seen.

Hyd. lines somewhat hazy.

k Vel. 7429,4 A.G.C. 12620.

K = H 1.1 = 3 Hδ

Hyd. lines very hazy. Star on edge of plate.

G band seen.

Where are the other plates.

k Vel. June 1. Sept. 29. These plates are k not K Vel. } 5438,2 poor, probably like γ Dor. ~~ι Car. nom.~~

6223,3 ~~Can not find them~~ poor, like γ Dor. ~~Lines like ζ Cap. nor Hδ is~~

J Vel. 7430,4

To be identified.

η Crucis 7432,4

K = 1.1 H = 3 Hδ

Very poor focus. Solar lines almost blurred out.

May 21, 97

g Lupi 7456,3

K = 1.2 H = 4 Hδ.

G band faintly seen.

β Triang. Aust. 7559,3

K = H = 3 Hδ

All Hyd. lines surrounded by haze.

G band discontinuous.

A.G.C. 14276 I Carinae 6424,4

K = H = 3 Hδ

H lines clearer than on most of the plates I have examined. G band faintly seen caused by crowding of the lines towards the red.

First and second type stars barely seen on this plate.

A.G.C. 14276 I Carinae 4714,4

K = 1.1 H = 3 - 4 Hδ

H lines very slightly hazy.

Lines that form G band show a slight crowding together tow. red. Line dotted appear

A.G.C. 14405 A.G.C 14405 on plate. Like α Tauri.

" " " 14283 " " " 14283 " " " — Phoen. A.G.C. 31955

↑K line appears about 0.1 weaker than in A.G.C. 31955

May 21, '97.

v ~~x~~ Carinae 6433,5
K = 0.8 H = 2-3 Hδ
Hyd. lines somewhat hazy.
No trace of G band.

α Corvi 6470,4
K = 1.1 H = 4 Hδ.

α Corvi 6500,5
K = 1.1 H = 3 Hδ
Hyd. lines hazy.
Slight haziness in the lines of the G band.

γ Lupi 6571,3
K = 1.1 H = 4 Hδ
G band seen continuous toward the red.
Hyd. lines a little hazy

η Scorpii 6617,4
K = 1.1 H = 3 Hδ
G band faintly seen, hazy toward the red.
Hyd lines a little hazy.

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γ Tucanae 6684,4
K = 1.1 H = 3 Hδ
G band faintly seen.

α Ophiuchi 6857,5
K = 1.3 H = 4-5 Hδ
Focus very poor.

α Ophiuchi 4898,3
K = 1.2 H = 3-4 Hδ
G band not continuous or hazy.
H lines slightly hazy.

α Ophiuchi 4999,5
K = 1.2 H = 4 Hδ
Hyd. lines quite sharp.
Slight haziness in G band towards red.
Solar lines

α Ophiuchi 5632,5
K = 1.1 H = 3 Hδ
G band faintly seen.
H lines not hazy

ψ Cap. 7140,4
K = 1.2 H = 4-5 Hδ
Hδ looks sharper than Hγ.
G band seen hazy towards red.

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α Ophiuchi 5900^{3} very poor.
Too poor of other stars.

α Ophiuchi 6326^{3i} poor.
Too poor of sec. stars.

A.G.C. 28179 (φ Pavonis 5902^{4} Wrong dec. taken.
K = 0.9 H
There seems to be a trace of the G band but it may be due to poor definition

π Puppis 8365_{2}^{4}
This two-prism spectrum shows the star to be nearer α Tauri than δ Sag. The break at F is much more distinct than at 4762 or 4954, but the spectrum matches up well with ε Leporis
π Puppis has stronger H lines than α Tauri.
Hγ is here seen clearly apart from 4337.6
Hγ here = 4326.0 very nearly
Hγ " = 2-3 α Tauri.
Hβ + Hδ also strong.

May 21, 97.
π Puppis 8336_{2}^{4}
marked absorption towards violet
Same peculiarity of strong H lines.

π Puppis 8366_{2}^{3}
4326.0 = 1 Hγ = 2 Hβ
Hδ strong and hazy.

π Puppis 8249_{2}^{4}
Hγ looks stronger than 4326.0
It breaks less at 4762 + 4954 than α Tauri.

π Puppis 8253_{2}^{4}

π Puppis 8258_{2}^{4}

All these plates of π Puppis are put in box marked Bright Line

May 22, 97

δ Indi 5911,^{4}
K = H = 1.5 Hδ
All lines broad and hazy.
No G band distinctly seen.

δ Normae 5912,^{4}
H lines very hazy.
K = 0.5 H = 1.1 Hδ The haze around Hδ makes estimate uncertain.
~~No trace of G band.~~
Line near Hδ (ζ Cap. line) very strong.
There may be a trace of the G band.
This star is very much like α Circini, but has a weaker K line.

δ Doradus 5989,^{4}
K = 0.9 H = 1.5 Hδ
No G band seen. Definition poor.

γ Doradus 6132,^{4}
K = 1.2 H = 2 Hδ
G band slightly hazy towards red.
Lines rather sharp.

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A.G.C.5295+ α Caeli 6150,^{5}
K = 1.1 H = 3 Hδ
Lines quite sharp between K & H.
Hε & h seem sharp.
Hγ a little hazy.
G band not seen.

A.G.C.5351+ 2nd type star on plate to be identified.
It is like α Tauri. Spectrum very poor.
I

A.G.C.5244+ K = 0.7 H = 0.7 Hδ II

τ$_{6}$ Eridani 6193,^{4}
K = H = 4 Hδ
Hδ is somewhat narrower than Hγ or Hβ.
G band distinctly seen.

I Puppis 6203,^{3}
K = H = 1.5 Hδ
Too poor to see much.

May 22, 97

~~π Can. Maj.~~ 6220,^{3} Wrong star taken

Two stars overlapping.
To be identified before classifying

The two stars identify as the following.
DM $-18°$ 1591
$K = H = 1.5\,H\delta$ D ~~Under~~ In α Hydri Group

DM $-18°$ 1594
$K = \frac{1}{2} H = \mp 0.8\,H\delta$ D

May 24, '97

θ Cham. 6277,^{3}

Two stars.

A.G.C. 11334 α Cham. F star. $K = H = 4\,H\delta$
Hβ, Hγ, & Hδ all hazy.
Poor definition at G. possibly the band is seen.
Solar lines strong between Hδ & Hε perhaps because the focus is good here.

A.G.C. 11405 θ Cham. K star. Like α Tauri.
The break at 4762 is seen. The G band is not separated but this must be due to poor focus, as in the other points, the star is like α Tauri.

S Carinae 6323,4
$K = H = .3\,H\delta$.
H lines seem surrounded by haze.
G band not seen.
This looks much like α Argus.

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ψ Velorum 6332,^{4}
$K = 1.1\ H = 3\ H\delta$
G band faintly seen hazy towards red.
H lines hazy.
Is this wider α Canis Minoris ?
Other star too faint.

η Crucis 6350,^{3}
$K = 1.1\ H = 2.3\ H\delta$
Central line of G band stands strongly out.
H lines a little hazy

d Lupi 6353,^{3}
F star.
A.G.C. 21226 g Lupi $K = 1.2\ H = 4\ H\delta$.
G band seen hazy towards red
Hyd. lines a little hazy.
Solar lines sharp but $H\delta$ & $H\epsilon$, hazy elsewhere.

A.G.C. 21182 K star, not identified.
Like α Tauri

" 21095 d Lupi B 3 A.

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A.G.C. 24559 ✓H π Pavonis 5701,^{4}
$K = 0.8\ H = H\delta$ H is surrounded by haze which makes it seem somewhat wider without a glass.
$K = 0.9\ H\delta$
All H lines are hazy. The definition of solar lines is very poor.

π Pavonis 4986,^{4}
$K = 0.8\ H$. < They appear nearly equal
$K = 0.9\ H\delta$ when the eye separates the H band from the haze surrounding it.
Lines of G band slightly hazy towards red
H lines enveloped in haze

Other stars on plate 4986.

A.G.C. 24848 H (1) Like α Aurigae, spectrum poor, but H. lines seem to have about the same intensity. ~~Plate 5701 shows that this star may belong to earlier group, as the H lines look stronger than in type~~

A.G.C. 24745 H (2) Like α Bootis, spectrum very poor.
On 5701, this spectrum is much better and shows the star to be similar α Bootis

" 24714 Like γ Hydri ?; Too faint to use, but the third type marks are very faintly seen.

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ρ Pavonis 5734,³
Four stars on plate

ρ Par.
A.G.C. 28179 (1) $K = 0.9\,H = 2\text{-}3\,H\delta$
ζ Cap. line near $H\delta$ is strong.
G band seen. H lines soft hazy.
This looks like α Circini.

(2)
A.G.C. 28236
φ₂ Par. $H = K = 4\,H\delta$.
$H\gamma = 2\text{-}3$ 4326.0
Like γ Tucanae and perhaps approaching α Aurigae.
G band about as in α Aurigae, but the H lines are stronger.
Lines sharp.

(3)
A.G.C. 28140
φ₁ Par. $K = 0.9\,H = 2\,H\delta$
G band not seen. Focus poor,
Like α Argus?

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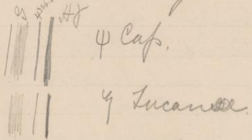
g Lupi 5762,⁴
(1) $K = H = 3\,H\delta$
G band seen.
Like α Can. Min.
$H\gamma = 5\text{-}6$ 4326.0

Star marked (3) on 5762.
Like α Tauri, Spectrum on edge of plate, only red end seen.

ψ Cap, 5810,⁵
$K = 1.1\,H = 2\text{-}3\,H\delta$
The G band seen about as in γ Tucanae, but the star seems a little earlier than ~~in~~ γ Tucanae.
$H\beta$, $H\gamma$ + $H\delta$ are stronger.



The line two violet near G band is distinctly seen in ψ Cap. but if existing in γ ~~Cap~~ Tucanae it is very hazy on this plate 7151⁴
H + K are about equal in both stars

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A.G.C. 23614 b Ophiuchi 5820,4
$K = 0.8\ H = H\delta$
G band not seen. Focus poor.

A.G.C. 23583 Star marked (3) on 5820
Under α Tauri most probably. D
Spectrum very poor

A.G.C. 23500 θ Oph. partly on plate. Type B.

β Triang. Aust. 5876,5
$K = 1.1\ H = 3\ H\delta$
G band not seen. the lines are clearly discontinuous.
Solar lines sharp. Hyd. lines seem a little hazy.
Like α Argus.

τ_6 Erid. 5325,4
$K = 1.2\ H = 4.5\ H\delta$
G band seen as in φ Cap. except that the def. is not so good. [illegible]
Are these two stars (φ Cap. and τ_6 Erid) nearer α Can. Min. or ζ Lac?

May 24, 97.

$\left.\begin{matrix}\delta_1\\ \delta_2\end{matrix}\right\}$ Apodis 6847,3

Two spectra superposed.
δ_1 Apodis is 2'R.
Its spectrum is like α Tauri.

δ_2 Apodis has third-type spectrum like γ Crucis.

These stars are discussed on p. 179 Bk I.

θ Antliae 7354,3 too poor.

θ Gruis 7207,5
$K = 1.2\ H = 3\text{-}4\ H\delta$
G band seen hazy towards red.
ζ Cap. line near Hδ is strong. Is this star like α Circini?

A.G.C. 31437. Other star on plate.
Hyd. lines strong and wide.
G band seen
Probably under ζ Lac.

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θ Gruis $5839,^{4}$
Like α Circini?
The G band is plainly seen.
Other star does not appear.

β Cali $5352,^{4}$
K = 1.1 H = 3-4 Hδ
G band a little hazy towards red.
Lines do not seem hazy.

I Puppis $7391,^{4}$
K = 1.1 H = 3 Hδ
H lines a little hazy
G band not seen but there is some haziness there. It may be poor focus.

β Cali $5447,^{4}$
K = H = 3 Hδ
G band seen with naked eye.
With the glass, the lines ~~near~~ towards red end seem crowded together.

γ Doradus $5496,^{4}$
K = 1.3 H = 3 Hδ
G band not seen, or if so, but a mere nearing together of lines twr. red.

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M ~~M~~ Vel. $5530,^{3}$
K = 6.9 H = 1.5 Hδ
Hyd. lines hazy.
G band not seen!

ζ Lupi $5576,^{31}$
K = 1.1 H = 3 Hδ
Focus very poor.

ψ Vel. $5574,^{5}$
K = H = 3 Hδ
G band faintly seen
Hyd. lines not hazy.

η Cap. $5595,^{3}$ Wrong region taken. η Cap. not on plate.
A.G.C. 29014 1) K = H = 2-3 Hδ D
Focus very poor.
η Cap. line quite strong.
" 29006 2) Probably under α Bootis D
" 28944 3)
"Look up better plate" D

ε Ophiuchi $5645,^{3}$
A.G.C. 23481 K = 1.1 H = 3 Hδ
G band faintly seen but there are no clear lines in this spectrum.

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ξ Ophiuchi 5645,3
Star marked (2)
Under α Bootis.

A.G.C. 23577

ι Centauri 5654,4i
K = 1.1 H = 3-4 Hδ
G band seen. Strong lines
seen as in α ~~Ciam~~

η Indus 5691,4
K = 1.1 H = $1,\overset{4}{5}$ Hδ
G band not seen. H lines hazy.

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η Crucis 4835,4
K = 1.1 H = 2-3 Hδ
Central line of G band stands
out stronger than the others.

A.G.C. 16359.
(3) Spec identification
too faint.

η Crucis 4785,40
K = 1.1 H = 3 Hδ
Solar lines not distinct, Definition
poor.
(3) not seen.

η Indi 4866,4
K = 0.9 H = 2 Hδ
No G band seen. All lines hazy.

η Scorpii 4874,4
K = 1.1 H = 2-3 Hδ
G ~~band~~ lines hazy toward red

ζ Pavonis 4879,4
Like η Ind.

g Lupi 4897,4
K = H = 2 Hδ
G lines hazy towards red.
Without the glass the G band is seen
somewhat as in α Can. Min.

May 25, 97.

φ Vel. 6332,^{4}
$K = 1.1\,H = 2\,H\delta$
G band faintly seen, hazy toward red. All lines hazy

δ Indi 5779,^{3}
H ~~δ~~ $= K = 2\,H\delta$
Def. poor.
No trace of G band

δ Indi 5124,^{5}
$K = 0.9\,H$. K line is sharper than H. All the H lines seem hazy.
A trace of G band seen but the star seems much nearer α Argus than γ Dor.

π Sag. 5164^{5}
$K = 1.1\,H = 4\text{-}5\,H\delta$
G band not seen. The lines are clearly separate, but the central line 4302.0 is double.
This is like α Carinae

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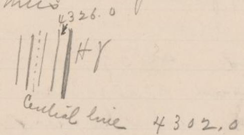
γ Doradus 5771,^{4}
$K = 1.1\,H = 2\,H\delta$.
G band hazy toward red. The change in this band is seen to be due to the growing strength of a line placed thus



The dotted line is seen distinctly in this star whereas it is very faint in α Carinae

γ Leporis 4481,^{2}
Like γ Luc.

κ Phoen. 4487,^{2}
$K = 0.6\,H$ H is hazy, K not.
All H lines hazy

? Pictoris 4517,^{2}
$K = 0.6\,H = 1.1\,H\delta$.
Lines rather hazy
No solar lines distinctly seen

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τ_6 Eridani 4538,$^?$
K = 1.1 H = 3-4 Hδ
G band seen hazy toward red.
A star on plate.
Too hazy for estimate.

τ_7 Erid.
A.G.C. 4208

τ_6 Erid. 4539,$^?$
G band resembles same in γ Tuc.
but on superposing the H lines
are stronger here, and 4326.0 weaker.
This is probably nearer α Can. Min.

δ Carinae 4706,^{5}
K = H = 3 Hδ
H line somewhat hazy.
No G band seen. 4326.0 weak
Like α Carinae.

ψ Cap. 4761,^{5}
Like γ Tuc.

ψ Cap. 5269,^{4}
Like γ Tuc.

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μ Hydrae A.G.C. (7 mag.) 19997 7455, ~~4831~~,^{4}
A.G.C. 19998 differs but 0.61 from
19997. I do not see the 7th mag. star,
though a faint edge to 1999~~8~~7 was
thought at first to be it. The same edge
however appears on A.G.C. 20035 on
this same plate.

A.G.C. 19997 μ Hydrae.
K = 1.1 H = 2.3 Hδ
Hyd. lines hazy.
G band slightly hazy tow. red.
caused by strength of 4302.0
A.G.C. 20044
Image on edge, shows some shading like
δ Sag.
μ Hydrae 7405,^{3} Poor, no use for classif.
" " 5928,^{3}, Images narrow & burned out.

A.G.C. 19997 μ Hydrae 4831,^{4}
K = 1.1 H = 2 Hδ
H lines hazy and broad towards
red. Like δ Doradus.
4302.0 wide.

" 20044 A.G.C. 20044
Like α Bootis? H & K seen.
4227.0 weaker than in α Bootis
Hγ = 4326
G-H

May 28, '97.

α Cor. Aust. 5764,^{4}

α Cor. Aust. is type A.
γ " " " also on plate
It is like ζ Tuc.

γ Cor. Aust. 4780,4 A.G.C. 26123.
Like ζ Tuc.

A.G.C. 24577 5909,^{4} W Sag
Looks without the glass like ζ Tuc
but seems with the glass to be nearer
α Can. Mini.
Put it under α Can Maj. saying
that the spectrum is on the edge
of the plate & it may come under
ζ Tuc.

A.G.C. 9176
A.G.C. 9283 7224,^{4} [I Puppis plate]
Probably like α Tauri, spectrum
very poor on edge

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A.G.C. 11770

A.G.C. 11770 $\overset{n}{\chi}$ Vel. 6405,^{4} (b Vel.)

K = 0.6 H = 0.8 Hδ
H lines are a little hazy
G lines distinct

A.G.C. 443 γ_1 Phoen. 5277,^{4}
A star Like A.G.C. 31955.

A.G.C. 519 γ_2 " "
Like ζ Tuc. on edge of plate

A.G.C. 427 5277,^{4}
Probably under α Can. Mini
Spectrum poor on edge of plate
It may be under ζ Tuc.

A.G.C. 14083 4710,^{40} (ζ Vel. plates)
Like ζ Tuc.

A.G.C. 1408$\dot{3}$ 7376,^{8} " "
Like ζ Tuc.

A.G.C. 14105 $\left\{\begin{array}{l}4710,^{40}\\7376,^{3}\end{array}\right.$
D Second-type star appearing partly on these plates
4227,0 is barely seen
The star is probably under δ Sag. ~~Spectrum~~

May 28, '97.

A. G. C. 21102 4897.4 (g Lupi plate)
Under α Tauri.

A. G. C. 12617 c Vel. 7429,4 [α Vel plate]
This spectrum is too poor to classify
D with certainty. It looks like δ Sag.
See p. 2.

A. G. C. 15166 χ, Hydrae 6481,3

K = H = 2 Hδ
G band hazy twd red caused by appearance of a line bet. 4302.0 & 4315.

Hγ = 6×4326.0

A. G. C. 15166 (χ, Hydrae 4762

K = H = 2 - 3 Hδ
G band as described above.

These are the only plates of χ, Hydrae and are put in A box

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α ~~Ori~~ Scorpii 7493$_2$
Under γ Hydri ?
The streaks seem about as sharp.
H lines stronger.
Hγ = 4326.0
Hβ = 2 the same as γ Hydri.
Hδ is broad
The streak at 4954 seems to be bright-edged, and the whole region between Hβ & 4954 is made up of bright streaks. This is probably due to the breaking out of the dark lines ~~due~~ by poor focus

α Scorpii 4093,2
On a one-prism plate, the spectrum looks more like α Orionis & γ Crucis. with the H lines about as in α Orionis and also 4227.0 " " " " "

α Scorpii 7623$_2^4$
" " 7587$_2^4$
" " 7486$_2^4$

1 May 28, 1897.

8367_{2}^{4} b Vel.

α Corvi 4105, 2
K = 0.4 H = 0.5 Hδ
No solar lines seen.
Is this α Corvi. Compare plate
6500 where K = H

β Triang. Aust. 4219, 2
K = H = 1–2 Hδ.
No G band seen.
Like α Carinae?
H lines a little hazy

4346 θ Gruis. Too poor.

A.G.C. 31437. One star on plate looks like ζ Tuc.

ζ Tuc. 4399, 2

η Scorpii 4419, 2
K = 1.1 H = 3 Hδ
Other lines very faint.
Other stars too poor.

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π Sag. 4423, ?
(1) K = 1.1 H = 4–5 Hδ
Lines sharp. No G band seen.
Other stars too poor

α Horologii 4474, 3
(1) δ Hor. K = H = 1–2 Hδ
G band hazy tow. red?

(2) Like α Bootis
α Horolog. H + K well seen.

ρ Pavonis 4878, 4
ρ Par. (1) K = 1.1 H = 2′ Hδ
Trace of G band seen. Plate poor.
Probably like α Can. Maj.

A.G.C. 28140 φ₁ Par. (2) K = H = 1.3 Hδ
No G band but 4302. Bands out.

" 28236 φ₂ Par. (3) Like ζ Tuc

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A. G. C. 519 ν_2 Phoen 5265,⁴ ~~5277,~~
Like G Luc

A. G. C. 427
Like α Can. Minor ?
Spectrum poor.

ρ Puppis 3974,⁴ too poor.

α Cham. 4019 (One other plate 6145)

α Cham. (1) K = 1.1 H = 4 Hδ

θ Cham. (2) Like α Bootis showing some absorption bet. G & H but not so much as in δ Sag

a ~~α~~ Carinae 4071
To be identified

ψ Vel. 4072,²

A.G.C. 12989 (1) K = 1.1 H = 3 Hδ
G hazy towards red.

A.G.C. 13028 (2) Like α Bootis
(3) First type.

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ξ Doradus 5205,⁴ } Like G Luc.
" " 6170,⁴ }

5029,⁵ ε_1 Arae
ε_2 appears Like G Lucanae

8195,³ λ Vel. partly in.
Like α Tauri.

B star in centre.

5675,⁴

A. G. C. 28236 φ_2 Par. G Luc.
" " " 28140 φ_1 " α Argus sp. very poor.
" " " 28179 ρ " α ~~Can. minor.~~ Circini sp. on edge of plate

May 31, 97

η Carinae 4013,^{4}
S A Carinae

Hβ, Hγ & Hδ seen bright.
The spectrum is too faint to detect other characteristics, but it seems to be of the third-type.

The plate is put in box of A stars. On the other two plates these stars do not appear.

6819,^{3} A. G. C. 30557 in Tucana

Under δ Pavonis, plate poor.
Hγ = 4326.0

6819,^{3} A. G. C. 30468 in Tucana
Under α Tauri, plate poor.

8048_2^3 η Eridani
May be also δ Sag or α Tauri.
Plate poor.

May 31. '97.

α Fornacis 7856_2^3

" " 6261,^{4}

" " 5334,^{4} compared w. 4450 β Hydri. These two plates are of about the same density and look as if the exposure were about the same ~~and~~ so that a comparison seems fair.

H & K in α Fornacis = 3/4 of same in β Hydri
~~Hβ~~ Hγ ~~in β Hydri~~ = 4 × 4326.0 in α Forn.
" = 1.2 – 2 times 4326.0 in β Hydri

The Hyd. lines do not seem in this plate much stronger in α Forn. than in β Hydri but they stand out much more conspicuous with regard to the other lines of the spectrum.

4326.0 in β Hyd = 3 times same in α For.

The solar lines look about the same in both.

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6261 α Forn
5948 ζ Tuc } Almost exactly alike and both look very much like β Hydri, with Hyd. lines a little stronger.

7843_{2}^{3} ζ Tuc.
4326.0 seems somewhat stronger here than in α Fornacis.

7804_{2}^{4} ζ Tuc.
8060_{2}^{4} α For.

In ζ Tuc 4326 = 1.5 same in α Forn.
" " " G band seems a little more continuous, for in α For, it seems where a tiny central line.

$8190,_{1}^{3}$
$8142,_{1}^{4}$ } α Fornacis

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Pavo γ $5768,_{1}^{5}$
Like α Fornacis

$6192,^{3}$ α Forn.

Retic. κ, $5344,^{3}$ not good, but looks more like β Hydri

β Dorado 4431
To be identified.
ζ Cap. line strong

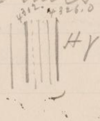
β Doradus 5497^{4}
Like ζ Cap. with the strong line at mm. from F very faint

A.G.C. 9733 —Puppis $5423,^{40}$
" " $6206,_{1}^{30}$ } Like α Fornacis.

There are no secondary stars on these plates, but the spectra are alike, and so it may be assumed that the right star was taken.

May 31. 97.

β Doradus 6196
This spectrum resembles δ Can. Maj. especially in the intensity of its lines between Hβ + Hε. The G band however, looks more connected, for here we have distinctly a line placed thus as given ~~in~~ by the dotted line



The appearance of this lines makes the G band look hazy towards the red.

β Dor. 4500,? Same as above.

May 31. 97.

η Scorpii 5763,⁴ lines very broad

ζ Pav. 7081,⁴ Like α Fornacis

γ Doradus 7204,⁴ Like α Fornacis

ζ Puppis 6172,³ " " "

κ Retic. 7146,⁴
G band seen, focus very poor, solar lines all hazy.

7309,⁴ κ Retic.
The G band is seen as in ζ Dor.

June 1. '97.

5077,^{3} plate of σ Apodis

A. G. C. 21445 on plate

D Spectrum poor. probably like α Can. Minoris though it may be nearer α Argus.

8082$_3^4$
α Scorpii

γ Doradus 7088,4
$K = H = 2H'$
Solar lines not clearly seen.
Hyd. lines hazy.

γ Dor. 7089,^{5}
$K = H' = 2H\delta$ Hyd lines hazy
G lines not seen so clearly as in 6132

φ Cap. 5201,^{3}
poor. A star appears, but is not good enough to assist in its classification

June 1. 97.

ρ Puppis 6165,^{4}
This spectrum looks like α Circini, more than anything else
It is something like ι Scorpii but differs essentially in the G lines

ρ Pav. 5734,^{3}
Looks like α Circini

φ_2 like ζ Tuc.
φ_1 " α Argus? Def. poor.

κ Pavonis 6532,^{4}
Where are other plates 6985 & 7768?
This spectrum resembles α Leon. about the G band but from $H\delta$ to $H\varepsilon$ it looks more like ζ Cap.
The line at 3.73 mm. from F is not more than ½ as strong as in ζ, but the other strong lines bet. this line and $H\varepsilon$ are seen. The H lines are stronger than in ζ.
$K = H = 3 - 4 H\delta$

June 1, '97

ν_2 Centauri 6586,^{4}
Like δ Can. Maj.?
The G band is here more cont.
It is like the band in ζ Dor.
and has the dotted line as in
figure on p. 23.
4326.8 is 1.5 as strong as in δ.
The sp. resembles δ Can. Maj. in the intensity of
its solar lines.

ρ Par. 5902,^{4} Like α Circini?
~~Star~~ Plate put in A stars.

α Can. Min. 4042,$^?$
" " " 3882,^{3} Good of violet
" " " 3876,^{5} " " "
" " " 4026,^{4}

α Persei - 7983$_3^5$
Match this up w. three-prism of α Can. Mi.

June 1, '97

ζ Tuc. 7785$_8^3$ poor.

c_3 Aquarii Peculiar.

7115,^{3}
5138,^{4}
4961,^{3}

7834$_2^4$ π Sag.
Appears to be somewhat nearer
α Can. Min. than β Triang. Aust.
does. The K line is a little
broader in π Sag. The new line
bet. 4302.0 & 4315 - is faintly
seen. If another class is
made bet. β T. A. & α Can. Min.
put this star in it.

θ Gruis
5275,^{3} (Secondary star)
5971,^{4} No other star
5963,^{4}
5964,^{4} Peculiarly strong lines.
5582,^{5} very poor of other stars
6834,^{4} and focus poor of +

June 1, '97

The focus seems poor on all plates of η Crucis.

June 2, '97

φ, Pav. 4865
φ, like α Argus
φ_2 " ξ Tuc.
ζ " α Circini

ξ Ophiuchi 4824,^{3}

Indus δ 4960,4
Like α Can. min.?
Hγ d. lines hazy.
Re-examined. K = H = 1.5 Hδ. Plate very poor.
Centaurus ι 4948,4
Like α Can. min.

δ Indi 5068,^{3i} too poor.

June 2, 97

α Circini. 7517 2^4

Line 0.34 mm. shorter λ than Hδ
is 1/3 as strong as Hδ

Lines at 1.33 & 1.49 shorter λ
than Hγ are 1/5 as strong as Hγ

K = H
Hyd. lines hazy.

June 3. 1897

✓ A. G. C. 38425, plate 5207, ^{3}
taken for δ Indi, but it is not on plate

A. G. C. 30425, probably like α Aurigae
spectrum poor on edge of plate.

Plate 6598 ξ_2 Scorpii.

A. G. C. 22748 also on plate

The lines in ζ Puppis having wave-lengths 4472, 4544, 4633 and 4688 are seen in this star.
The first of these lines is well seen in this star whereas it is faint in ζ Puppis. The second is not so strong in this star as in ζ Puppis.
The third and fourth are double as in ζ Puppis, but the stronger one is here towards the violet, but towards the red in ζ Puppis.
The ζ Puppis lines between Hγ & Hδ and between Hδ & Hε are also seen.
The K line is seen in this spectrum

June 3, '97.

Plate 5058 (ξ_2 Scorpii.)

A. G. C. 22843 also on plate.
Hβ ~~+ Hγ~~ bright.
Hγ bright- edged?
Hδ a bright line with a dark one
on either side.
The star has two bright bands that
seem to correspond with those in
ζ Puppis at w'length 4633 and 4688.
The lines at 4472 and 4544
are also seen.
The line between H~~γ~~δ and Hε is seen.
This may be an Orion line.
There also seems to be a very faint
line between Hγ and Hδ that
coincides with the ζ Puppis line
at this point.

June 3, '97

Plate 5058 (ξ_2 Scorpii.)
A. G. C. 22763
Hβ, Hγ + Hδ bright.
Bright bands like ζ Puppis.
Line at 4544 is bright.
Other bright lines.

A. G. C. 22827
One broad bright band near
Hβ. It seems to be bordered by a dark line
on the edge of shorter wave-lengths.
A. G. C. 22812. ξ_1 Scorpii. Announced.
Hβ bright.

June 3, 1897.

6480$_{}^{3}$
w ~~α~~ Carinae A.G.C. 14673
Like λ Tauri

Plate 40 HA
A.G.C. 14626
Hβ bright.

June 5, 1897

7865$_2^4$ ζ_2 Scorpii

The bright band of shortest wave-length in A.G.C. 22748 and A.G.C. 22843 ~~are~~ is double.

7691$_2^{4i}$
Star marked (1) appears to have a bright line between Hβ and Hγ.
The bright bands mentioned above ~~are~~ is widely double in both stars.

June 5, 1897.

A stars

A.G.C. 15755 o$_1$ Centauri 6340,^{3} A.G.C. 15757 too poor.
" " 7356,^{3}. Spectra superposed
" " 7357,^{3} " "
" " 7431,^{3} " "

o$_1$ and o$_2$ Centauri are superposed. The spectra are farther apart on 6340 than on the other plates. The spectrum of A.G.C. 15755 o$_1$ Cent. is like δ Can. Maj. except that the H & K bands seem narrower, but this part of the spectrum is indistinct

A.G.C. 15756 The spectrum of o$_2$ is seen as far as α. K is about one half as strong as H. It is impossible to tell which solar lines belong to this star. Both K & H are very narrow.

June 18th
4728,"4" { Found in box of peculiar stars.
7377,^{4} { 4728 is marked "Two stars superposed", speaking of A.G.C. 15757 which is also on plate.

mag. 7¾

A.G.C. 15757 A.G.C. 15757 is on the edge of both plates. The lines Hγ, Hδ, H look very broad. K is narrow. The spectrum is too faint to bear magnifying. A better photograph ought to be taken.

June 5, '97.

δ Normae 6343,^{4}

K = 1/3 of H.
H = 1.1 Hδ.

G Cap. line near Hδ is quite strong. Hyd. lines hazy. G band not defined. Solar lines not clear. This looks like the δ Can. Maj. Type, having strong lines but earlier than δ

e Vel. 6346,^{4i}

K = 0.8 H = Hδ except for the haze surrounding the latter.
Violet end seen as far as ε, red end in poor focus.
The lines of the ^{G}H band are separate and look like α Argus. The K line is narrower than in α Argus, otherwise the star seems to come under the same group.

m Carinae 6357,^{3}

K line seen as a thin thread perhaps 1/2 as strong as H
The hyd. lines all hazy. No solar lines seen. There seems to be the trace of a line between Hδ and Hε
Line of shorter λ than K is fainter on part of the plate

June 5, 97.

m Carinae 6278,^{3} too poor

m Carinae 5537,^{3}

This spectrum is not good but there is an Orion line between Hβ & Hγ, and one between Hδ and Hε. It is very hazy at the K line.

If it is an Orion star I can not understand the decided K line, nor the double-star effect on plate 6357. These are all the plates used. A better photograph ought to be taken.

June 7. 97

A.G.C. 17180 τ Cent. τ Cent. 12^h 32.3 6360,^{5}

(1) K = 1/5. H

H = 1.2 Hδ

Def. poor but evidence of solar lines. Hyd. lines hazy.

A.G.C. 17269 γ Cent. (2) K = 1/10 H

violet end seen as far as H_γ

Spectrum intense. Solar lines not seen. Like α Canis Maj.

A.G.C. 17300 ω Cent. (3) 2nd type star, faint.

Like α Bootis?

ψ Cent. 6361,^{4}

K = 1/8 H

Some few solar lines seen.

Like α Canis Maj.

The K line looks slightly stronger, and the H lines wider.

α Centauri 6377,^{3}

(1) K line faintly seen, much fainter than in Sirius. Perhaps it is burned out as the spectrum is intense and no solar lines are seen

June 7. 97.

a Centauri 6377,^{3}

A.G.C. 15962 (2) Like γ ~~Gruis~~ Hydri.

D (3) Hyd lines very broad.
K = 1/10 Hδ.
Like α Can. Maj.?
This spectrum is too poor to classify with certainty. Leave out unless a better plate is found.

γ Triang. Aust. 6393,^{4}
K = 1/10 Hδ
Hyd. lines very broad.
Few ~~No~~ solar lines clearly seen.
Like Sirius

~~χ~~ η Cent. 6398^{3}
K = 0.8 H H is very hazy.
All Hyd lines are hazy.
G band as in α Argus.
K is slightly narrower than in α Argus and H is decidedly wider and hazier.

June 7. 97.

λ Cent. 6417,^{3}

A.G.C. 15848 (1) Faintest trace of K, very indistinct and hazy. No solar lines seen.

.. 16039 (2) Like α Argus?
The G band looks so, and the H lines but the solar lines look wider and stronger. This may be because the star is on the edge of the plate.
Intensity of lines like those of δ Can. Maj.

.. 16046 D K = 1/2 H. Hyd = those of Sirius. Very poor.

~~κ~~ l Cent. 6427,^{3}

A.G.C. 17234 (1) K not seen. Def. very poor.
No solar lines visible.

A.G.C. 17149 (2) K = 1/10 H
Hyd lines broad.
No solar lines seen.

D (3) K = 0.9 H Sp. cut off between Hγ & Hδ. Solar lines burned out.
Too poor.

A.G.C. 17320 (4) K = 0.9 H.
Like α Argus?

June 7. 97.

i Vel. 6436,^{4}

K = 6.8 H H is very hazy.
Other Hyd. lines also hazy, but
not so much so as H.
The G band seems intermediate
bet. H ζ Dor. & α Argus as
the new line is faintly seen
On superposing, the star seems
nearer α Argus. The Hyd. lines
are stronger than in ζ Dor.
and the solar lines not so intense

K Carinae 6458^4 a. G. C. 14383
(1) K line double?
a. G. C. 14383 ✓+ K = ½ H = 0.6 K δ
Hyd. lines hazy.

✓+ ✓
a. G. C. 14743 (2) Like γ Luc. ✓
✓ ✓
" " 14405 + (3) Like α Tauri. ✓

June 7. '97.
Investigation of K Carinae for
doublicity of K line.
K Carinae
4790,^{3}
K line single
Hyd. lines hazy.
Solar lines not clearly seen
Other stars not on this plate.

6510,^{4}
K line double.
K = 0.5 H.
Hyd. lines hazy.
The G lines are faint but seem
like ζ Dor.
Other stars too faint

6551,^{3}
K line wide, not clearly double
H is very hazy.
Plate 6549 shows focus poor in
~~this~~ part of spectrum.

Other stars too poor.

June 7. '97

K Carinae 6557,^{4}
Hyd. lines very hazy
Violet end not seen beyond δ.

6561,^{3} K Car.
Like 6557

6567,^{4} K Car
K line double?
Like α Argus at G band
but K is much narrower.

K Car. 6591,^{4}
K line double.
Note on cover says it is assumed to be due to focus.

K Car. 8373$_{2}^{3}$
Very narrow and poor.

K Car. 8237$_{2}^{3}$
Poor.

June 7. '97.

6560,^{4}
ι x Car.
Like α Argus.
a Car. B star.
Two other stars identified on plate
are too poor.

6406,^{3}
A.G.C. 12652 g Carinae
Like α Tauri.

A.G.C. 12672 partly on plate.
D K = H
G band not on plate.

A.G.C. 12535
Orion type.

5043,^{3} – Sag. A.G.C. 24919
Very poor but appears to show
breaks like α Tauri.

June 7, '97.

6298, 4 ~~x~~ k Lupi

A.G.C. ~~20856~~ 20847 (1) K line fainter than in α Can. Maj.
A line is seen on each side of
Hδ. Are these Orion lines?

A.G.C. 20779 δ Lupi. (2) ~~K = 1.5 H.~~ K not seen.
This is an Orion star. The line
of shorter λ than Hη is strong
This line = 1/3 of Hη. Violet end
seen as far as Hι.
Line seen between Hδ and Hε –
like the ζ Puppis line.

A.G.C. 20861 k Lupi. (3) K = 1/10 H
Like α Canis Maj.?
Solar lines not clear

A.G.C. 20861 k Lupi 5640, 4 k Lupi
(1) K = 1/10 H
Solar lines not seen
Like Sirius.

A.G.C. 208~~56~~47 (2) K very faint, barely seen
A line on each side of Hδ
Position of these lines is the same as in ζ Phoen. X6936, stars differ in other respects however, see p. 94.

A.G.C. 20787 (3) K not seen Like ν Fornacis. A.G.C. 20787 is on edge of the plate & shows hazy lines
A strong line of longer λ than Hδ
is the only solar line visible

June 7, '97.

A.G.C. 20959. 5643, 4 ~~x~~ k Lupi
(4) K = H
Spectrum is faint but it looks
like α Argus.

A.G.C. 20861 6462, 4 ~~x~~ k Lupi.
(1) K is barely seen. These spectra
on this plate are very narrow and
burned out.

A.G.C. 20847 (2) No lines seen except Hγ d.

" " " " 20856 (3) K = 1/10 H

" " " " 20959 (4) K = H
Like α Argus?

" " " " 21022 (5) K = 0.9 H
Like α Argus?

These spectra are too poor to
classify unless seen on better
plates.

June 7. '97.

c Ophiuchi 6478,^{3}
$K = 1/12\ H$
No solar lines seen

4041,^{5} τ Cent.
$K = 1/12\ H$
No solar lines seen.

6499,^{5} χ Cent.
A.G.C. 15848 (1) $K = 1/10\ H$.
This star seems to be a transition from B to A, as some Orion lines are present, noticeably the one between $H\delta$ and $H\epsilon$, and some between $H\beta$ & $H\gamma$. This is kept as it may be a typical star

A.G.C. 15975 (2) Like ζ Lac. Sp. is only partly on the plate, and is not seen
of shorter λ
beyond 4227.0
October. The star seems nearer α Aurigae and should go under that star. The hyd. lines $H\beta$ and $H\gamma$ are not strong enough for ζ Lac.

A.G.C. 16039 (3) Seems to resemble δ Can. Maj.

1

June 7. '97.

7506,^{4} χ Cent. A.G.C. 15848.
K is broad and faint
Two solar lines between $H\beta$ & $H\gamma$ are the only ones clearly seen

γ Muscae 6501,4 A.G.C. 170~~6~~72
(1) K not seen. A.G.C. 17072
Line like ζ Puppis bet. $H\delta$ & $H\epsilon$ the only solar one seen
A.G.C. 17061 (2) Like α Bootis. Sp. on edge, and some absorption is shown.

γ Muscae 4022,^{3}
Orion line beyond $H\eta$ seen.
K not seen

γ Triang. Aust. 6516,4
(1) $K = 1/10\ H$.
Solar lines not seen.

(2) Like α Bootis. Spectrum is faint

June 7, 1897.

A Cent. 4771,^{4}
K line is very faint.
Orion line like ζ Puppis bet.
Hδ & Hε seen.
Two lines seen bet. Hβ & Hγ.
Is this like λ Cent.?

A Cent. 7437,^{3}
K barely seen.
Line bet. Hδ and Hε the only solar line.

A Cent. 7373,^{4}
K is slightly stronger than the ζ Puppis line.

A Cent. 6526,^{3}
Burned out

A Cent. on 4771 matched up with λ Cent. 6499 shows a fair coincidence. The K line ~~may be~~ seems slightly stronger on λ.

A Cent. is like γ Gruis.

June 7. 1897.

~~α~~ ℓ Cent. 6536,^{4}

A.G.C. 17234 (1) K barely seen.
~~Before~~, more like B, than λ Cent.
This sp. is like γ Gruis. The lines 4144, 4128-4131 are not well seen, as in γ Gruis. & there appear other more lines bet. Hγ & Hδ.

A.G.C. 17149 (2) K = 1/10 H
Like α Can. Maj.

A.G.C. 17320 (3) K = H.
Like α Argus.
Hβ, Hγ, & Hδ are too strong for α Argus.
K = H = 1.2 Hδ. Focus poor.

H 6 Cent. 6545^3
Images burned out.

κ Lupi 6546,^{4}

A.G.C. 20861 (1) K = 1/10 H
Solar lines not distinct

" " " 20847 (2) K = 1/12 H.
Orion lines seen.
The v. Fov. line & faint trace of ζ Puppis line seen.

" " " 20959 (3) K = H
Like α Argus? faint.

June 7, 1897.

ι Carinae 6549,^{5}
Like ι Argus.
α Car. (B) also appears.

ι Car. 6555,^{4}
Like ι Argus
α Car appears.

$\overset{n}{\cancel{\gamma}}$ Cent. 6559,^{3}
K = 0.8 H. H is very hazy.
Like ι Argus at G valid
Orion star no faint.

A.G.C. 17521 $\overset{n}{\cancel{\gamma}}$ Cent. 6639,^{3} K = 1.3~~7~~9, r L.
(1) ~~Like ι Argus except that~~
K = 0.9 H.
(2) Orion star.

$\overset{n}{\cancel{\gamma}}$ Cent. 4755,^{5}
K = 0.8 H
In other respects it resembles
ι Argus.

Orion star appears.

$\overset{n}{\cancel{\gamma}}$ Cent. 5339,^{3}
very poor.

June 7, 1897.

ι Car. 6565,^{4}
Like ι Argus.
Def. excellent.
B star (α Car. partly on)

A.G.C. 20184 6563,^{3}
Like ι Tauri. The break at
4762 is very faintly seen.
Star resembles δ Sag. in absorption and may be more
like δ Sag. on a good plate.

ε Cham. 6577,^{3}
A.G.C. 16382 (1) The faintest trace of K.
No solar lines seen.
Hyd. lines broad.

A.G.C. 16766 (2) Orion star
Not enough of spectrum on the plate.

June 7, 1897.

~~w Lupi~~ 6580,^{3} Wrong region taken. ~~Stars~~ Spectra very poor. Orion,? Too narrow & poorly defined.

ℓ ~~x~~ Cent. 6583,^{3}

(1) K not seen.

a.G.C. 17234 ζ Puppis line bet. Hδ & Hε seen
Orion star

a.G.C. 17149 (2) K = 1/10 H

a.G.C. 17320 (3) K = 0.8 H
Like α Argus at G.

ν_2 Sag. 6590^3
Too poor.

c Ophiuchi 6599,^{3}
K = 1/10 H.
Def. poor. No solar lines seen.

b Op. 660~~8~~6,^{3}

a.G.C. 23614 ν Op. ✓ (1) K = 0.9 H′ = 1.2 Hδ
G lines app. ζ Dor.
ζ Cap. Line near Hδ strong.

a.G.C. 23739 c Op. ✓ (2) Like α Can. Min.

June 7, 1897.

b Op. 5659,^{31}
Too poor.

b Op. 4740,^{4}
✓ K = 0.8 H. K is weaker than in ζ Dor.
ζ Cap. Line near Hδ is stronger than in ζ Dor.
The G band resembles ζ Dor. Like ζ Normae, only fine lines are not so well seen.
(2) is not seen.

a.G.C. 25435 ~~h_2 Sag.~~ Wrong region taken. 6608,^{3}
(1) Orion star.
Too poor.

" " 25526 (2) Too poor.

h_2 Sag. 6892,^{4}

a.G.C. ~~26827 h_1~~ 26843 h_2 (1) K line faintly seen.

" " ~~26843 h_2~~ 26827 h_1 (2) K = 0.5 H
Solar lines abundant, but not very sharp.
ζ Cap. Line near Hδ strong.

June 7, 1897.

h_2 Sag. 7069,4

Same stars as on 6892.

A.G.C. 2684 3 h_2 4026 is not distinctly seen. K fainter than in λ Centauri

All lines very faint except the hydrogen.

~~" 26977~~ ~~A4F. No lines seen except K & the hydrogen~~. Not on this plate

ε Par. 6609,4

K = 1/10 H.

Like Sirius?

Solar lines not well seen

June 8, 1897

6455,4 — Canis Maj.

ω Can. Maj. A. G. C. 9198. too much burned out. Orion line beyond H_η seen

+ A. G. C. 9181 H β bright. Can not see other lines.

B3A + A. G. C. 9123 Orion star

B3A + " " " 9121 " "

+ " " " 9131 K = 0.7 H. ~~Orion~~ Solar line bet. H δ + H ε present. Few lines seen bet. H γ + H δ. Intermediate bet. B + A?

~~Too poor~~ A4F

B3A + A. G. C. 9168 Orion star.

+ A. G. C. 9205 Like α Tauri.

B3A 2 + A. G. C. 9287 Orion star

4.28–4.131 seen, B5A. + " " " 9323 – Resembling ζ Capricorni The line of 1.2 mm shorter wave-length is faint on this star. This spectrum is narrow and on the bottom of the plate so it is not safe to judge of intensities of the lines. The intensities however seem nearer like ζ Cap. than any other typical star.

+ A.G.C. 9364 = A5F solar lines seen.

Put under α Aurigae. Narrow spectrum makes lines appear more intense.

June 8, 1897.

6432,^{3} – Can. Maj.
The images are narrow and burned out. and nothing is seen that would be any help in classifying stars on plate 6455.
A.G.C. 9123, 9181, 9198, 9265, appear.
A.G.C. 9121, 9131, & 9168 are partly on

o Scorpii 6616,^{3}
Images very narrow – too poor.

o Scorpii 4722,^{4}
K = 0.7 H – 0.9 $H\delta$
Looks like α Argus at G.
Hyd. lines are rather broader and more conspicuous.

B star on edge of plate.

o Scorp. 7434,^{3}
K = 0.8 H. No solar lines seen
poor def.

B star on edge shows Hyd. series as far as H_γ. [illegible] line by H_η is strong.

June 8, 1897.

o Scorp. 5616,^{3} – too poor, no solar lines seen.

o Scorp. 7457,^{4}
K = 0.7 H H is hazy, K not.
4326.0 is not seen, and the star looks earlier than α Argus.
It may be focus.

o Scorp. 7117,^{4}
K = 0.9 H The Hyd. lines do not seem hazy on this plate. The spectrum is narrow and sharper. Solar lines are burned out. It is probably near α Argus

Others stars too poor.

June 8. 1897.

A.G.C. 23739 ✓ c Ophiuchi 6627,^{4}
K = 0.37 H. No solar lines seen
K + Hyd. lines wide. ~~& hazy~~.

h$_2$ Sag. 6647,^{4}
V. Poor, film stained.

τ Cent. 6652,^{3}

γ Cent. (1) K = 1/20 H – very dark, no solar lines seen.

τ Cent. (2) K = 1/10 H – Poor focus.

A.G.C. 17300 ω Cent. (3) Like δ Sag. approaching α Tauri as the faintest possible break is seen at 4762. 4227.0 is not so strong as in α Tauri and the G band is not seen divided. Star is more like δ Sag. than α Tauri from this plate.
H + K are well seen, as in α Bootis
4227.0 is like δ Sag. In absorption, it is intermediate.

June 8. 1897.

ψ Lupi 6671,^{4}

A.G.C. 21454 (1) K = 1/12 H. Bare evidence of solar lines. One seen bet. Hβ & Hγ that is prominent in Sirius.

(Oct. 21) 4471 & 4481 both seen. of about same intensities as in α Cent. The spectrum is like α Cent.

A.G.C. 21586 5.6
" " " 21587 6.2 (2). K = 1/10 H. on edge of plate
Like Sirius? K line appears double
See p. 118 for description

η Tel. 6674,^{4}
K = 1/12 H. No solar lines seen except a mere trace of the one spoken of above

ω Carinae 6685,^{4}
K = 1/15 H
The Orion line beyond Hγ is seen as a faint trace, weaker than K.
The line bet. Hδ & Hε is slightly weaker than K.
Other lines not seen.
Hyd. lines about as in α Can. Maj.

June 8, 1897.

w Car. 6304,^3
May be like α Can. Maj. but the
ζ Puppis line bet. Hδ & Hε seems too strong.

w Car. 4073,^2
B - A ?

ε Tel. 7124,^3 Ls. poor. very narrow.

ε Tel. A.G.C. 24703 is identified on 5071.

5071
A.G.C. 24650
Like η Leo ?

6703,^3 Ls. poor. narrow.

6704,^3 Ls. narrow, no blending seen.

June 8, 1897.

A.G.C. 23614 ✓ 6749,^4 ~~θ~~ b Ophiuchi (Wrong region taken)
(1) $K = 6.8\text{-}9\ H$
Poor def. at G band.
Like γ Doradus ?. K is a little narrower.
Line near Hδ (ζ Cap. line) is here a little stronger.

A.G.C. 23739 c Ophiuchi (2) $K = \frac{1}{10} H$
Like Sirius. On edge of plate.

A.G.C. 22949 Wrong Dec. ~~ε, Arae~~ 6755,^3
$K = \frac{1}{\cancel{10}3} H$
Hyd. lines very broad. other lines not seen.

A.G.C. 22949 Wrong Dec. ~~ε, Arae~~ 6756,^3c
$K = \frac{\cancel{1}\,1}{\cancel{10}\,2} H$ poor.

Probably under A.G.C. 31955. The focus is poor on these plates. The Hydrogen lines are broad.

June 8, 1897.

θ' Micros. 6760,^{3i} – too narrow

" " 6899,^{4}

A.G.C. 29248 θ$_1$ (1) K not seen as a distinct line. Hyd. lines broad. G band not clearly defined. ζ Cap. line near $H\delta$ is strong. The solar lines look strong for a star having such a weak K line. The definition is narrow, poor at the violet end

A.G.C. 29314 θ$_2$ (2) K = 1/12 H
Line of longer λ than $H\delta$ seen.

θ' Micros. 6927,^{4}

θ' (1) K line weak, not as strong as in Sirius, though the poor/def may make it seem weaker. The ζ Cap. line is stronger than K. Other solar lines seem stronger than in Sirius. I have not seen a star exactly like this.

June 8, 1897.

θ' Micros. 6927,^{4}

θ2 (2) K = 1/10 H
Line of longer λ than $H\delta$ is the only strong solar line. Compare this line with one in ν Fornacis.
It seems to be the same ~~star~~ line & the spectra of this star and ν For. are much alike. The K line is less stronger & Hyd. lines a little broader

θ' Micros 4959,^{5} focus poor

" " 5383,^{3}, poor, narrow

" " 5384,^{3} "

" " 5735,^{3i} Same peculiarity as on 6927

ι Pis Aust. 6798,^{4}
K = 1/12 H
Lines hazy, and broad
Like Sirius.

A.G.C. 30704 β Pis. Aust. 6683,^{4}
(1) K = 1/6 H
No solar lines seen except one bet. $H\beta$ + $H\gamma$.

A.G.C. 30810 (2) Like δ Sag. Sp. on edge of plate.

(3) A.G.C. 30762 K line indistinct. ~~ζ Puppis [illegible] [illegible]. $H\delta$ + $H\varepsilon$ seen~~ 4026 + 4471 seen.

June 8, 1897.

β Pis. Aust. A. G. C. 30704

5881,4

Com. marked K line double, and then "not confirmed on 5687, 6683, 7149.

On ~~5881~~, the Hyd. lines are broad. The K line seems to be made up of a single thread, with hazy portions on each side

A.G.C. 30704 7149,4 β Pis. Aust.

K line clearly single

$K = \cancel{1/10}\ \cancel{H}\ 0.4\ H$

~~1/5~~

~~" 30762~~

Solar lines not clearly seen

" 30762 4026 seen & 4471 which is very hazy.

5687,3 β Pis. Aust. narrow & poor.

h_2 Sag. 6822,3

h_{x2} (1) B star. K very faint, no solar lines seen.

h_{x1} (2) K = 1/3 H

G band not clear.

7 Cap. line quite strong

June 8, 1897.

— Ceti 6827,4 A. G. C. 419.

$K = \frac{1}{2} H$

Hyd. lines hazy.

No solar lines seen.

O' Imcris. 6857,4

Def. poor.

4 Lupi 6856,5

Like Sirius.

— Phoenicis A. G. C. 31955

5386,3 too poor.

7143,4

$K = \frac{1}{2} H.$

Hyd. lines hazy.

Solar lines not clearly seen though there seem to be a number of them

6862,4

$K = 1/3 + \cancel{\tfrac{1}{2}}\ H.$

Solar lines not seen

Hyd. lines fairly as strong as in Sirius.

June 8, 1897.

— Phœn. A.G.C. 31955

5979,4   K = 1/2 H.

Solar lines look like α Cygni.
This seems to be a good star
for group immediately preceding
α Cygni.

5978,4   Focus not so good
5076,3   on edge but fair

A.G.C. 2065.   ν Fornacis 6874,4
K line very faint, much fainter than
in Sirius.
Line seen of slightly longer & clear At

A.G.C. 1998 ~~ω~~ π Fornacis.   (2) Like ~~α~~ ~~Bootis~~ δ Pavonis.
~~Hyd. lines a little stronger~~
~~4227,0 a little weaker~~

A.G.C. 2024   (3) K = 3/4 H.
Solar lines seen.
7 Cap. line seen but not pronounced.
Poor def. at G band.
~~Probably like α Cygni or α Car.~~
Like A.G.C. 30955; K is a little
more intense.

June 8. 1897.

ν Forn. 4952,5   poor focus.

" " 5426,4   Narrow.
" " 6937,5   focus poor
" " 7293,3, no solar lines sharply seen

Other stars appear but are very poor

" " 7123,5

A.G.C. 2065   ~~+~~ (1) K line broad & faint Double?
. . . 1998   (2) Like α Bootis or. Hyd. lines stronger
4227,0 is fully as strong.
Sp. faint on edge of plate.
. . . 2024.   (3) Too poor.

5842,4   ν Forn.
Is this a transition star from
B–A.

μ Pis. Aust. 4928,4
A.G.C. 30260   (1) K = 1/3 H
Solar lines not seen

~~γ~~ τ Pis. Aust.
A.G.C. 30254   (2) Like γ Tuc.

A.G.C. 30290   (3) K = 0.9 H = 1.545 ~~Like α Cygni~~
A.G.C. 30261   (4) Like α Tauri }   ν Pis. Aust.
(5) Too poor.

June 8, 1897.

6879,4 μ Pis. Aus.
(1) K = 1/3 H. Hyd. lines broad.
No solar lines seen.

(2) Like γ Tuc.
(3) K = 0.9 H =1.5Hδ on edge.
(4) Like α Tauri. On edge
(5) Too poor.

7127,4 μ Pis. Aust.
A.G.C. 30260 +✓ (1) K = 1/4 H. H lines hazy.
Solar lines not seen.

" 30294 +✓ (2) Like γ Tuc.

" 30290 +✓ (3) K = 0.9 H =1.5Hδ ~~Like α Argus~~
" 30261 +✓ (4) Like α Sagr on edge
" 30268 +✓ K = 1/2 H. A2F! Some solar lines seen

6919,4 μ Pis. Aust.
(1) K = 1/3 – 1/2 H.
No solar lines seen

(2) Like γ Tuc
(3) + (4) not run.

June 8, 1897.

ι Phoen. 6882,4
K = 0.2 H
ζ Cap line = 0.5 K.
There are more solar lines than in Sirius.

μ Pis. Aust. 5811,4
(1) K = 1/3 H. Solar lines not seen

(2) Like γ Tuc.

A.G.C. 351. κ Phoen. 6889,4
K = 0.9 H. All lines somewhat hazy.
The spectrum seems to resemble [illegible]
α Argus with K slightly weaker
and H lines broader & hazier.

κ Phoen. 5907,3
Lines very hazy.
K = 0.9 H Solar lines not seen
The haziness is probably due to focus
since 5905 & 5906 show broad
ill-defined lines.
5910 gives better definition

June 8, 1897.

κ Phoen. 4497, ^{2}

A.G.C. 351 (1) K = 0.9 H. Solar lines not sharp.

A.G.C. 955 α Phoen. √(2) Like κ Boote. Sharp lines.
Spectrum extends well into the red & seems to break in light at 5168, also possibly at 4954.

κ Phoen. 7717$_{2}^{4}$

June 9, 1897

κ Phoen. 7717$_{2}^{4}$

K = 0.7 H Hyd. lines hazy.
Solar lines broad, not clearly visible.

α Phoen. on plate.
Like α Bootes.

κ Phoen. 8013$_{2}^{3}$
Narrow & burned out.

κ Phoen. 8059$_{2}^{3}$
K = 0.8 H.
Hyd. lines hazy.
Solar lines badly seen.

κ Phoen. 6953, ^{5}
K = 0.9 H.
Hyd. lines hazy.
Solar lines indistinct.
Dark space seen bet. K & L as in α Carinae.

κ Phoen. partly on plate

June 9. 1897.

κ Phoen. 4487,^{2} A.G.C. 357
Hyd. lines hazy. Solar lines double?
K = 0.9 H.

β Sculptoris 6901,^{4}
K = 1/10 H
Like Sirius. Solar lines seen
fairly well defined.

— Sag. 6914,^{3} too poor.

A.G.C. 31184 δ Pis. Aust. 6920,^{4}
(1) Like α Bootis

" 31123
Iden. from p.129
without finding
this plate.

(2) K = 1/10 H
Solar lines not well seen.
K well defined. Examine other
plates. This K line seems to
have a dark streak on side
of longer λ. Later. Nothing seen
of this on 47199. K is very sharp & clear.

δ Indi 6928,^{4}
K = H very nearly
G band like α Aquis.
Hyd. lines somewhat hazy.
Like α Aquis.

June 9. 1897.

S Eridani 6932,^{3}
K = 1.5 K in Sirius
Hyd. lines hazy.
No solar lines seen

ε Microscopii A.G.C. 29200
~~639~~
6933,^{4}
K = 1/5 H
Hyd. lines hazy.
A number of solar lines seen

A.G.C. 419 — Ceti 6935,^{3} 0h 25.4m −24° 21′
K = 1/2 H very poor.

η Phoen. A.G.C. 662
(1) 6936,^{3}
K = 1/10 H
Only one or two solar lines seen
Like Sirius.

ξ Phoen. (2). Peculiar? Probably two stars.

η Phoen 5841,^{4}
Hyd. lines very broad.
Like Sirius
Solar lines well seen.
Other stars too faint.

June 9. 1897.

η Phoen. 6168,^{3}
(1) K = 1/10 H
Like Sirius

(2) Two stars? Peculiar.

η Phoen. 7197,^{4}
(1) K = 1.5 ~~H~~ K in Sirius
K seems about as strong as in ε Microscop. but the solar lines are not here seen as in ε.

(2)

June 9. 1897.

ε Gruis 6938,^{5}
Like – Phoen. a.g.c. 31955
K = 1/2 H

η Tuc. 6939,^{3}
K = 1/3 H   H is very hazy.
Is it focus?
Solar lines seen
6938 shows good def. in violet portion of spectrum.

η Tuc. 5133,^{5}
K = 1/3 H   poor

η Tuc. 5956,^{4}
A.G.C. 32311 (1) K = 1/2 – 1/3 H
Hγδ. lines hazy
" " " 32307. (2) D K = 1/2 H ← { Not ach'l on bet. H~~δ~~β & Hγ. Sp. cut off
η Tuc. 7122,^{3}
poor
" " " 32311 (1) K = 1/4
" " " 32307 (2) D K very faint.

η Tuc. 5054^5
" " " 32311 (1) K = 1/4 H
Lines hazy,
" " " 32307. (2) D K = 1/2 H.

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η Phoen. 6168,^{3} (A.G.C. 662 η Phoen)

(2) A.G.C. 633 ξ Phoen
Peculiar.
The line near $H\delta$ like η Cap. is as strong as in η. $H\delta$ is wide and hazy towards red
K = H.
$H\gamma$ is hazy.
~~4227.0 is nearly as strong~~ as in ~~α Bootes~~. This line is found to be of shorter λ than 4227.0 & is λ4215 1
There is poor definition at the G band, but ~~it~~ the band is not conspicuous.
Solar lines seem abundant but are not sharp. The spectrum is on the edge.
There is a conspicuous line about as far from $H\delta$ towards the red as the η Cap. line is towards the violet

June 10. 1897.

η Phoen. 8053,^{4}
η Phoen like Sirius
ξ Phoen. Peculiar. Composite?
This spectrum is faint, on the edge of the plate.
Line of slightly shorter λ than 4227.0 ~~4227.0 is strong~~, and there are other strong solar lines, while the H lines are very wide.
A good photograph should be taken.

A.G.C. 2887 ε Hyd. η Hydrae 6940,^{4}
(1) K = 1/10 H
4026 ~~ζ Puppis line bet. $H\delta$ & $H\epsilon$~~ is one-half as strong as K.
There is a solar line of ~~shorter~~ longer λ than $H\delta$ in same position as the one in ξ Phoen. mentioned on the previous page. In this star, however, the line is very weak.
Hdy. lines = those in Sirius.

A.G.C. 3003 ζ Hyd. (2) K = 1/2 H

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η Phoen. 7312,^{4}
ζ Phoen. Like Sirius.
ξ Phoen. Peculiar.

η Phoen. 4951,^{4} – The same

η Phoen. 6936,^{3} Two exposures?
" " 7197,^{4} – Like Sirius.
" " 5128,^{4}

ω Fornacis 6954,^{4}
K line = 1/10 H
ζ Puppis line bet. Hδ & Hε is seen.
One Sirian line bet. Hβ & Hγ also seen.

β_2 Tucanae 6963,^{4} (Identified)
β_1 & β_2 Tuc. appear superposed
They are given in A.G.C. thus
β_1 A.G.C. 451 4.3 mag.
β_2 " " " 452 4.7 "

β_2	$0^h\ 25^m\ 48^s.94$	63 39 15.9
β_1	" .31	38 48.8
	$0^s.63$	17".1

They thus differ $0^s.63$ in R.A and 17".1 in δ.

June 10. 97.

β_2 Tuc. 6963,^{4}

β_1 Tuc. shows no K line.
β_2 Tuc. has a K line stronger than Sirius, perhaps twice as strong.
A few solar lines seen.

A.G.C. 467 K = 1/3 H Hyd. lines hazy.
The Sirian line is the only pronounced solar line.

There is the appearance of a bright line bet. β Tuc. & A.G.C. 467. Leak?

ζ Hydri 6966,^{4}
A.G.C. 3003 ζ Hydri + (1) K = 1/5 H.
A.G.C. 2887 2 Hydri + (2) K barely on. Like Sirius?
A.G.C. 3116 + (3) Like α Bootis? Image faint
" " " 2853 + (4) " " " ? very faint. too poor to use unless confirmed on other plates.
A.G.C. 2878 + (5) Too poor. Probably like α Boötis.
" " " 2965 + (6) Like ζ Tuc.

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A.G.C. 3003 ζ Hydri 6137,^{4}
(1) K = 1/8_3 H - Many solar
lines indistinctly seen.
In group w. A. G. C. 31955.

" " 2887 (2) K = 1/10 H.
ζ Puppis line & Sirian line seen.
(3), (4), (5) & (6) too poor.

ζ Hydri 7228,^{4}
A.G.C. 3003 (1) K = 1/3 H.

" " 2887 (2) K, faintly double? Probably from
K very faint. Pec. Band?
Other stars too poor.

ζ Hydri 6239,^{4}
A.G.C. 3003. (1) K = 1/3 H
Others not on

ζ Hyd. 7145,^{4}
A.G.C. 3003 K = 1/2 H.
Other stars not on

June 10, 1897.

ζ Hydri 5446,^{3}
A.G.C. 3003 (1) K = 1/2 H

" " 2887 (2) K barely seen Spectrum over-exposed.

" " 3116 (3) Like α Bootis

" " 2853 (4) Like α Bootis
" " 2878 (5) Too poor
" " 2965 (6) Like ζ Tuc.

ζ Hydri 5160,^{4}
A.G.C. 3003. (1) K = 1/2 H
Other stars ff

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A.G.C. 28598 ω Cap. 6983,^{4}

Has been classified.

A.G.C. 28593 Like γ ~~Lucanae~~

A.G.C. 28539. D K line not seen. Focus poor, on edge of plate.

β Par. 6986,^{5}

A.G.C. 28338 β Par. (1) K = 1/2 - 3/4 H - very nearly like α Argus. The dark streaks are seen at ~~red~~ violet end.

~~(2)~~ It seems also like α Argus except that the K line is slightly weaker.

" 28259 ν Par. (2) K very faint. Like Sirius?

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η Cap. 7059,^{3}

K = 3/4 H. App. α Argus?

~~Like β Pavonis~~. The K line in β Par. is stronger. Like A.G.C. 31955

β Par. 7074,^{5}

(1) K = 0.8 H.

Like α Argus at G band and in solar lines.

ν Par. (2) K = 1/10 H? Focus poor.

A.G.C. 28879 η Cap. 7075,^{4}

K = 0.7 H. H is hazy.

Solar lines seem as abundant as in α Argus.

A.G.C. 28879 η Cap. 7130,^{3}

(1) K = 0.7 H

D (2) K = H. Like α Argus? on edge of plate.

η Cap. 5924,^{3} Too poor to use in classifying.

η Cap. 6809,^{3}

K = 0.9 H = 1.5 Hδ poor.

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η Cap. 4927,^{5}
K = 0.7 H   Stars hazy.
Solar lines seen as in α Argus

η Gruis 7076,^{3}
K = H
Focus poor
Like α Carinae ?

A.G.C. 28338 β Pav. 7080,^{5}
(1) K = H
Like α Argus.

A.G.C. 28259 ν Pav. (2) K = 1/10 H
ζ Puppis ^{4026} line seen
Like α Cent. ?

A.G.C. 30954 δ Toucanae 7082,^{3}
K = 1/10 H
No other solar lines seen.

b$_3$ Aquarii 7083,^{3}
K = 1/12 H
No other solar lines seen.

b$_3$ Aquar. 5083,^{4}
K = 1/10 H.
Lines broad. No other solar lines seen

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b$_3$ Aquar. 5833,^{4}
Like Sirius.

A.G.C. 29533 ν Octantis 7098,^{4}
Has been classified α Bootis.

A.G.C. 29985 K = 0.9 H   Too poor.   D

ε Tucanae 7084,^{4}
A.G.C. 32347 (1) The faintest trace of K is seen.
Also of the ζ Puppis and the ν Forn. line.
This is bet. B and A?

" 32240 (2) Like η Tuc. ?

(3) Partly on plate. K = $\frac{1}{2}$ H.

ε Tuc. 4855,^{3}
(1) Faint trace of K + the ζ Puppis and the ν Fornacis line

(3) K = 1/2 - 1/3 H. Partly on plate

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ε Tuc. 5393, ^{4}

a.G.C. 32347 (1) Little seen except Hyd. lines. There is a suspicion of K and the ζ Puppis line.

" 32240 (2) Like ζ Tuc.

ε Tuc. 5906, ^{3}

(1) K wide & faint.
ζ Puppis line = K

(2) Like ζ Tuc.

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a.G.C. 451 β_1 Tucanae 7085, 4. (~~Identified~~)
The faintest trace of K line seen. It seems fainter than in Sirius, but this may be due to the over-lapping ~~dark~~ bright space of β_2. The Hyd lines of β_1 are about like Sirius.

a.G.C. 452. β_2 Tuc.

a.G.C. 467, K = 1/3 H.
K is narrow and sharp.
Hyd. lines hazy.

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β_1 & β_2 Tuc. 7247,^{5}
Spectra superposed
Both stars of first-type.

β_1 Tuc. is earlier, having stronger Hyd. lines and a very weak K line. The Hyd. lines, $H\beta$, $H\gamma$, & $H\delta$ + $H\epsilon$ appear fully equal to those in Sirius. The K line not quite so strong. This may be due to superposition of the bright part of β_2.

This seems to be the Orion line 4026.4 & will hereafter be designated as such

ζ Puppis line bet. $H\delta$ + $H\epsilon$ is seen. The Hyd. lines except $H\beta$ appear slightly hazy. Hyd. series seen as far as $H\chi$; the two series separate as far as $H\eta$.

β_2 Tuc.
K = 0.9 H. K is sharp while the Hyd. lines are a little hazy. Numerous faint solar lines are seen but can not be placed with certainty in either star.

A. G. C. 467 K = 1/3 H
This is like η Tucanae. The K line is narrower than in A. G. C. 31955. K is sharp in this star. Hyd. lines a little hazy. Sirian line the only marked solar one.

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β Tucanae 4984, "4"
Not very good.
Brighter comp. toward violet.

β Tuc. 5299,^{5}
Not so good as 7247.
Hyd. lines hazy.

β Tuc. 5445,4
Not sharp.

β Tuc. 5704,^{4}
A dark streak at K of β_1

β Tuc. 7160,^{4}

A. G. C. 467. H is very hazy. K is sharp.

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β Horologii: 7087,^{4}

K = 0.8 H

Hyd. lines look stronger and solar lines weaker than in α Argus. This is like A.G.C. 31985, with a slightly stronger K line

a.G.C. 3279 β Hor. 5319,^{4}

5952,^{31}

6185,^{4} — excellent of the solar lines

7294,^{3}

7295,^{3} very narrow.

6185 is by all means the best plate. The star seems a little peculiar.

K = Hδ

K = 0.8 – 0.9 H

The G band is like γ Doradus. The new line is fully as strong as in γ Dor. but the Hyd. lines are equal to those in Sirius. The star had better go under α Argus, with the statement that the γ Dor. line is strong. Hyd. lines are a little hazy.

The Hyd. look look 1.3 as strong as in α Argus. This may be due to the haze, for the lines in α Argus are

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6185 (cont.)

very sharp and clear.

K is a little weaker than in α Argus.

β_2 Sagittarii 7093,4

A.G.C. 26485 β_1 (1) K line dimly seen.

4026.4 seen.

Two lines of longer λ than Hδ seen

Faint lines probably burned out.

A.G.C. 26500. β_2 (2) K = H

K = 2 Hδ

G band like α Argus.

A.G.C. 26532 ✓ (3) Like ~~γ Crucis~~ γ Hydri. faint, on edge of plate

A.G.C. 26557. ✓ (4) Like α Bootis: Too poor to use unless confirmed on other plates.

K2 M.

June 11. 97.

β Sag. 5066,⁵

A.G.C. 26485 (1) B-A. K line dimly seen.

A.G.C. 26500 (2) like η Argus.

~~(3) γ Hydri. on edge of plate.~~

~~(4) [illegible]~~ These stars are not on this plate.

5717,⁵ β Sag.
(3) + (4) not on.
Others not so good as 5066.

β Sag. 5809,⁴
Poor definition
(3) + (4) not on.

4760,⁴ⁱ β Sag.
(3) + (4) not on.

June 11, 97.

K Phoen. 7100,⁴
Lines very hazy and broad. The Hyd. lines look broader than any I have seen.
H ζ looks particularly broad.
The solar lines are also broad.
The lines do not seem hazy, they are broadened out.

Plates 7101 + 7102 examined to see if focus was out of adjustment.
Plate 7102 shows rather broad lines but not like 7100.

K is sharp
K = 0.8 H
K is more intense than H δ, but not so wide.

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ε Hydri 7102

A.G.C. 2887 (1) K = 1/12 H ε Hydri.

H = 1.1 Hδ

Hβ 2x6.4 seen.

~~Like β Sag.~~

Like Sirius with ~~4026 stronger~~

A.G.C. 3003 (2) η Hydri Like A.G.C. 31955

5951,^{4}
5292,^{5}
4301,^{2}
} ε Hydri

7241,^{5} ε Hydri

A.G.C. 2887 This shows two distinct solar lines bet. Hβ & Hγ. These agree with lines in Sirius but the one of shorter λ in here stronger than in Sirius.

4026.4 ~~is seen~~ = 1/2 K

K is as strong as in Sirius

A.G.C. 3003 η Hydri

Like A.G.C. 31955

A.G.C. 2965 ~~A.G.C. 2965 partly on plate~~

D ~~Like η Hyd.~~

June 11, '97.

A.G.C. 419 7161,^{3}
5.2 mag.

K = 0.7 H

Nothing else seen but Hyd. lines.

A.G.C. 419 5290,^{4}

K = 0.8 H H is very hazy

Cover marked "K line double?"

Probably focus.

H is slightly wider than K in A.G.C. 31955, but not so wide as in α Argus.

A.G.C. 419 5139,^{5}

Like A.G.C. 31955

Hyd. lines hazy.

A.G.C. 419. 5801,^{30}

K = 0.7 H

Poor focus. No solar lines sharp.

A.G.C. 419 7162,^{3} Poor.

A.G.C. 419. 7163,^{3} Like A.G.C. 31955

June 11, 1897.

A.G.C. 29795 θ Pis. Aust. 7106,^{80}
K = 0.3 H
H = 1.2 Hδ

K looks double. Due to focus? other plates examined for doubling.

A.G.C. 29795 4910,^{4}
"Cover marked "K line double? Due to focus."
K = 0.4 H Lines ill-defined.
Sirian line seen clearly

A.G.C. 29795 5088,^{5}
K = 0.3 - 0.4 H
H is very hazy
Solar lines seen.
On this plate the spectrum resembles that of A.G.C. 31955. K is not quite but nearly as wide

" 29795 6824 θ Pis. Aust.
Lines sharp. K is no more intense than in ζ ~~Vel.~~ Centauri. Solar lines not seen. Comparison of plates 5088 with 6824 shows differences due to exposure.

A.G.C. 29795 5208,^{4}
K line double? Probably focus.
K not quite as strong as in 31955.

June 11, 1897.

A.G.C. 29795 θ Pis. Aust.
5789,^{3}
Lines hazy. Solar lines barely seen.

β Octantis 7120,^{3}
K = H very narrow sp.

β Oct. 7121,^{4}
K = H = 1.2 Hδ
Like α Argus.
Hyd. lines are rather more marked here but that is probably due to over-exposure.

c Ophiuchi 7128,^{4}
A.G.C. 23739 (1) K = 1/10 H
K is broad. Solar lines not seen

" 23720 (2) Like α Argus? Sp. faint.
Too poor unless seen on other plates. D
K = H = 1.5 Hδ.

A.G.C. 23737 c Oph. 5617,^{3}
K = 1/10 H Focus poor

June 11, 1897.

c Oph. 4820,^{3i} poor

ζ Cor. Aust. 7129,^{3}

a.G.C. 26027 (1) K not seen. Image dense.

a.G.C. 26000 (2) K = 1/10 H. Solar lines not seen.

a.G.C. 26198 (3) Orion star

a.G.C. 26119 (4) ^{Sp}α Bootis.

ζ Cor. Aust 5733,^{3i}

a.G.C. 26027 (1) K is fainter than in Sirius 4026.4 seen?

" .. 26000 (2) Like Sirius $^{H\gamma\delta}_{\wedge}$ lines broad

June 11, 1897.

ζ Cor. Aust. 5731,^{3}

a.G.C. 26027 (1) K hazy & faint. No other lines seen except Hγ δ.

" " 26000 (2) Like Sirius

ζ Cor. Aust. 6318,^{4}

a.G.C. 26027 (1) Before Sirius

" .. 26000 (2) Like Sirius

" 26198 (3) Orion Star.

Plate 6318 is put in box of B stars for classifying a.G.C. 26000 & 26198.

ζ Cor. Aust. 4799,^{4}

a.G.C. 26027 (1) K = 1/15 H.

" 26000 (2) Sp poor. K line indistinct

(3) not seen.

June 11, 1897.

A.G.C. 22941 ε, Arae 6701, 4
ε, - Like α Tauri?
Breaks more at F, less at 4762

A.G.C. 23018 ε²
Like η Luc

ψ Lupi 6671, 4

A.G.C. 21586. A.G.C. 21586 5.6 } This spectrum is on the
" " 21587 6.4 } edge of the plate.
See also p. 77. } The K line appears
double. the Hγ d.
lines broad. The stars differ
but 7".6 in δ and but
0s.72 in R.A. hence their
spectra must be superposed.
A better photograph should be
taken.

A.G.C. 21,4~~68~~ 86 7½ mag.
D Like η Luc? faint on this plate —
Too faint.

June 11, '97.

A.G.C. 21454 χ Lupi 5910, 4.
Like Sirius, other star not
on. ∴ Leaks on plate.

" " " " χ Lupi 4174, ½ } Other star not on
" " " " " " 4168, ½ }

June 12, 1897

✓ γ_2 Sag. 6796,^{3}
A.G.C. 25944
Like A.G.C. 31955.
The spectrum is faint on most of the plates. On 6796, the solar lines are not seen, but the intensity of the line K is about equal to Phoen. A.G.C. 31955

46702,$^{"3"}$
A.G.C. 24925
Like η Tucanae

A.G.C. 24825
Like α Argus?
The K line seems nearly as
D strong as H. The definition is poor and solar lines are not brought out. Better not use unless confirmed on other plates.

A.G.C. 24765
Between Sirius & A.G.C. 31955
K = 1/2 H.
~~Do not use unless confirmed on other plates.~~

June 12, 1897.

46702,$^{"3"}$
A.G.C. 24934
D Like β Corvi?
Do not use unless better spectrum is found.

A.G.C. 4757 — 7233,^{4} α Horolog. also 4474 & 5977,^{3}

A.G.C. 4686 — δ Hor. also on plate. } on these plates of δ Hor. the H line appears broader than in α Argus.
K = H
Like α Argus. Hyd. lines broader & solar lines somewhat fewer. This may be due to the quality of the plate.

ε_2 Arae on plates of ε, or A.G.C. 22941
6866, 4
6453, 4
7064,^{4}
7063,^{3}
6644,^{4}
} Like η Luc.

γ Vel. 4061
6208
} Too poor of first type star

June 12. 1897.

A.G.C. 26123 γ Cor. Aust. Like ζ Tuc.
" " " 26189 α also on plate
K = 0.3 H.
H = 1.1 Hδ
Probably a little before
A.G.C. 31955.

" " " 26189 4780,4
α Cor. Aust.
Bet. Sirius & A.G.C. 31955.

A.G.C. 4686
4474
5409
7220
5977
δ Hor. on plates of α Hor.
Like α Cygni. The Hyd. lines are broader but it ~~it~~ may be due to focus, as the star is not in the centre of any of the plates.

June 12. 1897.

γ Caeli A.G.C. 5807
7310,3
5402,3
7166,4
6159,4

Star on ~~same~~ plate
A.G.C. 5810
K = H. = 1.5 Hδ
The solar lines are not clearly defined but the spectrum appears to be like α Cygni. Hyd. lines broader, but the star does not seem in perfect focus.
On all the plates but one the images are partly superposed

A.G.C. 5810 is not in S.M.P., hence it must be less than 6 mag. The hydrogen lines Hβ, Hγ & Hδ are stronger than in α Cygni.

June 14. 1897.

ν_2 Sag. 4759,4 Q ~~+B~~ ~~Stars.~~
a.G.C. 25895 – B star

a.G.C. 25944
K = 0.3H. H is hazy and out of focus. K seems a little less intense than in A.G.C. 31955. It comes most probably in group between α Can. Maj. & A.G.C. 31955.

A.G.C. 22454. H Scorpii 4796,³
a.G.C. 22430 too faint.
" " " 22347 H Scorpii, B star partly on plate.

June 14. 1897.

Stars on plates of ξ Par. 5~~806~~120,³

A.G.C. 24959 too faint.
" " " 25153 ξ Par. B star

& 5806,³ Good of the B star.

6505,4 ξ Par. approaches α Tauri.
5876,4 ξ Par. 4227,0 = α Tauri.
A.G.C. 24958. ξ Pavonis. 6673,4 ξ Par. should, by all means go under α Tauri. The breaks are seen on this plate almost as distinctly as in α Tauri.

The B star ξ Par. appears partly or wholly on all these plates.

June 14, 1897.

A.G.C. 25140. γ Tel. 7092,^{3} Like α Bootis.
Also on plate.
A.G.C. 25032
Like γ Tuc.
D A.G.C. 25221
~~Like α Argus~~? Too poor K=H.
No solar lines seen
A.G.C. 25095
D Not all on plate. 2nd type.

γ Tel. $6\overset{9}{\cancel{7}}61$.
A.G.C. 25032
Like γ Tuc.
A.G.C. 25221. Too poor.

June 14, 1897.

A.G.C. 30930 ρ Geminis $\frac{7107,^{3}}{\cancel{6825,^{3}}}$ Like α Bootis.

A.G.C. 31012 Also in plate. Like α Tauri.
This spectrum is faint, but it seems quite certainly in this group.
A.G.C. 30962 Like α Bootis? This needs confirming.
7060,^{3} – other stars too faint.
5021,^{3} " " " poor
5893,^{3} " " " faint.
6825,^{3} " " " "

A.G.C. 4450 ι Retic. 7250,4 Like δ Sag?
" " " 4487. δ Retic " Like ζ Hydræ.
Other stars too faint.

A.G.C. 7066 – Doradus 7252,^{3}
Like α Bootis? Focus poor.
H + K are well seen.

June 14. 1897.

A.G.C. 4191 τ_6 Erid. 4539,?
" " 8016,$^{31}_{2}$
A.G.C. 4408 τ_7 Erid. also on plate.
K = 0.2 Hζ,

4538,^{2} τ_6 Erid. Like ζ Leo.
τ_7 : Like A.G.C. 31955.
5$\overset{3}{8}$35,$_1^4$ τ_7 " " " "

June 15. 1897

A.G.C. 19857 α Apodis 5697,4
other stars identified on this plate
A.G.C 20030 & 20477 are too faint
to use.

A.G.C. 31184. δ Pis. Austr. 5126,5 (identified)
Like α Bootis
A.G.C. 31123 also on plate.
Like α Canis Maj.
A.G.C 31180 + 31192 also in plate, too faint.

A.G.C. 28598. W Cap. 6983,4
A.G.C. 28593. also on plate.
Like ζ Leo
A.G.C. 28537
B – A?

W Cap. 5719,$^3_1$
A.G.C. 28593
like ζ Leo
" " " 28537 too poor.

W Cap. 4989,$^3_1$
A.G.C. 28593 too poor.
" " " 28537 - Line 4026.4 seen, also
K very faint

June 15. 1897.

A.G.C. 25927 ξ_2 Sag. 5786,^{5}
Like α Bootis.

A.G.C. 25919. ξ_1 Sag. 5786,^{5} Like α Can. Maj. ?

4899,^{3} ξ_1 & ξ_2 Sag. poor.

ξ_1 & ξ_2 Sag. 7846$_2^3$
ξ_2 Lines broad
ξ_1 too faint.

7574$_2^4$ ξ_2 Sag. α Bootis.
ξ_1 faint at K line

ξ_1 & ξ_2 Sag. 4987,^{4}
ξ_2 α Bootis, with some absorption as seen in δ Sag.

ξ_1 Sag. Like α Can. Majoris.

June 16. 1897

δ ~~Cr~~ Pis. Aust. 6886,4 & 5703,^{3}
A.G.C. 31184 δ is like α Bootis.
" " " 31123 γ " " α Can. Maj.

A.G.C. 26162 δ Cor. Aust. 5914^3 & 5647,^{3}
Like α Bootis.
A.G.C. 26191 also on plates, too poor, to decide w. certainty. It is most likely under δ Sag. The sp. is faint on the edge of the plate. It may be under α Sadre,

violet end of
A.G.C. 26198 also on plates.
B star.
Both the secondary stars are better on 5914 than 5647.

June 1$\overset{6}{5}$, '97

β Doradus.

Like δ Can. Maj.

8213$_2^4$
8235$_2^4$ { Compare these with a two-prism plate of δ which I can not now find.

β Pavonis

A.G.C. 28338 (1) 4180
5891$_1^4$
7860$_2^4$
7976$_2^3$ } Like ζ Muscae and nearly like α Argus.

A.G.C. 28259 (2) K line faintly seen.
v Like α Can. Maj.

Nov. 3, 1897. $\overset{\beta\text{ Par.}}{\wedge}$ Hβ & Hγ & Hδ stronger than in α Carinae. K slightly weaker. Line 4302 (dotted line on p. 23) not seen on a two-prism plate. Clearly different at the G band on a two-prism plate from α Argus.

June 17, '97

A.G.C. 14304 s Carinae 4706$_1^5$
Like α Argus.

A.G.C. 14244
Like α Argus. Spectrum is faint & not in sharp focus.

June 18. 97

4027
4028 { 195 Carinae

These spectra are too poor to classify.

A.G.C. 15266. ε Carinae 4733,4
Like δ Can. Maj.
A.G.C. 15344 also on plate.
Like β Gruis.

ε Carinae 4064
Like δ Canis Majoris

A.G.C. 15344
Like β Gruis.

4043 265 Carinae
ε Carinae on plate.
Many other stars on plate but are too narrow and poor to classify.
This is the only plate of 265 Car.

June 22, 1897

A.G.C. 27440 — Sag. 7125,4 Like α Tauri.
Other stars on plate.

A.G.C. 27452 Like ~~α Tuc.~~ α Aurigae, ~~K~~ K 3286 too strong for ζ Tuc.
" 27354 " α Bootes
~~" 27438 Like α Cygni? — too poor~~
~~" 27336 Like α Canis Maj.?~~
" 27292 ~~" α Argus~~ α Can. Minor —
" 27375 + 27377 Superposed.
Can not classify from this plate.
" 27442 Like α Bootes?
This spectrum is faint.

— Sag. 5773,4

A.G.C. 27452 ζ Tucanae
~~" " 27336 K = 0.2 1.3 H~~
" " 27354 Like α Bootes
" " 27292 α Argus? Poor. Better on 7125
" " 27438 Too poor

— Sag. 6823,3 Like α Tauri.
~~A.G.C. 27336 K = 0.2 H~~
" " 27354 Like α Bootes.
" " ~~27452~~ 27442 " ~~ζ Tuc.~~ Like α Bootes
A.G.C. 27375 + 27377 are superposed. The Hyd. & K lines of both stars are seen. K appears equal H in both stars, but as the spectra are too faint to see other lines, they had best be omitted from classification

June 22, 1897

– Sag. 7058,^{3}
A.G.C. 27452 Like η Luc,
" " 27354 " κ Bootis

– Sag. 6898,^{3}
A.G.C. 27452 Like η Luc,
" " 27354 " κ Bootis

A.G.C. 10450 j Puppis 5331,^{3}

A.G.C. 10512
Like α Bootis.
Hγ = 4326.

A.G.C. 31676 b_1 Aquar
Like κ Bootis

. . . . 31734 b_2 Aquar
Like κ Tauri

June 22, 1897.

A.G.C. 21939 δ Trian. Aust $^{6615^3}$ Like δ Pavonis
The Hγδ lines seem as intense as in α Aurigae but H + K are broader and while this image is dense and looks over-exposed there is little seen at violet end beyond K.

A.G.C. 22165 also on plate.
Like A.G.C. 31955?
To be confirmed on other plates.

June 22, 1897

a.G.C. 24919 — Sag. 7103,^{3}

(2) Like ζ Tuc

" 24897 (3) " α Bootis ?

5095,^{3}
other stars too poor.

7179,^{3}
(2) Like ζ Tuc,
(3) Too poor

June 23, 1897

a.G.C. 9176. 7224,^{4} I Puppis.

a.G.C. 9243 also on plate
~~Also on plate.~~
~~Like ν Fornacis~~
This star has the strong line of longer λ than Hδ like ν Form. It has also a line nearly mid-way between Hγ & Hδ which I do not see in ν Fornacis. The K line is not seen. the line bet. Hγ & Hδ appears to have the same λ as the ζ Puppis hyd. line at this point.

a.G.C. 9176 7391,^{4} I Puppis

a.G.C. 9243 Hζ line very dimly seen without the glass.

6203,^{3} I Puppis too poor of a.G.C. 9243

June 23, 1897

7072,5 Sagittarius
A. G. C. 25020
K fainter than in α Can. Maj
Line between $H\zeta$ + $H\delta$ seen.
B–A. Under γ Cent?

A. G. C. 24839. B star.
Lines double.
Is it focus.

5902,4 ρ Pav.
Like α Circini
K = H
G band hazy towards red
Lines all broad.

5265 4 κ Phoen.
A.G.C. 443 Like A.G.C. 31955

A.G.C. 427 Like α Canis minoris?

" " " 619 Like γ Luc.

June 23. '97.

4831,4 m Hydrae.
A.G.C. 19930
Like α Canis Majoris

A.G.C. 15166 ψ_1 6481 ψ_1 Hydrae.
A.G.C. 15183 K barely seen. Line bet. $H\delta$ + $H\epsilon$ seen.
A.G.C. 15253 ψ_2 Like A. G. C. 31955.

4762,5 ψ_1 Hydrae
A.G.C. 15183 The only decided sharp line seen is bet. $H\delta$ + $H\epsilon$. B star?
Like γ Gruis
A.G.C. 15253 Like A. G. C. 31955

June 23. 1897

A.G.C. 22941 ϵ_1 Arae Like α Sauri.

" " 23018 ϵ_2 Arae
Like ζ Tuc.

" " 14266 5508, ³ α Antliae
4227.0 = α Sauri
$H\gamma$ = 4326.0. Lines all broad.

ψ Capricorni 7140,4

A.G.C. 28539 on plate.
The line between $H\delta$ + $H\epsilon$ is strong. K is faint and out of focus. This is like A.G.C. 15783

A.G.C. 28539 Sp. faint, but it appears to be like γ Gruis.
A.G.C. 28539 also appears on 4761, + 5810.

June 23. 1897.

6571 g Lupi.

A.G.C. 21206 $7\frac{1}{4}$ } superposed
" " " 21205 $8\frac{1}{4}$ }

A.G.C. 21206 appears to be like Sirius. Having broad Hyd. lines and K line barely visible. A line is seen on each side of $H\delta$ as in ξ Phoen. See Note below.
A.G.C. 21205 is faint. $H\gamma$ + $H\delta$ are clearly seen.
H + K are almost entirely lost in haze. They appear, however, about equally ~~strong~~ wide.

A.G.C. 21218
D Like A.G.C. 31955.
This spectrum is poor. The Hyd. lines are broad and hazy.
These lines ~~seem~~ more out of focus than those of the stars described above, although this is nearer the centre of the plate.

Note. The line of ~~two~~ shorter λ than $H\delta$ does not match with ξ Phoen. It appears to be a solar line belonging to the spectrum of A.G.C. 21205. The line of longer λ appears to be the double line 4128 + 4131.

Sept. 23, 1897

ε Muscae ~~5576~~ 6669,^{4} (for addit. stars)

A.G.C. 16845 + ζ$_2$ Muscae. ~~Like α Argus.~~
K = 0.9 H = 1.2 Hδ. A4F.

" " " 16847. + ζ$_1$ Muscae Like α Bootis.

" " " 16878 + — Muscae Like α Bootis. Image faint.
but the lines are quite sharply defined.

ε Muscae 5576,^{4}

A.G.C. 16845 ζ$_2$ Muscae. K = 0.8 H
H lines hazier than the K line.

" " " 16847. ζ$_1$ Muscae.
Very faint.

Sept. 23, 1897.

A.G.C. 24919. — Sag. 7103,^{3}
A.G.C. 24897 — Sag. also on plate. Like ζ Lac.

A.G.C. 31184. δ Pis. Aust. 6920,^{4}

" " " 31123 γ Pis. Aust. also on plate. Like Sirius

This work was interrupted to make
a list of S. M. P. stars of 4.2
and brighter magnitudes.

Sept. 2~~3~~7. 1897.

α Pictoris 6197^{4}
K = 0.9 H = 1.1 Hδ

Lupus q¹ 6305^{4}
Like α Tauri

ε Sag. 5740 Like Sirius.

ζ Sag. 5001 K = ½ H.
A star.

Sept. 2~~7~~8. 1897.

Sub-division of Class B stars found in my S. M. P. list of stars brighter than 3.57.

ε Orionis 44041 is assumed to be a typical B star according to Draper Catalogue notation.
Description of spectrum of ε Orionis
The Orion lines are so strong that the eye does not readily perceive the hydrogen series upon first glance.
Line 4925.7 has 0.~~4~~2 intensity of Hδ.
Line 4649.2 has 0.8 intensity of Hδ
" 4471.8 " 0.5 " " "
" 4387.8 is very faint having not more than 1/10 the intensity of Hδ.
41~~20.5~~44.92 has 0.2 " " " "
4120.5 " 0.5 " " " "
4089.2 " 0.8 " " " "
4026.0 " 0.9 " " " "
3819.2 is too hazy to estimate

Hydrogen lines have about 0.2 the intensity seen in α Can. Maj.

Sept. 28. 1897.

μ Centauri 5633^{5},

$H\beta$, $H\gamma$, $H\delta$ & $H\varepsilon$ bright
$H\zeta$ & $H\eta$ broad & hazy,
$H\theta$ & H_{i} " " " , (may be focus)

Orion lines visible
Line 4471.5 as strong as in ε Orionis
4649.2 not seen,
4387.8 = 3.0 as strong as in ε Orionis

Lines near $H\delta$
4144.0 = 2.0 same line in ε Orionis
4120.5 = 0.6 " " " " "
4089.2 not seen or very faint
4026 = same in ε Orionis.
3819.2 = 1.3 " " " "

Line between $H\varepsilon$ & $H\zeta$ and of slightly shorter wave-length than K has edge of longer wave-length bright.
What is this line?

Sept. 28, '97

β Crucis 6295

3819.2 by far the strongest Orion line.
Hydrogen series much stronger than Orion lines.
4026.0 = 0.7 $H\delta$
Orion lines near $H\delta$ much fainter than in ε Orionis, & those ~~ones~~ of shorter wave lengths are fainter than those of longer,

4925.7 = 0.7 $H\delta$
3819.2 = 1.0 $H\delta$.
The other Orion lines are somewhat faint.

The faintest trace of the line K is thought to be seen.

Hydrogen lines have about 0.3 the intensity seen in α Can. Maj.

Sept. 28, 1897.

δ Lupi	6474,4		Like β Crucis
γ Lupi	5677,4		
ε Cent.	6439,3		
δ Crucis	6^{3}~~45~~9,5		
β Muscae	6294,5		
α Muscae	6409,5		
ζ Can. Maj.	6161,5		
δ Vel.	6183,3		(plate thin) This is not δ Vel Unidentified as yet.
τ Scorpii		B3A	
ν Scorpii	5700,5	B2A	
κ Scorpii	4402 7652	B2A	

Sept. 28, 1897.

~~The Orion~~

α Eridani 6184 4
4498

The Orion lines are fewer & weaker than in β Crucis.

{3819.2 + 4471.8} are the most prominent Orion lines.
{4026 -

4009.5 = 0.5 4026.0 & is relatively stronger than in ε Orionis and about the same strength as in β Crucis.

The K line is only barely seen. The Hydrogen are very slightly stronger than in β Crucis, here having about ~~2.5~~ 0.3 to 0.4 the intensity seen in α Can. Maj.

α Pavonis 5688,5
About like α Eridani
K is seen, but is very faint.

Sept. 28, 1897.

γ Gruis 5689, 4

Hyd. lines = $\overset{0.7-}{0.8}$ of their intensity in α Canis Maj.

Line 3819.2 not seen.
" K = 0.3 of same in α Canis Maj.
" 4471.8 } are the strongest Orion
" 4026 } lines, though others are surely seen, but are faint.

γ Gruis 5381, 5

3819.2 seen, faint & out of focus.

Line 4481.4 is about equal to 4471.8

A.G.C. 29989 K = 1/2 Hδ = 1/2 H

α Gruis 5757, 5
6878, 5
5273, 5
very much like γ Gruis, but line
Line 4481.4 = (0.8) 4471.8.
K line is not seen as sharply on plates of α Gruis as of γ, but this may be focus.

Sept. 28, 1897.

ν Puppis 6153, 5
Like γ ~~α~~ Gruis

λ Centauri 6499, 5
Like Sirius.

θ Carinae 6487, 5
Like β Crucis

Sept. 29. 1897

υ Cent. 6684,^{5}
$K = 1/3\,H\delta$

α Pictoris 6197,^{4}

$K = 1.1\,H\delta = H$
Hydrogen lines nearly as strong as in Sirius.

β Arae 5819,^{4}

Like α Tucanae

γ Arae also on plates of β Arae and on all plates examined shows wide lines. γ Arae is type B.

κ Vel 6467,^{5}
6556,^{5} B2A

Sept. 29, 1897
Examination of plates of α Pis. Aust.

X7667,^{2}
$H\beta$, $H\gamma$, $H\delta$ & H hazy.
$K = 0.8\,H\delta$
Hyd. lines = 0.9 same in α Can. Maj.

X 4297 Too poor

$X\,7894^{4}_{\textcircled{3}}$
Hyd. lines, very hazy, other lines broad.

$X\,7\overset{779}{\cancel{77}}5^{4}_{2}$
Lines distinctly narrower.

Sept. 30, 1897

Continuation of examination of a plates.

X5505,^{3}

A.G.C. 7989 ξ_1 Can. Maj. (1) Type B or B2A, poor.

" " 8065 ξ_2 Can. Maj. (2) Like Sirius.

X5541,^{3} a Cent.
Too poor.

X5580,^{4} χ Lupi
Like Sirius. Plate recorded as φ^1 Lupi not φ^1 Lupi, nearly check for χ Lupi, and is the same type, so probably is χ Lupi.

X5587,^{5} η Sag.
A2F.

X5597,^{3} l Cent.
too poor

Sept. 30, 1897.

A.G.C. 16217+ X5598,^{4} β Hydrae.
Hyd. series seen as far as $H\zeta$, possibly $H\eta$. Like Sirius? Re-examined. See Bk X p. 1.

" " 16309+ Like Sirius? poor focus. D

X4764,^{4} β Hyd.

" 16225+ A2F? Like Sirius
too faint. D

X5602,4 c Cent.

A.G.C. 19558 c_2 Cent. (1) Like Sirius

" " 19931 c_1 Cent. (2) " α Bootis

A.G.C. 19867 (3) Like Sirius? D No K line seen.

X5609,^{3} μ Lupi

(1) B8A?

(2) Like γ Lyr.

(3) " α Aurigae?

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μ Lupi 6539, ^{4}

A.G.C. 20713 + (1) Like ν Puppis. B8A.
Line 3819.2 not seen, but the focus
is very poor at that end.

Line 4026.0 = 2.0 K line.
" 4471.8 = (1.2) 4481.4

A.G.C. 20786 $^+$ (2) Like η Tuc.
ν_1 Lupi

A.G.C. 20783 $^+$ (3) Like α Aurigae
ν_2 Lupi

A.G.C. 20655 $^+$ (4) A 2 F.
" 20~~7~~686 + (5) Like α Bootis.

X 6381 μ Lupi.
(1) Hyd. lines seen as far as Hγ.
3819.2 not seen, but focus is poor.
B8A

(2) Like η Tuc.
(3) " α Aurig.
(4) K = 0.5 Hδ. A 2 F. poor.

Sept. 30, 1897.

X 5621, ^{3} ο Lupi
Too poor evidently the
clock was not going right.

X 5579, ^{4} ο Lupi
4026.0 is by far the strongest
Orion line
Hδ = 3-4 times this line 4026.0 in
intensity.
This star may be called B5A,
as it seems to be between η Cent and
ν Puppis.

ξ Oph. 5636, ^{3}
Too poor.

ε Cent. 5651. ^{3}
very poor focus.
Like Sirius?

ι Pis Aust. 5653, ^{3}
Like Sirius

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X5656,³ m Hydrae
Too poor.

X5660,⁰ – Sag. 19ʰ 56ᵐ.9
Too poor.

X5661,⁴ γ Microscop.

Like Sirius?
K line slightly stronger.

X5681,⁴⁰ ε Microscop.
Focus poor.
K = 2.0 same in Sirius
A 2 F.

X5702,³⁰ δ Tuc.
Like Sirius? K line double,
4026 seen, also 4471, nearer like λ Centauri.

X5724,⁴⁰ γ Cor. Aust.
(1) Like γ Tuc.
(2) α Cor. Aust. also on plate.
A 2 F1
A.G.C. 26134 (3) Like α Aurigae? faint image,
Seems nearer G5K.

X5725,³ θ Indi
A.G.C. 29216 (1) K = 0.9 Hδ very poor.
" " 29117 (2) K = 0.6 " " "

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X5743,³ δ Indi
Too poor.

γ Telescop. X5756,⁴
Like Sirius?
Def very poor.

~~A~~ κ Lupi X5761,⁴
Like Sirius?
A line clearly seen bet. H & K, and about as strong as K. What is this line? Line 4026.0 seen, also the line 4481.4 which is stronger than 4471.8
X4839,⁴ is the only other plate of κ Lupi
The spectrum here shows the line above spoken of but no other lines are clear except the hydrogen series and K.

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X 5782,^{3} β Octantis

K = 0.9 H = 1.1 Hδ
Solar lines very indistinct, the hydrogen series being still very strong.

X 5790,^{3} R ~~Gruis~~ Wrong region taken.
Stars identify as A.G.C. 30805, 30814 & 30830.

A.G.C. 30805 K = 0.6H = 0.8Hδ ~~K = 0.7H = 0.8Hδ~~ very poor, other lines except hydrogen not seen

" " " 30814 K = 0.3H = 0.4Hδ nothing seen except hydrogen lines and K

" " " 30830 Like η Tuc. Spectrum on edge of plate.

" " " 24812 X ~~5796~~ 5103,^{3} μ Sag.
Peculiar spectrum, of composite type.
The hydrogen series is seen as far as Hλ. Hβ, Hγ & Hδ have about half the intensity seen in α Can. Maj.
K = 0.7 Hδ = 0.5 H.
Other lines seen are
4925.7 = 0.5 its intensity in ε Orionis
~~4487.8~~
4471.8 = " " " " "
4481.4 = 1.3 × 4471.8
The other Orion lines are about like those in ν Puppis X 6153

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A.G.C. 24812 X ~~5796~~ 5103,^{3} μ Sag.
The spectrum resembles ν Puppis, except that the hydrogen lines in μ Sag. are weaker, and K is twice as strong.

A.G.C. 24850 Other stars on plate X ~~5796~~ 5103
B star. Like ε Orionis
K line seen? Focus poor.

A.G.C. 24857 Too faint.

A.G.C. 24812 X 5930,^{4} μ Sag.
The line K has 1.3 intensity of same in α Can. Maj. while the Orion lines are about as in ν Puppis, a transition star from B–A.
The spectrum seems to be composite the two elements being Class B and A.
A two-prism plate should be taken.

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A.G.C. 24850 X 5930 Like ε Orionis ?
K line not seen
Line near Hδ (of longer λ) looks double, probably focus.
The Orion lines here are about 0.8 as strong as the hydrogen.

A.G.C. 24857 X 5930
Orion star ~~or B9A.~~
Line 4026.0 is strong also 4471.8 and 4925.7 both Orion lines.
The spectrum on this plate seems to be much like ε Orionis, but it is near the edge, and out of focus

X 5796,^{3} μ Sag.
A poorer plate than X 5103 and X 5930.

X 5722, $3^{\mu\text{ Sag.}}_{\eta}$ Too poor.

X 4904,^{4} μ Sag. Poor.

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A.G.C. 27225 X 5797,^{4} ε Pav.
Like Sirius

A.G.C. 26980 X 5797 at edge of plate.
K = 0.7 H, = 0.7 Hδ Many solar lines seen.
Lines too hazy for accurate estimates
The hydrogen lines are very strong.

A.G.C. 31123 X 5812,^{4} γ Pis. Aust.
Like Sirius

A.G.C. 31184 X 5812 δ Pis. Aust. also on plate
Under α Bootis

X 5822,^{3} ν' Sag.
Too poor.

X 5832,^{4} ε Gruis.
K = 0.4 H = 0.5 Hδ
Hyd. lines about equal to those in Sirius.

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X 5835,^{3} ω Form.
Like Sirius ~~as~~ in Hydrogen lines and in the line K. Solar lines not seen. Focus poor.
Line 4026.0 is indefinitely seen.

X 5840,^{3} β Sculptoris
Like Sirius, K line very faint.

X 5843,^{3} φ Form.
Too poor.

X 5849,^{4} ι Psc. Aust.
Like Sirius

A.G.C. 31184 X 5850,^{4} δ Psc. Aust. Like α Bootis
A.G.C. 31123 γ also on plate. Identified from X 5812.
Like Sirius

X 5856,^{4} α Doradus
Hyd. lines = those of Sirius
K line barely seen, out of focus.
Only other line clearly seen is one near Hδ of longer λ. It does not seem like an Orion line

Oct. 1. 1897.

X 5877,^{3} ν, Sag.
Too poor.

X 5878,^{3} h_2 Sag.
A.G.C. ~~26827~~ 26843 $h_{\times 2}$ (~~var.~~) (1) K line very faint. Focus very poor.
Like Sirius?

A.G.C. ~~26843~~ 26827 ~~h_2~~ h_1 (2) K = 0.6 H = 0.8 Hδ
Poor.

X 5894,^{3} ι Phoen.
K = 0.2 H = 0.2 ~~K~~ Hδ
Solar lines seen, noticeably the ζ Cap. line near Hδ. Focus very poor.

X 5896,^{5} α Eridani
Long hydrogen series.
Ho faint but present.
Overexposed?
Line 4026.0 seen
also 3819.2
Other lines burned out
K not seen

Oct. 1, 1897.

A.G.C. 20668 X5898,^{4} β Circini

K = 0.6 H = 1.1 Hδ

A5F?

A.G.C. 20785 X5898 γ Circini

Orion type, and seems to have a strong K line for its type, but the focus is poor. Will examine the plates of γ Cir.

X4768,^{31} γ Cir.

Too poor.

X4883,^{4} γ Cir.

Lines hazy. Poor focus?

β Cir. also on plate

Oct. 2, 1897

A.G.C. 20785 X6401 γ Cir.

This spectrum is nearly like those I have called B2A, although the lines near Hδ and of shorter wave-length are of slightly different intensities. The focus is poor on this plate.

X5101,^{4} γ Cir.

On this plate the star looks like B3A. The Hyd. lines have 3 or 4 times the intensity of the Orion lines. And there are traces of numerous solar lines.

A.G.C. 209^{69}65 X5701

The spectrum is cut off at Hγ. The Hyd. lines Hγ, Hδ, Hε & Hζ are seen. Also line 4026.0, and one between Hγ and Hδ which appears to be of same wave-length as the line of ζ Puppis.

I have looked on plates

B13087
" 11669
11525
14132

and find the spectrum too dense to distinguish lines

Oct. 2. 1897.

69
a A.G.C. 20965 X 5101
may. 5.9 B 3371 examined but there seems to be no signs of the ζ Puppis bright bands.
The spectrum is therefore probably like ζ Orionis

X 4795,4 β Crucis
K = 0.8 H = 1.1 Hδ

γ shows Orion lines hazy. Focus, ?

A.G.C. 29216 X 5903,4 θ Indi
K = 0.7 H = 0.9 Hδ
Hyd. lines = 0.8 same in Sirius
Solar lines abundant.

A.G.C. 29117 X 5903
K = 0.9 H = 0.8 Hδ Focus poor.

X 5905³ δ Sculptoris
Like Sirius, focus poor

X 7201,4 δ Sculptoris
Plate "were" marked K line double?
Like " Sirius

Oct. 2. 1897.

X 5387³ δ Sculptoris
Lines broad & hazy, focus very poor.

X 5055 δ Sculptoris, focus poor.
Like Sirius.

X 5912 δ Normae.
K = 0.5 H = 0.7 Hδ
Hyd. lines are hazy.
The ζ Cap. line near Hδ is very strong. Hyd. lines are strong.
Class A5 F Pec.

A.G.C. 2838 δ Eridani X 5926,³
Like Sirius
The K line looks distinctly double, but the focus is very poor.

δ Eridani

X 7165	K line single
X 7272	" " "
7164	" " "
5057	" " "
5296	All lines double. Clock? Note in record-book says "Clock doubtful"
5310	K line single.
5343	Single?
5982	Too poor
5983	Single.

On all the plates, the hydrogen lines are wide and the focus poor.

Oct. 2, 1897.

X 8057$_2^4$ λs Eridani

Hyd.$^+$ lines very broad
Image thin
K line single

A.G.C. 29200 X 5940,^{3} ε Micros.
Like Sirius. See note on cover

X 5913,^{5} ω Ophiuchi
K = 0.8 H = Hδ
Hδ is narrower but stronger than K.
The γ Cap. line is moderately strong.

X 4819
X 4840 { ω Op. Not so good as 5913

A.G.C. 662 X 5981, 4 η Phoen.
Like Sirius. Cover marked
"K line double? ~~Probably focus~~
Bad focus?"

Other star on plate has a spectrum
A5F Peculiar. (mag. 5.9)
I think this star is ζ Phoen. which I have before examined and have asked for a better photograph of.

Oct. 4, 1897

Plates X 8141, X 8344 & X 8487 of θ Eridani^{A2F}, α Pictoris^{A4F} & α Circini^{A5F} respectively are good examples of the A-F stars.

A.G.C. 31906 X 4912,^{3} A.G.C. 31906 ι Phoen.
A2F? Lines very broad and ~~of~~ focus poor. Evidence of stronger solar lines than in Sirius and the two lines near Hδ (one on side of longer wave-length, the other on shorter) are seen.

X 5943,^{4} δ Hydri
A2F

X 5955,^{4} β Sculptoris
Like Sirius.

A.G.C. 2838 X 5958,^{3} ~~δ Erid.~~ s Erid. the star intended.
A2F? Hydrogen lines very strong and hazy,
K = 0.2 same as in Sirius.

Oct. 4, 1897.

45960,^{3} f Erid. Double star.

a. Hyd. lines very broad and K line wide and hazy.

x7176,^{3} f Erid.

(1) Focus poor. K line very broad.

(2) ~~H 5 m?~~ Like δ Sag.?

45304,4 f Erid

(1) Looks like a Sirian star with broad ill-defined lines.

h Eridani (2) Like α Tauri clearly.
Examined again. The break at H is more distinct than in α Tauri. Put it under α Tucanae.

x5294,^{3} f Erid.
K line double. Hyd. lines strong

x 5327,^{3}
(1) f Eridani, a close double star whose components have both the Sirian spectrum.

Oct. 4, 1897.

45327,^{3} f Erid.

I stopped to complete the list of stars south of -30° Dec. and brighter than 3.50 for the Astro-Physical Journal

Oct. 7, 1897

X 7504$_3^4$ ε Sag.
Class A.
Solar lines seen but not sharp.
K = 1/12 H δ
H = 1.1 H δ

This seems to be a good typical first-class star, with respect to the K and hydrogen lines, but a plate should be found giving the solar lines in better focus.

X 5740,^{5} ε Sag.
Good typical Sirian star.

A.G.C. 12636 β Carinae 6303,^{5}
(1) K = 1/6–1/8 H δ
H = 1.1 H δ
This K line is stronger than in ε Sag.

A.G.C. 12465
E Car. (2) B3A. Spectrum is not sharp. It comes well towards the edge of the plate but the class is clearly defined.
X 8473$_2^4$ β Carinae

E Car. partly on B3A

Oct. 7, 1897.

δ Vel X 3981
X 3993
X 8254
X 8216
} Like β Carinae

A.G.C. 17269 γ Cent. X 4123
X 7586$_2^5$
K = 1/6 H δ
H = 1.1 H δ

K looks slightly stronger than in β Carinae, but it may be because X 7586^5 is in sharp focus.

Lines are sharp, although a haze extends on both sides of the hydrogen lines yet these lines have their edges well defined.

A.G.C. 17180 X 4123
τ Cent. also on plate.
K = 6.3 H δ

X 7586^5
τ Cent. also on plate.
Hyd. lines very broad, poor focus
A2F.

Oct. 7. 1897.

A description of the sub-divisions of A Stars

A_1

$K = 1/12 - 1/8\ H\delta$
$H = 1.0 - 1.1\ H\delta$

Hydrogen lines exceedingly strong. Solar lines seen, but very weak. The strongest solar line is between $H\beta$ & $H\gamma$. λ4481.

Stars in this group arranged in a somewhat progressive series, considering the intensity of the line K.

ε Sag.
β Cat.
δ Vel.
γ Cent.

Oct. 7. 1897.

Description of sub-divisions of A Stars (cont.)

A_2

$K = 0.3\overset{-0.5}{\wedge}\ H\delta$
$H =$ ~~A~~ $1.0 - 1.1\ H\delta$

~~A~~

Examples.

θ Eridani 45117,^{4}
47921$^3_3$ lines hazy.
7706$_2$ lines a little hazy.
8141$^4_{24}$

A. G. C. 26041 ζ Sag. 45001
$K = 0.5 - 0.6\ H\delta$

ξ Sag. 47883
$K = 0.6\ H\delta = 0.$~~4~~$5\ H$
K seems slightly stronger than in θ Erid.

ι Cent. 5684,^{5}

A. G. C. 26084 ξ Sag. 47582
also in plate. Spectrum A_1

Oct. 7, 1897

Sub-divisions of A stars.

A_3 or (A4F1)

K = 1.1 Hδ = 0.9H

α Pictoris

X 6197

X 8344

4 8310$_2^4$

Oct. 7, 1897.

Sub-divisions of A stars.

A_4 A5F.

K = 1.5 to 2:0 Hδ = 0.9H

γ Carinae 4 834δ$_2^4$

Oct. 7. 1897.
Sub-divisions of A stars.

A_5 (D.C. F)

K = 3.0 A_5 = H

α Carinae
θ Scorpii
β Triang. Aust.

Oct. 7, 1897.
Continuation of examination of plates from p. 177.

X 5327, 3 f Erid.
(1)

A.G.C. 4256 g Erid. (2) Like δ Pav.

Oct. 8, 1897

A.G.C. 443 X 5966,⁴⁶ λ_1 Phoenicis

(1) K = 0.4 Hδ

H = 1.1 Hδ

Hyd. lines broad solar lines seen, but not very sharp.

Div. A_2

A.G.C. 519 λ_2 Phon. (2) Like ζ Tucanae? Focus poor, and hyd. lines may be somewhat stronger, but there is a decided G band.

A.G.C. 427 (3) Like γ Dor.? The G band looks nearly as well-formed as in (2).

A.G.C. 2838 X 5968,³ ~~δ Erid.~~ too poor s Erid. star intended

" 2838 X 5974,³⁴ ~~δ~~ s Erid. intended.

K = 0.3 Hδ

H = 1.2 Hδ

Div. A_2

Oct. 8, 1897.

A.G.C. 4447 X 5976,⁴ τ_9 Erid.

Cover states, "Miss Cannon, Describe double line in τ Erid on this plate." Also ⊗ written on cover "Class A. Pec." This spectrum is like ν Fornacis, see pp. 84 and 85.

The hydrogen lines = those in Sirius. The K line is not here seen, or only the faintest sign of it. There seems to be a line between Hζ & Hη, which is stronger than the K line.

Line 4026.0 is seen though somewhat faint.

Line 4471.8 = (0.5) 4481.4

Line of somewhat longer λ than Hδ is double.

This spectrum is also like α Dor. (see p. 168)

X 5142,⁵ τ_9 Erid.

Line bet. Hγ & Hδ marked on plate. Is it one of the hyd. series?

X 8018₂⁴ α Dor.

The line seen double above in τ_9 Erid is also double in α Dor.

Should these three stars

α Doradus
ν Fornacis
τ_9 Eridani

} be Class A, Peculiar?

Oct. 8. 1897.

A question arose as to the identification of α_1 and α^2 Centauri, as the X plate 6688 showed the fainter component to be south preceding, the position given in A.G.C. for α_1. Professor Pickering looked the matter up and found ~~that~~ α_2 is more south preceding.

X 6130,^{5} θ Erid.
K = 0.~~8~~9 Hδ
K = 0.7 H

The K line looks stronger here than in X 5717, from which plate and the two-prism plates the star was classed as A2F. It certainly here appears nearly equal to Hδ and this is a good plate, and from this plate I would class it A4F.

A.G.C. 7274 X 6133,^{3} ~~γ Columbae~~ Not γ Col, identified as A.G.C. 7274

~~A2F.~~ A

A2F.^ very poor definition

A.G.C. 7321 Partly on the plate. Probably B8A. Sp. poor Hβ off the plate.

Oct. 8, 1897.

s Erid. X 6169,^{4}
A2F.? $K = \frac{1}{8}$ Hδ.

A.G.C. 4821 X 6140,^{4} χ Erid.

(1) This spectrum looks like γ Cent, which I called B9A.

It is also very much like τ_9 Erid. α Dor. & ν Fornacis. They are all probably transition class from B to A

In this spectrum, the line of longer λ than Hδ is not so strong as in τ_9. λ 4026.0 is a little stronger.

A.G.C. 4841 (2) K = 0.2 Hδ, Lines too dim and hazy for accurate estimate

~~A.G.C.~~ 4841 X 6156,^{4} φ Fornacis.
K = 0.9 Hδ
K is very strong and sharp.
The hyd. lines are hazy.
H = 1.2 Hδ
A4F.

Oct. 8. 1897.

X 6166,4 τ_3 Erid.
$K = 0.\overset{8}{9}\,H\delta = 0.8\,H$

X 6173,^{3i} ξ Puppis.

A.G.C. 10249 (1) Like α Tauri? very narrow, all lines intensified.
Other stars too poor.

A.G.C. 10331 B3A.
" 10269 B3A? λ3994.9 seen, also 4128-4131.
" 10268 Too dense.
" 10211 Like 10269.

A.G.C. 10249 X 7230,5 ξ Puppis.
Like δ Sag.
(Stars marked on plate)

A.G.C. 10268+ X 7230 ρ Puppis
Spectrum rather dense
B2A. Like ε Orionis. 4089.2, 4116.5, & 4649.2 are all strong, 4116.5 not seen distinctly separate from 4121.

A.G.C. 10269+ X 7230
B3A. May be B2-3A. as there seem to be hazy lines bet. Hδ & 4026.

A.G.C. 10211+ X 7230
B3A. May be B2-3A, like A.G.C. 10269.

A.G.C. 10331+ X 7230
B3A

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A.G.C. 10033 X 6181 5
l Puppis (1) $K = 0.8\,H\delta = 0.6\,H$
Lines very thin and clear, and the solar lines seem sharper than in most of the plates examined.
This spectrum resembles ι Scorpii in the sharpness of the lines but the solar lines are not so well-developed here nor is K so strong. Is this Miss Maury's division c?
Keep this in box with ι Scorpii.
Considering merely the strength of the K line and of the hydrogen lines, this spectrum would be A3F.

A.G.C. 10025 (2) Like α Tauri.
Mapped up with γ Phoen, this spectrum shows the streaks of just the same intensity.

May 24.'98. l Puppis and α Cygni are alike as far as can be determined from one prism plates.

Oct. 9. 1897

X4379 l Puppis
very poor plate.

A.G.C. 10033 l Puppis $K = 0.5\,H\delta = 0.4\,H$
Solar lines seen, rather fine & sharp.

A.G.C. 10025 Like l Lauri? too poor.

A.G.C. 443 X5966,4i γ1 Phoen. (Stars marked on plate)
$K = 0.3\,H\delta = 0.2\,H$
A2 F.

~~" " 519~~ A.G.C. 427 ~~" " 427~~ $K = H = 1.2\,H\delta$. Definition very poor.
Solar lines abundant but the hydrogen lines are very strong, about equal to those in α Can. maj.

~~A.G.C. 427~~ A.G.C. 519. γ2 Phoen. Under η Luc. Hydrogen lines look very strong, but the definition is poor.

Oct. 9. 1897.

A.G.C. 443 X5007,4 γ1 Phoen.
$K = 0.2\,H\delta = 0.1{\wedge}5\,H$
A2 F

~~A.G.C. 519~~ A.G.C. 427 ~~γ2 Phoen.~~
$K = 0.9\,H = 1.1\,H\delta$
~~Lines are too blurred for accurate estimates.~~
This star should go among those in which the K line is very slightly weaker than H and very slightly stronger than Hδ, and solar lines abundant.

~~A.G.C. 427~~ A.G.C. 519 γ2 Phoen. $K = 1.1\,H = 3\,H\delta$
There is an appearance of the G band, as in η Luc. but the hydrogen lines are slightly stronger.

Oct. 9. 1897.

A.G.C. 11770 X 6199,4 ν Vel.

K = 0.6 H = 0.6 Hδ

While H & Hδ are approximately equal, Hδ is stronger and narrower; H is wider and apparently a little less intense.

A3F?

A.G.C. 11797 B3A.

Line K definitely seen.

A.G.C. 11771 B3A? Partly on plate. Leave this out unless confirmed on other plates.

A.G.C. 11755 b Vel. Partly on. A5F- Pec.?

X 5451,^{3} ν Vel.

Too poor.

(No more plates of ν Vel.)

Oct. 9. 1897.

X 6207,^{3}

A.G.C. 11293 ✓ + κ, Volantis

K = 1/10 Hδ

$4\overset{02}{\cancel{1}}\cancel{x}6.0 = 0.5 K$

Line 4481.4 = the K line in strength

Line 4471.8 is not seen.

Like γ Centauri

A.G.C. 11297. ✓ + κ₂ Volantis

Hβ, Hγ, Hδ, Hε and Hζ are the only lines seen except the line seen double in τ₉ Erid. of somewhat longer λ than Hδ. This is very faint in A.G.C. 11297 if really present. The K line is not seen, the image is poor in this part of the spectrum.

X 5417,^{92} κ, Volantis

Too poor to see any lines except the hydrogen.

The line K is barely seen in κ, Vol.

Oct. 9, 1897.

X6204,4 — Leporis $5^h 16.2$ — $21° 20'$

$K = 1/8\ H\delta$.

$H = 1.1\ H\delta$

4026.0 = (0.3) K~~H~~

This line is stronger than in Sirius.

Line 4471.8 is seen, not sharp, but stronger than in Sirius.

These two lines are Orion lines, and it seems strange for them to be stronger than in Sirius, while the K line is here somewhat stronger.

The line of longer λ than $H\delta$ is also seen as in λ Cent, but the K line is too strong for that division

X5486 — Leporis $5^h 16.^m2$

Too poor.

X5458 — Leporis $5^h 16.^m2$

$K = 1/10\ H\delta$. Like Sirius.

Spectrum poor

4717δ — Leporis $5^h 16.^m2$

$K = 1/10\ H\delta$ Like Sirius

Oct. 9. 1897.

A.G.C. 7989. X6215,4 ξ_1 Can. Maj.

B2A,

The Orion lines of shorter λ than $H\delta$ are clearly seen, and a number of of fine lines between H_ϵ & H_ζ.

A.G.C. 8065 ξ_2 Can. Maj.

$K = 0.2\ H\delta$

Line 4481, 4 seen

The Line of longer λ than $H\delta$ seen,

K is slightly stronger than in Sirius.

✓ X7214,3 ξ_1 Can. Maj.

A.G.C. 7989 + Orion lines seen but the spectrum is too dense to classify.

✓

A.G.C. 8065. + $K = 1/10\ H\delta$ (dense spectrum)

Like Sirius

Other fine lines not seen.

✓

A.G.C. 8109. ✓+ ~~Too poor unless seen~~ on other plates.

B5A. Sp. poor.

✓

A.G.C. 8161 + Like η Lucanae Spectrum faint and on the edge of the plate.

Oct. 9, 1897.

X 4598^5 ξ_1 Can. Maj.
B2A.
Orion lines well shown.

ξ_2 Can. Maj.
K = 0.2 Hδ
4026.0
4481.4
and the line of longer λ than Hδ are all faintly visible.

X 6245^5 α Volantis
K = Hδ except for the haze surrounding the latter.
H = 1.1 Hδ
Solar lines very abundant.
The hydrogen lines are very nearly as strong as in Sirius.

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A.G.C. 13968 ✓+ X 6238^4 γ Vel.
K = 0.5 Hδ
K = 0.3 H
H is slightly stronger than Hδ, while K is very perceptibly weaker than H.
Many solar lines are seen.
The hyd. lines are fairly sharp.
A2F.

A.G.C. 14061 Nothing seen except the hydrogen lines.

A.G.C. 11111 X 6258 (1) γ Puppis
K = Hδ
K = 0.9 H
The solar lines are numerous but the hyd. lines are still very strong.

A.G.C. 11194 (2). B3A.

Oct. 11. 1897

A.G.C. 11111 ✓ + X 5340,^{4} g Puppis
$K = H = 1.3\,H\delta$
These spectra are very narrow and the fine lines are burned out.

A.G.C. 11194 ✓ + Orion lines seen, but too poor to subdivide.
B3A

A.G.C. 10963 + F line bright. r Puppis.
This plate is put in box of bright line stars.

" 10973 ✓ + B3A with the lines $H\beta$, $H\gamma$, $H\delta$, $H\epsilon$, H_ζ ~~edge~~
A.G.C. 10974 superposed.

X 6324,^{4} θ Crucis

A.G.C. 16451 ✓ + θ_1 Crucis
$K = H\delta = 0.9\,H$

A.G.C. 16479 ✓ + θ_2 Crucis B3A?
The K line is not seen
The hyd. lines are two or three times as strong as any Orion line.

A.G.C. 16372 D $K = H = 1.2\,H\delta$
Spectrum is faint.

" 16329 ✓+ B5A. $H\epsilon$ & end of shorter λ off the plate, but the grouping seems certain.
The other stars identified are either too poor or not all on the plate.

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X 4825,^{4} θ Crucis.

A.G.C. 16451 $K = 1.1\,H\delta = 0.9\,H$

A.G.C. 16479 B3A

A.G.C. 16372 $K = H\delta = 0.9\,H$ D
On edge.

A.G.C. 20806 X 6306,^{5} ε Lupi
B3A

" " 20801 A2F? Spectrum faint.

X 5069,^{4} ε Lupi

A.G.C. 20806 B3A

" 20801 A2F. $K = 0.3\,H\delta$. $H = 1.1\,H\delta$

See note on cover concerning the leaks on this plate

Oct. 11. 1897

A.G.C. 13145 X 6331 ^{3} m Vel.
$K = 1.1 H\delta = H$
The K line is strong and sharp while the hyd. lines are a little hazy.
The solar lines are numerous and the spectrum shows banding in light.

A.G.C. 13077 B3A? Poor definition.

" " 13135 This spectrum shows the two strong lines, one on each side of $H\delta$ which are seen in ξ Phoen.
Very faint spectrum.
$K = 0.9 H = 0.9 H\delta$
Estimates almost worthless, as the image is very thin.

Oct. 11. 1897.

A.G.C. 13112 X 6322, ^{3} h Carinae
Three exposures on plate.
B3A?

X 5807, ^{4} h Carinae
The Orion lines are here fainter than in a typical B3A star.
The line 4481.4 is about one-half as strong as 4471.8
The line K is almost as intense as in Sirius. This star is surely nearer Sirius than those I have called B3A. and I will provisionally call this B5A.

X 7413, ^{4} h Carinae (the best plate)
The Sirian line 4481. almost equals the Orion line 4471.
A line near $H\delta$ appears double and seems to be the same line that is double in τ^{9} Erid & α Doradus.
Is this an Orion line?
It is not 4120.5 or 4144.0 the prominent Orion lines of this region, but is a line between these two.

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X 6264,4 γ Dor.
Like X Erid.

A.G.C. 17269 X 6293,5 γ Cent.
(1) $K = 0.2 H\delta$
$H = 1.1 H\delta$
The K line is slightly stronger than in Sirius, but as I seem to find few exactly like Sirius, I think it would be a good plan to take this as an typical A star.
The Orion line 4026.0 does not stand clearly out.
The Orion line 4471. is hardly seen.
This is an excellent plate.

A.G.C. 17180 (2) τ Cent.
$K = 0.3 H\delta$
$H = 1.2 H\delta$
A2F

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X 6317,4 p Vel.
$K = \overset{0.9H}{\cancel{H}} = 1.2 H\delta$
The spectrum shows banding.
The hyd. lines are strong, yet the lines at the G band look like γ Dor.

X 6212,3
Intended for ω Vel but other stars were taken. They are too poor to classify with certainty.

X 5116,4 φ Fornacis
$K = 0.3 H\delta$
$H = 1.2 H\delta$
A - A2F -

X 5125,3 β Oct.
$K = 0.9 H = 1.2 H\delta$
very narrow & poor spectrum

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ι Phoen. X 5127,^{45}
$K = 0.3 H\delta$
$H = 1.1 H\delta$
Peculiarly strong solar lines, the 3 Cap. line of slightly shorter λ than Hδ is the strongest solar line.

X 5136,4 β Oct.
$K = 1.1 H = 1.5 H\delta$
Very narrow spectrum solar lines almost burned out.

X 5140,^{5} w Fornacis
K barely seen, focus poor.
Like Sirius?
Line 4026.0 faintly seen,
Lines 4471.8 + 4481.4 seen, the latter much stronger than the former.

X 5141,^{5} τ$_5$ Erid.
K barely glimpsed.
4026.0 = 2 K
4471.~~4~~8 = 4481.4
Like γ Cent.?

X 5175,^{5} β Sculptoris
K line very faint. focus poor.
Like γ Cent.

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X 5180,^{3} Not identified. See note in record book.
Too poor.

X 5198,4 ε Pavonis.
A.G.C. 27225
$K = \frac{1}{12} H\delta$. K double? Probably focus.
$H = H\delta$
4026.0 not seen
4481.~~8~~4 seen
Like Sirius.

A.G.C. 26980
$K = 0.8 H\delta$
$H = 1.1 H\delta$
Spectrum on the edge of plate.

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A.G.C. 27225 ε Pav. X 7698$_2^4$
Hyd. lines hazy.
K line slightly broadened, but not double.
Line 4481.4 seems to be the only solar line distinctly visible

A.G.C. 26980 Only partly on the plate

A.G.C. 27225 X 7614$_2^4$ ε Pav
K line double? Focus poor, the hydrogen lines at end of shorter λ are very broad and fuzzy. All hyd. lines are hazy.

A.G.C. 26980 Too poor.

X 5326,^{3} ω Fornacis.
K line barely seen. Like Sirius?
K does not seem so strong but the focus is poor and the Orion lines which are visible in λ Cent. are not here seen.

X 7279,^{4} ω Fornacis
Focus good. Like λ Centauri

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X 5206,^{3} ε Sag.
Like Sirius?. very poor

X 5211,^{5} θ^K Eridani
Resembling h Carinae.
The K line is here not seen while it is sharp in h Carinae. Is this due to focus?

X 5291,^{4} θ^K Eridani
See original remark on plate, about the line seen double in ν Fornacis, τ$_9$ Erid. & α Doradus.

X 5950,^{3} θ^K Erid poor focus

X 7153,^{4} θ^K Erid " "

X 7218,^{4} θ^K Erid

X 5216,^{4} β Sculptoris
Like Sirius?. Very poor.
K line barely seen. probably under λ Cent.

Oct. 12. 1897.

X5217,^{4} ι Phoen.
ζ Cap. line is the strongest solar line
K appears double! Focus?
$K = 0.3 H\delta$
$H = 1.2 H\delta$
Lines not sharp enough for close estimates.

X5263,^{3} β Horolog.
$K = H\delta$
$K = 0.9 H$
Very narrow, solar lines seen
but not sharp

X5266,^{4} τ_3 Erid.
$K = H\delta = 0.9 H$
Solar lines are not sharp.

X5274,^{4} β Oct.
$K = 1.2$ ~~$H\delta$~~ $= H$
Numerous solar lines.

X5276,^{4} κ Phoen.
A line of slightly longer λ than
Hδ appears double. It also seems
to be the same line that is double
in τ9 Erid. Is it a solar line?

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X5306,^{3} J Puppis too poor

X5314,^{3} J Col. " "

X5316,^{4} Sirius - very broad

X5321,^{3} δ Caeli too poor.

A.G.C. 9176 X5323,^{3} I Puppis
$K = H = 2 H\delta$
Poor focus, no solar lines clearly seen.

A.G.C. 9243 Too poor.

A.G.C. 10268 X5324 P Puppis
B2A. Very poor image.

A.G.C. 10211 B3A?

A.G.C. 10269 B3A? Too poor.

A.G.C. 10249 δ Sag.?

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June 11.'97 Photograph should be taken of
m Carinae A.G.C. 13217 - $9^h 36^m.6$ $-60°53'$

ξ Phoenicis A.G.C. 633

A.G.C. 22949
A.G.C. 21586 ξ Lupi $\overset{mag.}{5.6}$ $15^h 50^m$
" " " 15757
" " 24839.