KG
11365
795

1926phae.proj...796D

P.D.

2.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..796D

KG11365.393

THORP & MARTIN
COMPANY
STATIONERS
66 FRANKLIN STREET
BOSTON
IN RENEWING THE ORDER FOR THIS BOOK IT IS ONLY NECESSARY TO QUOTE THE NUMBER BELOW. YOU CAN TELEPHONE THE ORDER.
No. 15257 PR _____

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

Measurements of line intensities in stellar spectra.

by Paul Davidovich

1926

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..790

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..79tr

Measurements of spectra of comparison stars for absolute Magnitude of Novae

Miscellaneous measurements.

Measurements of microphotometer tracings of Spectra

p 121 ff

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...796D

KG113651.795

UNIV
LIBRARY
JUL 17 1956

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..79D

Until p. 44. Visual 1

ϕ Sagittarii $\bar{X}$ 6.541. For abs. M.

cF2 ; $-0^{M}.8$ (Mt. W) ; $-0^{M}.7$ (Rim) ; $-0^{M}.8$ (Trig)

Line	I	T2	×	Δ		
4072	3	2	6	-24	2	Good density, but spectr. is rather unsharp.
4077	7.5	4	30		3.5	
4161	—	—	—	—	}	Diffuse
4165	—	—	—		}	
4215	5.5	2-3	14	-12	2.5	
4227	8.5	3	26		3.5	
4247	2.5	2	5		2	
4250	3.5	1.5	5.3	4215-4250 +93	1.5	
4259	1	2	2		}	Almost unseparable
4261	1	2	2		}	
4272	8.5	3	26		2	
4290	10.5	3-4	37	-11	2.5	
4455	—	—	—	—	}	Diffuse.
4462	—	—	—		}	

30-1

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

2 (1)

cF5; -2.8 (Rim) 2, Scorpii $\bar{X}$ 4421 (Stand. pl.). Fe abs. M.

Good dens. Very sharp spectrum

Line	Sc I	Fe	×	Δ <-->	
4072	6	3	18	-8	
4078	6.5	4	26		
4161	2.5	2.5	6	+1.3	
4165	2.0	2.5	5		
4216	4	3	12	- 4	
4227	5	3	16		Fe. slightly less than 4216. A very narrow line is on the violet edge and disturbs the estimate
4247	3	3.5	11		
4250	2.5	2	5	4216-4250 +7	
4259	3.5	2.5	9		
4261	3.5	2.5	9		
4272	3.	3	9	-3	diff
4290	3.5	3-4	12		
4455	3	2	6	+5	
4462	1:2?	1	1-2		Is it present in the spi.?

35
35
174
185
1225

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

2, Scorpii $\bar{X}$ 5778. For abs. Magn.

Line	Int	Tr	X	Δ	Good density, slightly lesser than usually.
4072	5	2	10	−11	
4078	7	3-	21		
4161	—	—	—	—	} not resolved
4165	—	—	—		
4216	6.5	3	20	−3	
4227	7.5	3	23		
4247	3.5	3	11		sharp.
4250	1.5	1.5	2.3	+18	←4216 − 4250
4259	—	—	—	—	} unresolv. (about of the same intens. as it appears)
4261	—	—	—		
4272	4	2-3	10	−8	
4290	7	2-3	18		
4455	1.5(1)	2(1.5)	3.2	—	
4462	—	—	—		unresolv.?

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7900

τ Sagitt. λ 5901. Fe. abs. m.

Line	hL	Ir	x	Δ	Good Density. Not very sharp spectrum
4072	4	1	4	−17	
4078	7.5	2-3(3)	21		
4161	—	—	—	—	} Too faint and uncertain to be meas.
4165	—	—	—		
4216	6	2-3	15		
4227	7.5	3	22	−7	
4247	4	1-2	6		
4250	2.5	1 [illegible] 2	3.7	+11	← 4216 − 4250
4259	1	1	1		} Uncertain. Separated only at the edge
4261	1	1	1		
4272	1.5	1-5	2	−12	
4290	5.5	2-3	14		
4455	3	1(1.5)	3 or 4	+2	} Very diff. and uncertain
4462	2	<1	<2		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7900

π Sagitt. ☉ 4423. For Hbs. M.

Line	Set	Tr	✕	Δ	Good dens.
4072	4	2(3)	10	−17	
4078	5.5	3	17		
4161	1	1	1	+0.5	Sharp (very).
4165	0.5?	1	0.5		This line surprisingly faint in comparison
4167	1?	0.8	0.8	+0.2	to λ4461 — on this plate.
					But 4167 is almost of the same intensity as 4461
4216	2.5	(2)3	7	−11	
4227	3.5	3	11		
4247	3.5	1	4		
4250	2	1	2	+5	← 4216 − 4250
4259	—	—	—	—	} Not sharp; not resolved
4261	—	—	—		
4272	3	1.5	4-5	−8	
4290	3.5	3.(5)	12		
4455	1	0.5?	0.5?	—	Very faint. uncertain
4462	—	—	—		Traces; somewh. less intense

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

π Sagittarii X 7834 (2pr) Fn. Abs M

Line	Sc I	Fr	×	Δ	Excellent sp. Density somewhat low.
4072	5.5	2-3	14	-10	
4078	8-	3	24		
4161	5.5	2-3	14	+4	
4165	5.=	2.=	10		4167 Sc I 6.5 | Fr 1.5 | × 10] +4
4216	6.=	3	18		
4227	7.0	3.5	25-25	-6,-7	
4247	7.5	2.5	19		
4250	6	2.2	13	+5	←4211-4250
4253	3	2	6		
4261	3	2	6		
4272	4.=	3	12	-11	
4290	6.5	3.5	23		
4455	7.5	2	15	+4	
4462	5.5	2 (1.8)	11		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

i Scorpii ☧ 7657 (2 prs) Iron Abs. M

Line	Int	T_2	X	Δ	Excell. sp. Density somewh. low.
4072	8.5	3	26		
4078	9.(3)	3-4	33	-7	
4161	7	2-3	18		
4165	7	2-3	18	0	
4216	7.5	3	22		
4227	7.7	3	23	-1	
4247	8.	3	24		
4250	5.	2	10	+12	4216 - 4250
4259	7.?	2	14 ?		} somewhat diffuse
4261	7.?	2	14 ?		
4272	3.5	2	7		
4290	6.5	3.3	20	-13	
4455	7.	1.2	8		
4462	4.	1 or <	4 or <	+4	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7909

k Reticuli $\bar{X}$ 7309

Line	Sct	Tr	X	Δ	Good plate. Normal density.
4072	4.5	2	9	-13	
4078	7.5	3	22		
4161	—	—	—	—	} invisible
4165	—	—	—		
4216	4.5	2.5	11		
4227	6.—	3	18	∓7	
4247	3	1	3		
4250	2	1	2	+9	4216 —
4259	—	—	—	—	} not separated
4261	—	—	—		
4272	—	—	—	—	diffuse
4290	—	—	—		diffuse
4455?	2?	1	2?	a	} Uncertain
4462?	2?	1	2?		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...79D

π Sagitt. ☓ 4423. (Duplicate) Measurement

Line	Int	Tr	X	Δ	
4072	4.5	2	9	−9	
4078	6.5	2.5–3	18		
4161	1.5	1.5+	1.5–2		
4165	—	—	—		Not present? But 4167 rather prominent
4167	1	1	1	+1	4161 –
4216	2.5	2	5		
4227	3	2	6	+1	
4247	2	1	2		
4250	1	1	1	+4	4216 –
4257	0.5	1?	0.5?		} not separable
4261	0.5	1?	0.5?		
4272	1.5	1	1.5 2	−8	
4290	2.5	2.5–3	10		
4455	1	1?	1?		
4462	—	—	—		Traces.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

10 A

 ζ, Scorpii $\bar{\lambda}$5778 (Dupl.)

Line	Sct	Tr	×	△	
4072	3.5	1-2	5	-19	
4078	8	3	24		
4161	1	2	2	0	} Separated? or optical illusion?
4165	1	2	2		
4216	5.5	2.7	~~9~~ 15	-6	Rem. 5.5 | 3 — × 17 △ -4
4227	7	3	21		
4247	3.5	2.5	9		
4250	4	1.5	6	~~+3~~	4216- Rem 7.5 | 1.5 - diffuse × 11 △ 4216- +9
4259	3	2.5-3	8		Blend with 4261. Very diff. to d
4261	3	2.5-3	8		
4292	4	3	12	-8	
4290	5.5-6	(3.5-)	20		Double ? If so - then it must be narrow Rem. 7.5 | 3.5
4455	0.5?	<1 ?	<0.5?		
4462	Tiny				

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

π Sagitt. X 5901 (Dupl.)

Line	Sd	Tr	x	Δ	
4072	1	0.5	0.5	−18	Hardly vis.
4078	7.5	2.5	19		
4161	—	—	–		} unvis.
4165	—	—	–		
4216	5.5	2	11		
4227	6.5–7	2.5	17	−6	
4247	5	1	5		
4250	2.5	1	3	+8	4216—
4257	—	—	–		} unres.
4261	—	—	–		
4272	2.5	1.5	3.5		
4290	5.5	2.5	14	−10	
4455	3	¾?	2		
4462	2–3	½?	1?	+1	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

2_1 Scorpii $\bar{X}$ 4421 (Suppl.)

Line	Sct	Tr	x	△	
4072	5.5	3.5	16	-5	
4078	5.5	3.5-4	21		
4161	2.5	2.7	7	+1	
4165	2.5	2.3	6		
4216	3.5	3	11		
4227	3.5-4	3	12	-1	(separated from the s. M. comp) about 7.- together
4247	3	3	9		
4250	2	1	2	+9	4216 -
4259	2	2	4		
4261	3	2	6		
4272	2.5	2.4	5	-3	
4290	3	2.5-3	8		
4455	1.7	1.5	2.5	+1.	
4462	1.5	1	1.5		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

ν Sagitt. Ξ 6541

Line	Int	Fr	X	Δ	
4072	2	1	2	−23	
4078	8.5	3	25		
4161	←	—	—		} unvisible
4165	—	—	—		
4216	4.5	2	9	−10	
4227	7.5	2.5	19		
4247	3	1.5	4-5		
4250	2	1	2	+7	4216−
4257	—	—	—		} not separ. | / | / | − on edge
4261	—	—	—		
4272	—	—	—		diffuse
4290	6	2.5	15		
4455	—	—	—		} diffuse
4462	—	—	—		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

[2 pgs]

ζ_1 Scorpii $\overline{X}$ 7657 (Dupl.)

Line	Sc I	Tr	×	Δ			
4072	8.5	3	25	−9			
4078	8.5–9	4	35				
4161	7.5	2.5–3	20	+2			
4165	6.5	2.7	18				
4216	8.5	3	25	0			
4227	8.5	3	25		double, a faint component on less ref. side.		
4247	8.5	3	25				
4250	5.5	2.5	14	+12	4216		
4259	7	2.5	18		} somewh. diffuse		
4261	7	2.5	18				
						×	Δ
4272	3.5	2.5	9		Rem. 3 | 2.5 } 15	8	
4290	6.–	3	18	−9	Rem 5.5 | 3 }	17	−9
4455	7.5 or 7	1.5	11	+6			
4462	5	1 or <	5a<		uncertain; somewh. diffuse.		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

15 Sagitt. $\bar{x}$ 7834 (2 prs)

Line	Sc I	Int	x	Δ	
4072	5.5	2.5	14	−12	
4076	7.5	3.5	26		Diffuse edges
4161	6.5	2	13	+8	Rem. 6.5 | 1.5
4165	3.5	1.5	5		Rem. 4 | 1
4167	4	1.5	6	+7	Rem. 6.5 | 1
4216	5.5	3	16-17	−2	
4217	6.0	3	18		Diffuse edges
4247	7.5	2.5	18		
4250	5.5	2.5	14	+3	4216−
4259	3.5	2	7		* Diffuse red edge
4261	3.0	2	6		
4277	3.5	2.5	9		†
4290	6.5	4	26	−17	
4305	6.5	1.5	10		
4362	4.0 (~3.5)	1	4	+6	

15 | × 16 4 7 | Δ +5 | +3

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

16 pF on pF$_1$

+2.2 M

p Velorum X 6317

Line	Sc I	Fe	X	Δ	
4072	3.5	2.5	8.8	-16.	
4076	6.7	4	26.8		
4161	—	—	—		
4165	—	—	—		
4216	5	2-3	13		
4227	7.5	3	28	-10	
4247	2	1	2		
4250	1.5	1	1.5	+11	4216 –
4259	—	—	—		
4261	—	—	—		
4272	—	—	—		
4290	—	—	—		
4455	—	—	—		
4462	—	—	—		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

F5
+2.3 M

α Chamaeleon R6145

Line	sel	Tr	X	Δ
4072	5.5	1.5	8	-7
4078	7.5	2	15	
4161	2	1	2	+0.5
4165	1.5	1	1.5	
4216	6	1-2	9	
4227	≡	≠	—	
4247	1-2	≡ 1	1.5	
4250	≠ —	—	—	
4257	—	—	—	
4261	—	—	—	
4272	—	—	—	
4290	—	—	—	
4455	≤1	≤1	≤1	
4462	2	1	2	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

p Velorum X 6317 (Dupl. means)

4072	2.5-3	2	5.5		4072 Rem. 4078
4078	5	3.5	18	-12.5	
4161	1.5	1-2	21		Difficult - blended with 4165
4165	1.5	1	1.5	+0.5	4165 component faint.
4167	1.5	1	1	+1	
4216	3	2.	6		
4227	6	3	18	-12	comp. on violet edge
4247	3	1	3		
4250	2	1	2	+4	4216 -
4259	—	—	-	-	} not resolved
4261	—	—	-	-	
4272	2	2	4	-8	?
4290	5.5	2(5)	12		
4455	—	—			} traces both seem to be present, but faint.
4462	—	—			

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..79

L Chamaeleon X 6145

Poor spectrum. Not quite sharp. Not enough contrast

4072	4.5	1	4	
4078	7	2-3	11	-7
4161	—	—	—	
4165	—	—	—	
4167	—	—	—	
4216	5.5	1.5	8	
4217	6.5	2-3	16	-8
4247	1.5	1	1.5	?
4250	—	—	—	
4259	—	—	—	
4261	—	—	—	
4272	—	—	—	
4290	—	—	—	
4455	—	—	—	
4462	—	—	—	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

π Sagitt. X 6521 (Triple)

4072	4	1	4		uncertain	Only those lines are to be measured (beginning with this record) which are ~~to~~ seen with certainty
4078	8.E	3	24	-20		
4216	5.5	2.5	14			
4227	8.5	2.5	22	-8		
4247	3.5	2	7			
4250	1	1	1	+13	4216 -	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

2, Scorpii Σ 4421 (Stand. p.l.). Triple.

#					
4072	5	3	15		
4078	5=6	4	22	-7	
4161	2.5	2.2	6	+1	
4165	2.5	2	5		
4167	0.5	1	½	+5.	
4216	3.5	3.5	12	-3	
4227	5	3	15		
4247	2.5=3	2.5	7		
4250	1	1-2	1.5	+10	4216-
4259	1	2	2		
4261	1	2	2		
4272	1-2	2	3.5	-4	
4290	2.5	3	7.5		
4450	—	—	—	—	
4462	—	—	—		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

π Sagittarii X4423 (triple)

4072	4.5	2.5	12		
4078	6.5	3.5	20	-9	
4161	1.5	1.5	2		
4167	1.5	1	1.5	+0.5	4165 not present
4216	2.5	3	8	-3	
4227	3.5	3	11		
4247	2.5	1	2.5		
4250	1.5	½	0.8	+7	4216-

Other lines too uncertain

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

i, Scorpii $\bar{x}$ 5.778 (triple)

4072	3.	2.	6		
4078	7	3.5	25	-19 ?	
4216	5.5	3.5	20	-6	
4227	7.5	3.5	26		
4247	4	3	12		
4250	2	2	4	+16	4216 –
4259	2	2.	4		
4261	2	2	4		
4272	–	–	–	–	Blend
4290	7.5	3	23		Double ?

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..796

11 Sagittarii ± 5901 (triple)

4072	3	≤1	≤3		Tr 1 or less. Hardy found
4078	8.5-9	2.5	22	-19	
4216	5	2	10	-6	
4227	8	2	16		
4247	3.5	1.5	5		
4250	3	1	3	+7	4216-
4290	5.5	2-2.5	12		

Other lines uncertain —

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...796D

ι Scorpii ☓ 7657 (2/39) Trifl.

4092	8.5	3	26		
4098	9	4	36	−10	
4161	6.5	3	20		
4165	6	3	18	+2	
4167	5-6	1	6	+14	
4216	7.5	3.5	26		
4227	7.5	3.5	26	0	fainter oxygen on less refr. side
4247	8.5	3	26		
4250	5	2	10	+16	4244 −
4259	4	1-2	6		diffuse
4261	4	1-2	6		
4272	2.5-3	2.5-3	7		
4290	5-6	3.5	19	±12	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..790D

π Sagitt. X 7834, 2prs (Tripl.)

t					
4092	5.5	2.5	14		Not quite sharp
4098	7 ?	3.5	23	-9	
4161	5	2	10		
4165	2	1.5	3	+7	
4167	5	1.5	7-8	+2 or +3	
4216	5.5	3	16.5		
4227	6	3	18	-1.5 or 2	
4247	7	2.5	17.5		
4250	5.5	2	11	+5	4216 —
4259	3	1.5	4.5		
4261	4	1.5	6		
4273	4.5	2.5	11	-#9	
4290	6.5	3	19.5		
4335	5	1.5	7.5		
4362	3.5	1	3.5	+4	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

[redacted] Π Sagittarii

	[redacted]	χ 7834		Means	χ 4423			Means	χ 6541			Means	χ 5901 ?			Means
4072 4078	−10	−9	−8	−9	−7	−9	−9	−8.3	−24	−23	−20	−22.3	−17	−18	−19	−18
4161 4165	+4	+8, +6	+7	+6.2	+0.5	—	—	(+0.5)	—	—	—		—	—	—	
4167	+4	+7, +3	+3	+4.3	+0.2	+1.0	+0.5	+0.6	—	—	—		—	—	—	
4216 4227	−6,	−2	−2, (−2)	−2	−4	−1	−3	−2.7	−12	−10	−8	−10	−7	−6	−6	−6.3
4247 4250	+5	+3	+5	+4.3	+5	+4	+7	+5.3	+9	+7	+13 (12)	+10.2	+11	+8	+7	+8.7
4259 4261																
4272 4290	−11	−8	−9	−9.3	−8	−8	—	−8	−11	—	—	−11	−12	−10	—	−11
4455 4462	+4	+6	+4	+4.7	—	—	—	—	—	—	—	—	+2	+1	—	+1.5 ?

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7900

Discussion of π Sagittarii

Some conclusions from the table on p. 27.

The spectr. of ι, Scorp. X 4223 is less intense than on plates X 6541 and X 5901. X 6541 is the strongest among them.

This is possibly the reason why there is a system. difference between the intensities, or more exactly the intensity differences: The less intense lines being burned out more easily than the more intense ones.

But, some lines seem to be intensified in one spectrum though they appear diminished in intensity in other.

Provisional direct comparison of different plates of π Sagitt.

Letter S designates the line is stronger in a plate in comparison to the X 4423.

Letter W des. the line is weaker

Letter n means

Spectrum X 6541 is considerably denser than X 4423, but X 5901 is almost of the same density as X 4423.

Line	X 4423	X 6541	X 5901
4041 Mn		W	W
4046 Fe		S	W?
4072		W	W *
4078		Nor S	S
4086 Ti Fe		S	S
4119 4123 and 4128 4132		S	
4216		W	n
4227		Nor S	S
4233		S	S
(4259) 4261		S	S
4272		S	S
4352		(S)	S
4368 4358		W?	W
4375		S	S
4400		S	S
4418		← S	S

Comparison to X 5901 and X 6541

Rem. * Almost unvisible

(4415-18) ↓ □ Stronger in comparison to 4400 and 4444. The line 4415-18 is on X 5901 stronger than 4444, but she is fainter than the latter line on X 4423.

19-20

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..796D

2, Scorpii.

Line	$\bar{x}$ 7657			Means	$\bar{x}$ 4421			Means	$\bar{x}$ 5778			Means
4072 4078	−7	−9	−10	−8.7	−8	−5	−7	−6.7	(−16) rem	−19	−19	−18
4161 4165	0	+2	+2	+1.3	+1	+1	+1	+1	—	—	—	—
4216 4227	−1	0	0	−0.3	−4	−1	−3	−2.7	−3	−6	−6	−5
4247 4250	+12	+12	+16 (+12)	+13	+7	+9	+10	+8.7	+18	(+13) rem	+16	+15.7
4257 4261												
4272 4290	−13	−9	−12 (−12)	−11.5	−3	−3	−4	−3.3	−8	−8	—	−8
4455 4462	+4	+6	+8	+6	—	—	—	—	—	—	—	—

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7900

Discussion of ι, Scorpii.

The differences between the spectra of ι Scorpii seem to arise from the different intensity of the plates.

Line	X 4421	X 5778	X 7657	X 8638
4041	——	o		
4046	——	o		
4072		w		
4078		Companion		
4086		w		
4326		S		
~~4337~~		~~S~~		

= Spectrum X 5778 too weak in this region. In general this plate is considerably weaker than X 4421.

Companion star

No other W Geminorum features.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..796D

ι, Scorpii — ☿ 8638 (2 prs)

Line	Sc I	Tr	×	Δ	Excellent spectrum, but not sharp.
4072	10.5	2	21	−18	not quite sharp.
4078	11	3.5	39		
4161	diffuse				
4165					
4167					
4173	11.5	4	46		
4179	10.5	4	42	+4	
4216	9.5	2.5-3	26		
4227	10.5				
4233	—	diff	—		
4247	7-8	2.5	19		4250 diffuse & unmeasurable
4384	10.7	4	43		
4395	8.5	3.5	30		
4400	8.5	3.5	30		
4405	10.7	3.7	40		
4418					
4444	10.8	3.5	37.8		
4455	unresolved (diffuse)		—		
4462					

Only two of the ☿ eyepiece was used for these measurements, the eyepiece being too powerful.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7900

d Persei I-7983 (3 hrs)

Not quite suitable plate -
since it is taken with
3 prisms.

Single lens of the eyepiece was
used for these measurements

			X	Δ	
4072	10.3	2-3	26		
4078	11.5	4	46	-23	diffuse extrapolated
4161	8.5	2	17		
4165	7	1	7	+10	
4167	diffuse		—		
4173	too broad 13.5	3	42		
4175	12	3	36	+6	extrapol. (1)
4216	10.5	3	32		
4227	too broad		—		
4233	10.3	2.5	26		
4247	10.7	2-3	27		
4250	8.5	2	17	4216-15	
4384	11.5	3.7	43		
4395	10.7				
4400	11.5				
4417	[illegible]				
4444					
4455	10.5	1.5	16		
4462	11	1	11		diffuse.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..796D

α Persei c 5257 (2 prs)

Line	Δ λ	Fr	x	Δ	second meas. Sej	Fr	x	Δ
4072	6.5	2.5	16	-16	6.5-7	2.5	17	-13
4078	8	4	32		7.5	4	30	
4084	4.5	2	9	+6	5.5	1.5	8	+6
4085	2.5	1	3		2	1	2	
4087	6	1	6	+3	6	1	6	+2
4173	10.5	3.(2?)	31.5	+16	10.5	3	31.5	+5
4179	8.5	2.8	24		9.5	2.8	26.6	
4216	7.2	2.7	19	-4	8.5	2.5	20	-2.5
4227	7.5	3	23		7.5	3	22.5	
4233	5.5	2.6	14	+5	5.5	2.5	14	+6
4247	8.5	2.5	21		7.5	2.3	17.3	
4250	3.2	2	6.4	+6 12.5	5.5	1.5	8.3	+6 12
4271	6.5	1.5-1.7	10		6	2	12	
4290	7.7	2.8	21.6	-11.5	8.5	3	25.5	-13.5
c. 4384	8.5	3.0	26		8.3	3	25	
4395	6.2	2.0	13.4	+12.5	6.7	2.2	14.7	+10.3
4400	7.3	2	14.6	+11.5	7.2	2.3	16.6	+8.4
4417	10.7	1.5	16	+10	5.5	2	11	?
4444	9.7	3	29		5.5	2	11	
4455	5.5	1.5	8	+19	9.6	3 (2.8)	28.5	
4462	7	1	7	+1	6	1.5	9	+20
					4.5	1	4.5	+4

One lens of eyepiece used in first meas. Whole eyepiece used in second meas.

26. ±5.5 E each

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

α Persei ☾5207 (2 prs)

Line	Int	Fr	×	Δ	Second mear. Int	Fr	×	Δ
								One less of eyepiece used
4072	4	3	12		4.5	2.5	11	
4078	6	4	24	-12	6.0	3.5-4	22	-11
4161	3.5	2.5	8		3.5	2.5	8	
4165	1.5	1	1.5	+6.5	2	1	2	+6
4167	4.5	1	4.5	+3.5	2.5	1.5	4	+4
					slightly diffuse			
4173	9.5	3	28.5		10.5	2.7	28	
4179	8.2	3	24.6	+4.	8.5	2.7	23	+5
4216	5	2.8	14		5.5	2.5	14	
4227	7-8	3.-	21	-9	6.-	3.-	18	-4 ?
					v. edge somewhat diffuse			
4233	5.2	3	15.6	-1.6	4.5	2.2	9.9	+4 ?
4247	6.2	2.7	17.7		6.5	2.5	16	
4250	3.5	2.5	8	4216 - +6	3.5	2	7	4216 - +7
4272	3.2	2	6.4		3.5	2.3	8	
4290	5	3	15	-9	5.5	3.3	18	-10
								4272 has wings
c 4384	7.5	3	23		7.5	3.5	26	
4395	5.5	2.5	14	+9	5.5	2.5	14	+12 ?
4400	6.-	2.5	15	+8	6.5	2.5	16	+10
4415	5	2.5	12.5	+10.5	5	2	10	= ?
4424	5	2.5	12.5	-"-	5	2	10	
4444	7.5	2.5	19	+12	8.-	2.7	21.6	+14.5
4455	4.5	1.5	7		4.5	1.5	7	
4462	2	1	2	+5	2.5	1	2.5	+5

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

α Persei C 6208

			×	Δ	Somewhat too strong a spectrum. Spectrum very thin. Hγ and Hδ seem to have broad wings. One lens of eyepiece used.			
					second meas.			
4072	8 ?	2.5	20		6.5	2.5	16.	
4073	7	3.5-4	26	-6	7.5	4	30	-14
4161	3	2.5	7.5		2.5	1.5	3.7	
4165	4	1.5	6	+1.5	—	—	—	≡ invis.?
4167	—	—	—	—	2.5	1	2.5	+1.2
4173	8.5	3.3	28		10.2	3	30.6	
4175	7.5	3.3	22.5	+5.5	8.5	2.8	24	+6.6 +5.2
4216	8.2	2.7	22		7.8	2.8	15.6	
4227	8	3.3	26.4	-4.4	7.5	3	21	-6.6
4233	3.	2	6	+16	3	1.7	5	+10.6
4247	7.2	3	21.6		7	2	14	
4250	2.5	2.	5	+17	2.5	1.5	3.7	4m +12 ?
					Double. Extremely thin both components			
4272	3.5	1.5	5		3.5	1.	3.5	
4290	5.5	3	16.5	-11.5	Has hazy wings			-12
					5.5	2.7-3	15.4	
c 4384	8.5	3	25.5		7.5	2.3	17 ?	
4395	5.5	2.3	13	+12.5	4.7	2.3	10	+7 ?
4400	6.5	2.7	17.6	+8	6.5	2.5	16	+1 ?
4415	4	2	8	+17.5	4	2.3	9	+8 ?
4418	5.5	2.6	14.3	+11	6	2.6	15.6	+1.5
4444	7.5	3	22.5		7.5	2.8	21	
4455 67	1		6.5	+16	7	1	7	+14
4462	2.5	1.5	3.7	+3	3	1	3	+4

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

α Persei (means).

Line	c 5725 1st meas	c 5725 2nd meas	c 5207		c 6208		Means c5725	Means c5207	Means c6208	Mean general
4072	—									
4078	-16	-13	-12	-11		-14	-14.5	-11.5	-14	-13.3
4161	+6	6	6.5	6			6	6		
4165										
4167	3	2	3.5	4	1.5	1.2	2.5	3.7	1.4	
4173										
4179	7.5	5	4	5	5.5	6.6	6.2	4.5	6	+5.6
4179										
4216	-4	-3	-9	-4	-4.4	-6.6	3.5	)	5.5	-4.5
4225										
4233	5	6	-1.5	+4			5.5			
4247										
4250	12.5	12.	6	7			12	6.5		
4271	-11.5	-13.5	-9	-10	-11.5	-12	12.5	9.5	12	-11.3
4290										
c 4384										
4391	12.5	10.3	9	12			11.5	10.5		+11
4400	11.5	8.4	8	10			9	9		9
4417	10	?								
4444	19	20	12	14.5	16	14	19.5	13.2	15	15.9
4455										
4462	1	4	5	5	3	4	2.5	5	3.5	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7900

α Canis Minoris C 5399

Not quite transparent plate – fogged. –

	Est	Fr	x	Δ	
4072	6.5	2.8	16		
4078	10.5	3	31.5	-15.5?	# 4078 diffuse
4161					
4165					
4167					
4173	10.5	3	31.5		
4175	8.5	2	17	+14.5	
4216	6.5	2.5	15		
4227	8	3.7	29.6	-14.5	
4233	disappears blended with other lines to the red.				
4247	Too faint for meas. Both				
4250	are of the same intens.				
4271	4–5	1.5	6.8		
4290	8.5	3	25.5	-18.5	
4384	8.HH	3.3	26.4		
4395	5.5	2	11	+15.4	
4440	5.5	2.2	12	+14.4	
4444	9.E	2+2.2	20		
4455	6.5	1.5	9.7	+10.3	
4462	6	<1	5	+5.3	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

α Can. Min. C 6309

Spectrum somewhat overexposed.

4072	5.5	3	16.5	
4078	7.	3.3	23.	-6.5
4161	2.5	1	2.5	
4165	Too faint		—	
4167	4.5	1.5-2	7.7	
4173	9.5	2.7	27	+12
4179	8.5	2 (1.3)	15	
4216	6	2.5	15	-13.5
4227	7.5-8	3.7	28.5	
4233	4	2	8	
4247	6.5	2	13	
4250	6	2	12	4216-+3
4272	4	2.	8	-15
4290	8.5	2.7	23	
4384	7.3	3.2	23	
4395	6	2	12	+11
4440	6.5	1.8	12	+11
4447	—	—	—	
4464	8.5	2.3	19.6	
4455	5.5	1.8	10.	+9.6
4462	3	1	3	+7

A wing or a faint line is on the red edge

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

α Canis Min

Line	1st means.	2nd means.	Mean	1st me.	2nd mean.	mean
4072						
4078						
Hδ						
4173						
4179						
4216						
4227						
4233						
4247						
4250						
4272						
4290						
Hγ						
4384						
95						
4400						
17						
44						
55						
62						

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7900

Dis. Comparison of α Persei ($-1.^M5$) and α Can. Minoris ($+3.^M1$)

[C.6208] [C.6309]

Spectrum of α Persei slightly less intense than α Can. Maj.

1. Calcium H and K are much stronger in α Persei than in α Can. Min. both in width (twice) and intensity.

2. 4078 line is very intense in α Persei
3931 line is also quite enhanced in α Pers.
4125, 4134 doublet enh. in α Per.
4173, 4179 doublet enh. in α Per. and the line 4179 is almost of the same intensity as 4173. But in α Can. Min. the line 4179 is considerably fainter than 4173. It is an abs. M. effect.
4216 is stronger (relatively) in α Per. but not very conspicuously.
4247 is considerably stronger in α Per. Next to 4290 is consid. stronger in α Per. [4250 Å
4384, 4417, 4444 enhanced in α Per.
4395-4400 relat. stronger in α Pers. (comp. 4384 4417)
4455 is stronger than 4462 in α Can. Min, but
4455 is weaker than 4462 in α Persei. (as Hower)
4668 and 4764 are the enhanced lines in α Persei near to Hβ
4924, 5018 enhanced in α Persei.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

Visual Comp. of Nova Pictoris Dec. 30 and June 11

13" Boyden telesc. spectra

4 H is the most prominent emission on both dates and is particularly conspicuous in June 1926.

1 Relative intens. of Emiss. is very much stronger on June 11 (—) compared to the background.

4a H can be followed until H_{ζ} (H_{ε})

2 The spectrum is rather simple showing about 30 distinct and diffused emission bands (rather narrow). They are about three times narrower than in Nova Aql. (in August 1918).

5 Next to the H stays the He+ 4686 line, ~~which in intensity lies between~~ it is somewhat lighter than H_{δ} but does not reach the intensity of H_{γ}. From among the (H_{ζ} > 4472) Å lines of neutral He the line 4472 is the most conspicuous, 4026 comes next. The series of singlets 1P–mD is well presented starting with 4922, 4388, 4144; 4009 – is absent.; the strongest of them is 4144. This is the reverse order of intensities of this series in laboratory spectra. Perhaps it is due to the curve of sensitiveness of the plate?

He 4713

3820 can be times too

3 The metallic emission faded away.

6 The following lines are conspicuous furthermore

4068.7 tr (abs. Stand. 4067); 4179; 4200 hazy; 4233 – hardly vis in June, though conspicuous in Dec 1925.; 4243.9 – γ (diff) this line is fainter than 4233 in Dec, but becomes stronger than the latter in June. ~~4277, 4285~~; 4277-?

4287.5 γ; 4413.9 – γ (br); Diffuse bands (metallic?) at:

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

Diffuse and rather weak in June.
Double in fact 4576 & 4587. Center at 4583

Hazy band
~~4517~~ ?; 4549.6 (Fe+? Limit); {4584 (Fe+, ? Limit), perhaps extending to the red} as far as 4556; 4630 - on red side of ~~4640~~ bands, 4640, it appeared by June and was

4661 | unvisible in March | 4683 Orig? Weak | 4713 He; | 4737 - orig? ≡; 4814 γ Car.
4718 (Weak)

Beyond Hγ: 4901, faint (next: 4922 - He - see He lines, p. 43), 4959 Neb, 5008 Neb. and a diffuse band is seen at 5037.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

Measurements of microphotometer tracings of the post-maximum spectra of Nova Pictoris 1925.4

X 14584, June 10

#	Measurements	Area	
1	21 small	21	
2a	1 large 133 small	158	
3a	$76\frac{1}{7}$ small	$76\frac{1}{7}$	
3	43 small	43	
6	2 large $41\frac{1}{2}$ small	$91\frac{1}{2}$	
10	1 large $36\frac{1}{7}$ small	$61\frac{1}{7}$	
18	1 large $61\frac{3}{7}$ small	$86\frac{3}{7}$	
19	$18\frac{1}{2}$ small	$18\frac{1}{2}$	
20	$52\frac{3}{7}$ small	$52\frac{3}{7}$	
	large area under curve	51,710	
	small area	228	

Microph. magn.: 6.85×

Vert. Scale red. to mm.: 0.65×

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

E 14587 June 10

#	Measurements	Area
1	12 ½ small	12 ½
2a	4 large 172 ¾ small	276 ¾
3a	1 large 143 ½ small	168 ½
3	1 large 70 ½ small	95 ½
6	4 large 112 ¾ small	212 ¾
10	2 large 74 small	124
18	3 large 129 small	204
19	54 ½ small	54 ½
20	87 ½ small	87 ½

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

X 14591 June 11

#		Measurements	Area	
2a		114½ small	114½	
2	3 large	87 "	162	
3a		107 "	107	
3	5 "	160 "	280	
4	4 "	105½ "	206½	
6	16 "	154 3/4 "	554 3/4	
7	2 "	57 1/4 "	107 1/4	
8	1 "	36 "	61	
9		32 "	32	116
	1 "	19 "	44	
	1 "	15 "	40	
10	7 "	162 "	337	
11		41 "	41	
12		35½ "	35½	
13	1 "	24½ "	49½	
14	1 "	24 "	49	
15	2 "	60 "	110	
16	3 "	74 "	149	
17	1 "	23 "	48	110½
	1 "	37½ "	62½	
17a	1 "	44½ "	69½	
18	9 "	190½ "	375½	
19	1 "	61½ "	86½	
20	1 "	49 "	74	

large

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

$\bar{x}$ 14590 June 11

#	Measurements		Area
3a	5 large	151½ small	276½
3	8 "	140¼ "	340¼
5	3 "	77½ "	152½
6	24 "	259¾ "	859¾
7	5 "	73 "	198
8	3 "	50 "	120
10	7 "	201½ "	376½
11		42 "	42
12		44 "	44
13	1 "	24¼ "	49¼
14		37 "	37
15	1 "	51 "	76
16	3 "	41 "	116
17	1 "	63½ "	88½
18	12 "	114½ "	414½
19	2 "	99 "	149
20	1 "	55¼ "	80¼

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

I 14593 June 12

#	Measurements		Area
3	10 large	131 small	381
4	8 "	82 "	282
6	19 "	162 "	637
7	5 "	135 "	260
8	3 "	57 "	132
10	11 "	146 "	421
11	1 "	16	41
12	2 "	7 "	57
13	2 "	18 "	68
14	1 "	31	56
15	3 "	47 "	122
16	5 "	49 "	174
17	3 "	72 "	147
17a	3 "	24 "	99
18	19 "	178 "	605
19	6 "	101 "	251
20	9 "	114	339

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

June 12 X 14594

#	Measurements		Area
3	11 large	203 small	478
4	7 "	101 1/2 "	276 1/2
6	12 "	163 1/2 "	463 1/2
7	3 "	60 "	135
8	1 "	42 "	67
10	6 "	159 "	309
11	1 "	25 "	50
12	1 "	25 "	50
13	1 "	32 "	57
14	1 "	28 "	53
15	2 "	54 "	104
16	4 "	80 1/2 "	190 1/2
17	3 "	66 1/4 "	141 1/7
17a	2 "	46 "	96
18	9 "	128 "	353
19		112 "	112
20	9 "	190 "	410

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

X 14596 June 14

#	Measurements		Area
	large squares	small squs	
3	12	31	331
4	8	42	242
6a	2	42	92
6	12	133	433
7	5	53	178
8	2	45	95
10	8	124	324
11	1	23	48
12	1	17	42
13	1	24	49
14	1	16	41
15	2	32	82
16	2	65	115
17	2	34	84
17a	1	26	51
18	13	133	458
19	3	82	157
20	7	208	383

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

R. 14597 June 14

~~H~~	Measurements		Area
2	8 large	161 small	361
3	15 "	198 "	563
4	8 "	74 "	274
6a	2 "	73 "	123
6	13 "	217 "	542
7	4 "	48 "	148
8	1 "	38 "	63
10	8 "	78 "	278
11	0 "	19 "	19
12	0 "	18 "	18
13	0 "	26 "	26
14	0 "	25 "	25
15	1 "	57 "	82
16	3 "	60 "	135
17	2 "	57 "	107
17a	1 "	52 "	77
18	20 "	213 "	713
19	6 "	98 "	248
20	9 "	175 "	400

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

June 15 ~~X~~ 14598

#	Measurements		Area
2	4	large 161 small	261
3	17	" 167 "	592
4	8	" 143 1/2 "	343 1/2
5	5	" 144 "	269
6	21	" 178 1/2 "	703 1/2
7	6	" 105 "	255
8	1	" 90 1/2 "	115 1/2
9	3	" 103 "	178
10	9	" 83 1/2 "	308 1/2
11		28 "	28
12		19 "	19
13		34 "	34
14	1	" 14 "	39
15	2	" 31 "	81
16	3	" 63 "	138
17	2	" 60 "	110
a	1	" 47 1/2 "	72 1/2
b	1	" 9 "	34
18	17	" 186 "	611
19	4	" 101 "	201
20	8	" 171 "	371

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7900

Σ 14599 June 15

#	Measurements		Area
2	14	large 162 small	512
3	18	" 290½"	740½
4	10	" 110 "	360
6	28	" 130 "	850
7	11	" 180 "	455
8	10	" 185 "	435
9	9	" 156½"	381½
10	18	" 151	601
11	2	" 35	85
12	2	" 46	96
13	2	" 51	101
14	2	" 35	85
15	4	" 70	170
16	7	" 55	230
17	4	79	179
17a	2	56	106
18	22	167	717
19	3	139	214
20	9	141	366

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

[± 14594. June 12 (small Defl.)]

See f. 91

H	Measurements		Area
2a	0 large	5 small	5
2	2 "	82 "	132
3a	0 "	5 "	5
4	0 "	60 "	60
6	3 "	69 "	144
7	0 "	39 "	39
8	0 "	35 "	35
10	2 "	85 "	135
11	0 "	17½ "	17½
12	0 "	15 "	15
13	0 "	16 "	16
14	0 "	18 "	18
15	0 "	27 "	27
16	0 "	41 "	41
17	0 "	35 "	35
17a	0 "	22 "	22
18	4 "	52 "	152
19	0 "	52 "	52
20	9 "	165 "	390

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

(X 14596, June 14, small defl.)

~~D~~	Measurements		Area
2	4 large	89 small	189
3	6 "	112 "	262
4	3 "	50 "	125
6	4 "	88 "	188
7	1 "	46 "	71
8	0 "	38 "	38
10	1 "	69 "	94
11	0 "	19 "	19
12	0 "	15 "	15
13	0 "	13 "	13
14	0 "	13 "	13
15	0 "	23 "	23
16	0 "	36 "	36
17	0 "	34 "	34
17a	0 "	27 "	27
18	4 "	99 "	199
19	1 "	44 "	69

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

June 16, λ 14603

#	Measurements				area		Distance (in small squares)
3a	8	large	50	small	250		
3	13	"	109	"	434		88
5	1		49		74		
6a	1	"	72	"	97		
6	15	"	100	"	475		
7	3	"	66	"	141		
8	1	"	34	"	59		
10a	0	"	15	"	15		
10	6	"	118	"	268		
11	0	"	26	"	26		
12	0	"	23	"	23		
13	0	"	30	"	30		
14	0	"	28	"	28		
15	1	"	32	"	57		
16	1	"	47	"	72		24
17	0	"	39	"	39		
17a	0	"	16	"	16		
18	11	"	59	"	334		33
19	2	"	55	"	105		
20	4	"	149	"	249		71

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

June 16 ± 14604.

#	Measurements		Area	Distance (in small squares)
3	13 large	135 small	460	117
4	5 "	80 "	205	
5	1 "	39 "	64	
6a	2 "	59 "	109	
6	17 "	137 "	562	
7	5 "	48 "	173	
8	2 "	27 "	77	
10a	0 "	35 "	35	
10	13 "	89 "	414	
11	0 "	38 "	38	
12	0 "	26 "	26	
13	0 "	30 "	30	
14	0 "	28 "	28	
15	1 "	45 "	70	
16	2 "	47 "	97	37 (minimum)
17	0 "	44½ "	44½	
17a	0 "	8 "	8	
18	16 "	152 "	552	55
19	1 "	119 "	144	
20	2 "	148 "	198	99

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

June 21 X 14617

#	Measurements		Area	Distances (in small squares)
1	12 large	75 small	375	
2	11 "	111 "	386	79
3	12 "	182 "	482	
4	6 "	42 "	192	
6	14 "	116 "	466	
7	5 "	79 "	204	
8	2 "	54 "	104	
10	9 "	92 "	317	
17	2 "	35 "	85	33 (minimum
17a	1 "	25 "	50	
18	9 "	214 "	439	48
19	2 "	106 "	156	
20	6 "	183 "	333	79

June 21 X 14617 ~~F2~~

1	8	137	337
2	8	136	236
3	13	115	440
4	4	86	186
6	13	141	466
7	4	58	158
8	2	29	79
10	10	62	312
17	2	21	71
17a	1	21	46
18	13	160	485
19	3	83	158
20	8	161	361

large area 26,065
small area 215

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

I 14617 June 21 (small defl)

II	Measurements		Areas		Distance
2	1 large	48 small	73		13
3	2 "	47 "	97		
6	2 "	33 "	83		
7	0 "	31 "	31		
8	0 "	14 "	14		
10	1 "	27 "	52		
13	0 "	13 "	13		
14	0 "	9 "	9		6
15	0 "	17 "	17		
16	0 "	18 "	18		
17	0 "	22 "	22		
17a	0 "	14 "	14		
18	2 "	40 "	90		10
19	0 "	34 "	34		
20	1 "	38 "	63		13½

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

X 1,4681 July 30

#	Measurements		Area		Distance
H_3	4 large	101 small	201		
1a	2 "	131 "	181		
1	12 "	194 "	494		117
2a	0 "	118 "	118		
2	4 "	132	232		
3a	1 "	172 "	197		
3	7 "	64 "	239		84
4	3 "	24 "	99		
6a	1 "	65 "	90		
6	9 "	89 "	314		
7	2 "	38 "	88		
8	2 "	45 "	95		
10a	0 "	15 "	15		
10	4 "	77 "	177		
12	0 "	6 "	6		
13	0 "	15 "	15		
14	0 "	7 "	7		32
15	2 "	26 "	76		
16	2 "	50 "	100		
17	2 "	37 "	87		
17a	0 "	17 "	17		
18	16 "	102 "	502		
19	7 "	82 "	257		
20	9 "	109 "	334		106

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

X 14685 Aug. 4.

#	Measurements		Area	Distance
1a	2 large	58 small	108	
1	6 "	62 "	212	76
2a	1 "	51 "	76	
2	2 "	54 "	104	
3a	3 "	71 "	146	
3	7 "	68 "	244	60
6a	1 "	72 "	97	
6	4 "	85 "	185	
7	1 "	35 "	60	
8	1 "	38 "	63	
10a	0 "	35 "	35	
10	4 "	70 "	170	
12	0 "	10 "	10	
13	0 "	12 "	12	
14	0 "	8 "	8	
15	1 "	18 "	43	32
16	1 "	27 "	52	
17	1 "	7 "	32	
				50

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

$\mathbb{H}$ 14699 aug 8

H	Measurements		area		Distance
H_ζ	0 large	32 small	32		
1a	1 "	58 "	83		
1	1 "	48 "	73		36
2a	1 "	49 "	74		
2	1 "	25 "	50		27
3a	2 "	50 "	100		
3	2 "	25 "	75		
6a	0 "	37 "	37		
6	1 "	25 "	50		
7	0 "	12 "	12		
8	0 "	13 "	13		
10a	0 "	30 "	30		
10	1 "	16 "	41		
15	0 "	13½ "	13½		12
16	0 "	17 "	17		
18	1 "	34 "	59		21
19	0 "	21 "	21		
20	0 "	56 "	56		43

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

X 14698 Aug 8

#	measurements		area		Distance
1a	1 large	70 small	95		
1	1 "	41 "	66		37
2a	1 "	65 "	90		
2	1 "	20 "	45		
3a	2 "	72 "	122		
3	1 "	44 "	69		23
6a	1 "	18½ "	43½		
6	1 "	28 "	53		
7	0 "	18 "	18		
8	0 "	21 "	21		
10a	0 "	21 "	21		
10	1 "	37 "	62		
15	0 "	19 "	19		
16	0 "	16 "	16		14
18	1 "	55 "	80		22
19	1 "	17 "	42		
20	1 "	45 "	45		41

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

5 14719 Aug 17.

II	Measurements		Area	Distance
Hy	3 large	60 small	135	
1a	1 "	112 "	137	
1	7 "	94 "	269	79
2a	3 "	71 "	146	
2	2 "	75 "	125	
3a	5 "	117 "	242	
3	6 "	103 "	253	51
4	0 "	26 "	26	
6a	2 "	50 "	100	
6	3 "	70 "	145	
7	1 "	21 "	46	
8	1 "	27 "	52	
10a	0 "	39 "	39	
10	3 "	44 "	119	
15	0 "	19 "	19	19
14	0 "	26 "	26	
17	0 "	19 "	19	
18	6 "	82 "	232	34
19	3 "	55 "	130	
20	7 "	93	268	78

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7961

Z 14720 aug. 17

#	Measurements		Area	Distance
H_3	3 large	29 small	104	
1a	3 "	48 "	123	
1	5 "	77 "	202	72
2a	3 "	62 "	137	
2	2 "	50 "	100	
3a	4 "	89 "	189	48
3	6 "	60 "	210	
4	0 "	33 "	33	
6a	0 "	88 "	88	
6	3 "	62 "	137	
7	1 "	7 "	32	
8	1 "	15 "	40	
10a	0 "	35 "	35	
10	3 "	33 "	108	
15	0 "	22 "	22	17
16	0 "	29 "	29	
17	0 "	22 "	22	
18	5 "	88 "	213	34
19	2 "	70 "	120	
20	5 "	64 "	189	72

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

δ 14735 Sept. 3

#	measurements				Area	Distance
H3	4	large	50	small	150	
1a	2	"	50	"	101	
1	6	"	83	"	233	67
2a	1	"	23	"	48	
2	1	"	43	"	68	
3a	2	"	101	"	151	
3	6	"	44	"	294	47
4	1	"	27	"	52	
6a	2	"	57	"	107	
6	2	"	84	"	134	
7	1	"	26	"	51	
8	1	"	39	"	64	
10a	0	"	49	"	49	
10	3	"	55	"	130	
15	1	"	8	"	33	24
16	1	"	13	"	38	
17	0	"	30	"	30	
18	5	"	73	"	198	37
19	2	"	48	"	98	
20	3	"	64	"	139	62

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..796D

Slit 0.25
Ξ 14733 Aug. 24

#	Measurements		area	Distance
H_3	3 large	67 small	142	
1a	6 "	81 "	231	
1	8 "	80 "	280	77
2a	2 "	68 "	118	
2	4 "	63	163	
3a	6 "	116 "	266	
3	7 "	185 "	260	49
4	1 "	33 "	58	
6a	4 "	100 "	200	
6	4 "	66 "	166	
7	1 "	41 "	66	
8	1 "	50 "	75	
10a	0 "	75 "	75	
10	3 "	63 "	138	
12	0 "	12 "	12	
15	1 "	12 "	37	20
16	1 "	18 "	43	
17	1 "	10 "	35	
18	6 "	106 "	256	38
19	4 "	59 "	159	
20	6 "	93 "	243	81

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

Ξ 14733 Aug. 24 Slit 0.1

H	Measurements		Area	Distance
H_7	3 large	67 small	142	
1a	1 "	46 "	71	
1	4 "	70 "	170	38
2a	1 "	27 "	52	
2	2 "	38 "	88	
3a	2 "	67 "	119	
3	3 "	48 "	123	22
4	0 "	21 "	21	
6a	1 "	55 "	80	
6	1 "	42 "	67	
7	0 "	22 "	22	
8	0 "	28 "	28	
10a	0 "	27 "	27	
10	1 "	50 "	75	
11	0 "	12 "	12	
12	0 "	8 "	8	
15	0 "	17 "	17	9
16	0 "	20 "	20	
17	0 "	18 "	18	
18	3 "	95 "	100	16
19	0 "	30 "	30	
20	2 "	52 "	102	34

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

X 14766 Sept. 15

#	measurements		Area	Distance
1a	1 large	22 small	47	
1	4 "	74 "	174	73
2a	0 "	31 "	31	
2	0 "	27 "	27	
2a	2 "	50 "	100	
3	5 "	47 "	172	56
4	1 "	24 "	49	
6a	0 "	62 "	62	
6	4 "	57 "	157	
7	1 "	23 "	48	
8	1 "	46 "	71	
10a	0 "	44 "	44	
10	3 "	95 "	170	
11	0 "	20 "	20	
12	0 "	22 "	22	
15	1 "	33 "	58	32
16	1 "	27 "	52	
17	1 "	24 "	49	
17a	1 "	16 "	41	
18a	0 "	9 "	9	
18	5 "	103 "	228	46
19	2 "	59 "	109	
20	2 "	66 "	116	67

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

(Slit 0.1) (small defl.) $\bar{\pi}$ 14766 Sept. 15

#	Measurements				Area
3a	2	large	42	small	92
3	5	"	62	"	187
4	1	"	24	"	49
6a	0	"	61	"	61
6	2	"	86	"	136
7	1	"	21	"	46
8	1	"	41	"	66
10a	0	"	39	"	39
10	3	"	73	"	148
11	0	"	7	"	7
12	0	"	16	"	16
15	1	"	27	"	52
16	1	"	14	"	39
17	1	"	19	"	44
17a	0	"	32	"	32
18a	0	"	7	"	7
18	5	"	120	"	245
19	2	"	75	"	125
20	3	"	64	"	139

Large area below curve 29,695

small areas below curve not previously measured 105

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..796

X 14748 Sept. 8

#	Measurements		area	Distance
1b	3 large	34 small	109	
1a	1 "	65 "	90	
1	7 "	112 "	287	74
2a	0 "	24 "	24	
2	1 "	58 "	83	
3a	2 "	52 "	102	
3	7 "	79 "	254	52
4	3 "	33 "	108	
6a	1 "	60 "	85	
6	4 "	77 "	177	
7	1 "	30 "	55	
8	2 "	34 "	84	
10a	0 "	38 "	38	
10	4 "	53 "	153	
11	0 "	25 "	25	
12	0 "	30 "	30	
15	1 "	27 "	52	
16	1 "	23 "	48	
17	1 "	21 "	46	25
17a	1 "	14 "	39	
18	4 "	112 "	212	40
19	2 "	59 "	99	49

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

X 14751 left. 8

II	Measurements		Area		Distance
1½	2 large	44 small	94		
1a	2 "	70 "	120		
1	5 "	114 "	239		65
2a	1 "	33 "	58		
2	1 "	51	76		
3a	3 "	66 "	141		
3	5 "	69 "	194		41
4	1 "	20 "	45		
6a	1 "	59 "	84		
6	3 "	62 "	137		
7	1 "	19 "	44		
8	1 "	35 "	60		
10a	0 "	40 "	40		
10	3 "	50 "	125		
12	0 "	16 "	16		
15	0 "	32 "	32		17
16	0 "	30 "	30		
17	0 "	27 "	27		
18a	0 "	7 "	7		
18	5 "	81 "	206		32
19	3 "	54 "	129		
20	4 "	83 "	183		66

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

R 14791 Sept 26

#	Measurements				Area		
3a	7	large	101	small	276		
3	14	"	219	"	569		118
4	9	"	79	"	304		
6a	4	"	76	"	176		
4	21	"	236	"	761		
7	4	"	81	"	181		
8	7	"	107	"	282		
10a	2	"	81	"	131		
10	18	"	168	"	618		
11	1	"	26	"	51		
12	2	"	49	"	99		
15	5	"	73	"	198		
16	4	"	59	"	159		
17	4	"	85	"	185		75
17a	4	"	76	"	176		
18a	0	"	40	"	40		
18	21	"	275	"	800		105
19	8	"	131	"	331		
20	8	"	138	"	338		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

X 14792 Sept 28

#	Measurements		Area	Distance
2	2 large	29 small	79	
3a	2	72	122	
3b	0	16	16	
3	13	109	434	103
4	4	45	145	
6a	3	83	158	
6b	0	10	10	
6	15	92	467	
7	3	42	117	
8	6	67	217	
10a	2	74	124	
10b	0	5½	5½	
10	18	170	620	
11	1	13	38	
12	2	47	97	
15	4	45	145	
16	4	64	164	62
17	3	57	132	
17a	2	24	74	
18	23	121	746	91
19	8	120	320	
20	7	98	293	130

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

Ξ 14800 Oct. 7 (1)

#	measurements		Area	Distance
1a	1 large	17 small	42	
1	4	50	150	56
2	0	24	24	
3a	1	31	56	
3	4	72	172	46
4	1	46	71	
6a	0	40	40	
6	4	91	191	
7	1	24	49	
8	2	33	83	
10a	0	21	21	
10	4	69	169	
11	0	18	18	
12	1	9	34	
15	1	19	44	
16	1	11	36	22
17	1	12	37	
17a	1	15	40	
18a	0	3	3	
18	5	79	204	37
19	2	60	110	
20	2	57	109	61½

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

α 14800 Oct 7

#	Measurements		Area		Distance
1a	1 large	19 small	44		
1	6	79	229		77
2	1	15	40		
3a	1	40	65		
3	8	69	269		63
4	3	42	117		
6a	1	25	50		
6	6	91	241		
7	1	34	59		
8	2	41	91		
10a	0	28	28		
10	5	93	218		
11	0	26	26		
12	1	20	45		
15	2	17	67		
16	1	30	55		30
17	1	35	60		
17a	1	47	72		
18	8	115	315		
19	3	96	171		
20	4	97	197		84
large area under curve			28,150		
small area			167		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

X 14794 Oct 5-6

#	Measurements		Area		Distance
2	4 large	55 small	155		
3a	3	57	132		
3b	1	17	42		
3	14	149	499		77
6a	4	73	173		
6b	0	24	24		
6	15	94	469		
7	3	60	135		
8	5	88	213		
10a	3	40	115		
10b	0	22	22		
10	13	118	443		
11	0	37	37		
12	1	51	76		
15	2	39	89		
16	2	23	73		
17	2	22	72		33
17a	1	44	69		
18a	0	62	62		
18	14	63	413		54
19	7	86	261		
20	10	90	340		90

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

Oct 28 ☌ 14812

#	Measurements		area	Distance
1	7 large	90 small	265	78
2	0	29	29	
3a	1	46	71	
3	7	148	323	62
4	3	59	134	
6a	0	55	55	
6	6	86	236	
7	1	8	33	
8	1	49	74	
10a	0	21	21	
10	6	75	225	
11	0	13	13	
12	1	14	39	
15	1	22	47	37
16	1	16	41	
17	1	25	50	
17a	1	23	48	
18a	0	6 ½	6½	
18	9	110	335	59
19	3	74	149	
20	3	96	171	102

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

Nov 5 X 14813

#	measurements		area	Distance
1a	10 large	12 small.	12	
1	9 "	59	284	123
2	1 "	13	38	
3a	0	6	6	
3	12	109	409	108
4	3	32	107	
5	1	34	59	
6	17	127	552	
7	1	39	64	
8	4	45	145	
9	3	51	126	
10	15	152	527	
11	0	25	25	
12	2	35	85	
15	3	47	122	75
16	3	49	124	
17	4	66	166	
18	15	171	546	100
19	2	67	117	
20	2	78	128	128

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

Nov 7 & 14 & 19

#	Measurements		Area	Distance
1a	0 large	4/2 small	42	
1	11	95	370	98
2	1	16	41	
3a	1	58	83	
3	10	108	358	72
4	3	41	116	
6a	0	41	41	
6	10	95	345	
7	1	31	56	
8	2	59	109	
9	2	35	85	
10a	0	32	32	
10	8	91	291	
12	1	23	48	
15	1	22	47	35
16	1	29	54	
17	2	24	74	
18	9	158	383	62
19	3	91	166	
20	4	98	198	102

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

Nov 13 x 14822

#	measurements		Area	Distance
1	8 large	140 small	340	119
2	0	17	17	
3	15	191	566	100
4a	0	21	21	
4	5	51	176	
6a	0	9	9	
6	18	133	583	
7	1	44	69	
8	4	62	162	
10	14	105	455	
12	1	51	76	
15	2	30	80	50
16	2	33	83	
17	4	41	141	
18	18	169	519	85
19	5	102	227	
20	5	101	226	130

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

Nov 16 X 14825

#	measurements		area	Distance
1a	1 large	48 small	73	
1	9	109	334	147
2	0	22	22	
3a	0	42	42	
3	15	202	577	129
4	4	77	177	
6a	0	5	5	
6	21	124	649	
7	3	27	102	
8	5	86	211	
9	4	78	178	
10	19	160	635	
12	2	59	109	
15	4	62	162	81
16	3	60	135	
18	20	184	684	112
19	3	98	173	
20	4	87	187	149

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7900

Dec 4. x 14829

#	Measurements		area	Distance
3	8 large	122 small	322	91
4	4	39	139	
6	10	107	357	
7	1	24	49	
8	3	49	124	
10	12	102	402	
12	2	24	74	
15	1	37	62	
16	2	23	48	63
>17	11	121	396	
18	13	144	369	81
19	2	49	99	
20	2	72	122	102

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

Dec 8 X 14830 (1)

area	measurements		area		Distance
1	4 large	74 small	174		82
3	8	87	287		73
4	1	34	59		
6	11	115	380		
7	1	20	45		
8	2	64	114		
10	13	79	404		
12	1	38	63		
15	2	40	90		
16	1	47	72		49
>17	13	81	406		
18	11	140	415		66
19	1	69	94		
20	2	52	102		88

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

Dec 8 x 14830 (2)

#	Measurements		Area	Distance
1	6 large	86 small	236	92
3	10	108	358	83
4	2	83	133	
6	14	143	493	
7	1	37	62	
8	3	73	148	
10	12	183	483	
12	2	34	84	
15	3	43	118	55
16	2	47	97	
>17	16	104	504	
18	12	163	463	72
19	1	74	99	
20	1	49	74	74

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

Jan 7, 1926 I 14841

#	measurements		area	Distance
1	7 large	103 small	278	114
3	10	99	349	107
4	1	39	64	
6	15	141	516	
7	1	36	61	
8	3	54	129	
10	17	167	592	
12	1	39	64	
15	2	11	61	90
16	1	30	55	
717	19	168	643	
18	13	149	474	115
19	0	50	50	
20	1	48	73	118

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

Jan 13, α 14844 (1)

#	Measurements		Area	Distance
1	8 large	80 small	280	83
3	10	98	348	80
4	2	60	110	
6	13	139	464	
7	1	28	53	
8	2	60	110	
10	13	160	485	
12	1	29	54	
15	2	29	79	65
16	1	32	57	
> 17	16	138	538	
18	11	140	415	77
19	1	36	61	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

Jan 13 & 14844 (2)

#	measurements		Area	Distance
1	9 large	92 small	317	100
3	11	118	393	94
4	3	42	117	
6	16	145	545	
7	1	22	47	
8	2	62	112	
10	15	158	533	
12	0	55	55	
15	2	13	63	77
16	1	37	62	
717	21	137	662	
18	13	119	444	89
19	0	54	54	
20	2	42	92	101

Large area	8610
Small area	143

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7900

Argus ☓ 13739 (shortened slit)

#	Measurements		Area		Distance
3	1 large	16 small	41		37
6	1	22	47		
7	1	17	42		
10	1	44	69		
15	1	21	46		20
16	1	17	42		
17	1	17	42		
18	2	69	119		28
19	0	35	35		
20	0	45	45		40

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

June 12, 1925 ☿ 145 94

II	Measurements		Area
2a	0 large	3 small	3
2	2	69	119
3a	0	4	4
3	3	60	135
4	0	62	62
6	3	70	145
7	0	38	38
8	0	33	33
10	2	67	117
11	0	14	14
12	0	9	9
13	0	14	14
14	0	16	16
15	0	26	26
16	0	39	39
17	0	34	34
17a	0	20	20
18	3	77	152
19	1	27	52

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj.7960

Dec. 8 I 14830 #3

#	Measurements		Area	Distance
1	9 large	71 small.	296	108
3	13	128	453	98
4	5	63	188	
6	17	61	486	
7	2	35	85	
8	4	63	163	
10	14	163	513	
12	1	47	72	
15	2	38	88	61
16	1	53	78	
17	14	118	368	
18	15	155	530	85
19	2	67	117	
20	2	60	110	107
	large area		15,010	
	small areas below curve		40	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

Dec. 16, λ 14833

#	measurements		area		Distance
1	5 large	64 small	189		50
3	5	100	225		43
6	6	76	226		
7	0	26	26		
8	1	35	60		
10	5	67	192		
12	0	28	28		
15	0	32	32		26
16	0	26	26		
>17	4	69	169		
18	5	95	210		34
19	1	25	50		
20	1	41	66		48

e

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj.7960

March 2. x 14845

FF	measurements		Area	Distance
1	8	large 111 small	311	91
3	16	173	573	84
4026 2	7	89	264	
6	19	186	661	
4	2	24	74	
4026 7	1	29	54	
8	3	36	111	
3	2	57	107	
10	12	109	409	
9	6	77	227	
12	1	34	59	
4472 θ	5	83	208	
15	1	25	50	
16	1	31	56	57
> 17	19	186	661	
18	14	162	512	71
19	2	42	92	
20	4	59	159	85

Hp
4922
4959
5007

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

March 8 ☌ 14846

#	Measurements		Area		Distance
(O)	8 large	85 small	285		
1	11	123	398		110
3	16	156	556		105
α	4	99	199		
6	21	158	683		
γ	2	14	64		
7	1	25	50		
8	1	15	40		
ε	3	41	116		
3	2	61	111		
10	18	171	621		
4	8	109	309		
12	1	48	73		
θ	7	107	282		
15	2	21	71		
16	1	34	59		
>17	29	174	899		79
Hp 18	16	103	503		95
4922 λ	1	64	89		
4959 m	0	16	16		
5007 √	3	76	151		110
	large area		10,435		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

March 13 & 14 847

II	measurements		area	Distance
(0)	10 large	84 small.	334	
1	12	94	394	94
3	17	144	569	87
α	5	93	218	
6	18	64	514	
Y	2	38	88	
7	2	36	86	
8	1	38	63	
ε	4	74	174	
3	4	51	151	
10	19	146	621	
9	12	111	411	
12	2	51	101	
θ	8	124	324	
15	2	48	98	
16	2	56	106	
>17	33	218	1043	77
18	18	116	566	81
λ	1	63	88	
M	0	15	15	86
	large area		5530	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7900

April 14. ☿ 14 849

#	Measurements		Area	Distance
(0)	9	165	390	108
1	9	117	342	
3	15	113	488	106½
2	3	58	133	
6	15	167	542	
r	2	21	71	
7	1	20	45	
8	1	27	52	
ε	1	56	81	
3	2	37	87	
10	16	188	588	
η	9	144	369	
12	1	40	65	
θ	6	117	267	
15	1	35	60	96
16	2	26	76	
2	6	117	267	
K	7	130	305	
18	13	219	544	102
λ	2	32	82	
m	0	32	32	
ν	2	71	121	107

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

April 20, I 14851

#	measurements		Area	Distance
(0)	28	162	862	99
1	22	92	642	96
3	22	79	629	
2	8	84	284	
6	19	155	630	
Y	4	77	177	
7	3	43	118	
8	2	58	108	
E	4	44	144	
3	4	35	135	
10	13	122	447	
4	9	113	338	
12	1	36	61	
Θ	6	67	217	
15	1	28	53	
16	1	44	69	57
2	4	93	193	
K	6	91	241	61

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

April 28, ± 14852

#	Measurements		Area	Distance
(6)	20	119	619	74
1	16	132	532	
3	20	146	646	70
α	8	63	263	
6	17	130	555	
γ	3	69	144	
7	1	32	57	
8	2	48	98	
ε	3	47	122	
3	4	29	129	
10	12	104	404	
9	8	74	274	
12	2	17	67	
θ	6	70	220	
15	2	22	72	48
16	2	40	90	
2	6	88	238	
K	8	135	335	
18	11	157	432	63
λ	2	38	88	
m	0	37	37	
U	5	67	192	83

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

May 1. ☌ 14858

#	Measurements		Area	Distance
(0)	21	155	680	91
1	18	134	584	
3	22	149	699	86
2	7	79	254	
6	19	141	616	
Y	3	69	144	
7	2	47	97	
8	2	51	101	
E	4	31	131	
3	3	69	144	
10	17	125	550	
4	13	129	454	
12	2	48	98	
Θ	8	123	323	
15	2	54	104	
16	4	40	140	
2	9	90	315	65
K	11	130	405	
18	16	128	528	75
λ	2	78	128	
V	7	106	281	93
	larg area		8020	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phec.proj...700

May 4, I 14862

#	Measurements		area	Distance
(0)	22	148	698	
1	18	148	598	94
3	23	165	740	91
α	6	78	228	
6	20	147	647	
γ	3	50	125	
7	2	36	86	
8	2	53	103	
ε	4	58	158	
3	5	48	173	
10	21	148	673	
η	15	148	523	
12	2	58	108	
θ	9	137	362	
15	2	54	104	
16	2	66	116	
ζ	10	105	355	77
κ	12	147	447	
18	14	159	509	83
λ	1	41	66	
μ	1	10	35	
ν	3	71	146	91

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

May 10, ☿ 14870

#	Measurements		Area
(0)	26	182	832
1	22	167	717
3	25	194	819
2	8	108	308
ρ	5	78	203
6	23	182	757
4	4	70	170
7	2	45	95
8	2	67	117
9	4	58	158
3	5	50	175
10	22	163	713
η	17	151	576
12	2	57	107
θ	9	156	381
2	9	138	363
K	11	130	405
18	14	194	544
λ	1	39	64
μ	0	19	19
ν	3	52	127
large	area		3845

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

May 12. ☿ 14880

#	measurements		area	Distance
(0)	38	245	1195	131
1	28	272	972	
3	35	263	1138	123
2	12	172	472	
β	10	101	351	
6	35	223	1098	
4	8	94	294	
7	3	80	155	
δ	6	57	207	
ε	6	77	227	
3	7	78	253	
10	26	200	850	
4	20	168	668	
12	3	74	149	
θ	11	204	479	
2	16	152	552	96
κ	24	217	817	
18	19	223	698	118
λ	0	101	101	
μ	0	28	28	
√	5	87	212	132
large area			10,100	
small area			68	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7901

May 19 ☿ 14893

H	Measurements		Area
(0)	9	198	423
1	8	159	359
3	12	95	395
α	3	51	126
β	3	39	114
6	9	157	382
γ	2	26	76
7	1	25	50
δ	1	33	58
ε	1	42	67
ζ	2	31	81
10	9	130	355
9	7	67	242
12	1	27	52
θ	5	60	185
2	4	128	228
κ	6	86	236
18	8	103	303
λ	0	40	40

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

May 26 × 14898 slit 0.1

#	Measurements		Area		Distance
(0)	7	107	28.2		43
1	5	106	231		
3	8	89	289		41
2	2	23	73		
Θ	1	17	42		
6	4	130	230		
4	1	16	41		
7	0	16	16		
δ	0	31	31		
ε	1	11	36		
3	1	14	39		
10	5	71	196		
4	3	51	126		
12	0	18	18		
Θ	2	50	100		
2+K	10	83	333		29
18	5	81	206		36
λ	0	34	34		
μ	0	24	24		
ν	2	49	99		47

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

May 26 & 14898

#	Measurements		Area	Distance
3	12	103	403	57
2	3	55	130	53
B?	2	34	84	
6	10	105	355	
Y	2	27	77	
7	1	7	32	
δ	1	29	54	
ε	1	27	52	
ζ	1	24	49	
10	6	105	255	
9	4	82	182	
12	0	30	30	
Θ	3	57	132	
2+K	15	140	515	42
18	8	126	326	56
λ	0	52	52	
μ	0	35	35	
V	3	76	151	71

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj.--.7960

June 2 & 14909

#	Measurement		Area	Distance
(0)	21	151	676	
1	20	140	640	63
3	17	147	572	
2	7	64	239	
β	6	71	221	
6	14	118	468	
4	4	64	164	
7	3	42	117	
8	2	63	113	
ε	2	61	111	
3	2	60	110	
10	10	94	344	
9	8	89	289	
12	1	36	61	
θ	5	69	194	36
2	6	81	231	
K	10	108	358	
18	10	104	354	51
λ	1	63	88	
μ	2	27	77	
V	5	70	195	63
large area			8440	
small area under curve			50	

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

June 11 X 14924

#	measurements		Area	Distance
3	17	202	627	88
α	4	78	178	
β	4	64	164	
6	19	125	600	
4	3	52	127	
7	2	19	69	
8	2	38	88	
ε	1	29	54	
3	2	30	80	
10	17	124	549	
9	12	144	444	
12	1	41	66	
θ	7	116	291	
15	1	59	84	
16	1	36	61	74
2	7	99	272	
K	10	118	368	
18	13	174	499	84
λ	0	45	45	
M	1	20	45	
N	1	65	90	91

#1
1
#2
2
#3
3

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

June 5 ☓ 14916

#	Measurements		area	Distance	
(0)	10	171	421	84	
1	10	88	338		
3	16	126	526		
α	3	61	136		
β	2	27	77		
6	14	159	509		
γ	2	45	95		
7	1	15	40		
δ	1	28	53		
ε	1	17	42		
3	1	16	41		
10	14	135	485		large area
η	9	148	373		
12	0	36	36		3,040
θ	6	128	278		
15	0	27	27	76	small area
16	0	31	31		50
2	5	110	235		
K	11	128	503		
18	11	154	429	85	
λ	0	32	32		
μ	0	21	21		
ν	2	45	95	92	
Nova Pict.		☓ 14792	Sept. 28		
#1	14	155	505		
1'	0	21	21		
#2	22	163	713		
2'	1	19	44		
#3	20	145	645		
3'	3	35	110		

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..79C

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..796

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...796D

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

Measurements
of
Tracings of
Spectra.

for absolute magnitude
over a Norm Victoris
Comparison Stars
& Nun-

1960 δ Cep. 17: 3.5
1702 12,5 | 3.5

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj.—7990

π Sagittarii

Depth ←

Width

	$\bar{X}$ 7834 Sco P	Ratio	$\bar{X}$ 4423 Sco P	Ratio	$\bar{X}$ 6541 Sco P	Ratio	$\bar{X}$ 5401 Sco P	Ratio	
4072	8		2.5		1.2?		1.0?		
4078	27	- 3.4	7	- 2.8	3	- 3.3	3	- 3	3.1
48	8 7						8 7		
4161	9		3		1.2?		2 (1.8)		
4165	3	0.33	0.5?	0.17	1.0?	0.83	1.5	0.8	0.52
4167	7	- 0.77	0.2?	(0.07)	—	—	—	—	
4173	26		6.5		3.0		3.0		
4179	23.5		5.2		2.5		2.6		
4216	16		2.5		1.2?		2.2		
4227	27	- 1.7	4	- 1.6	2.2	- 1.8	4.5	- 2.1	1.8
4233	15.7	0.98	4	1	1.05	2.2	2.5	1.8	1.5
4247	12		—		—		1.8?		
4250	10	4216/4250 0.62	—	4216/4250 —	—	—	1.5??	4216/4251 0.59	0.66
4259	9.5	—	—	—	—	—	—	—	
4261	15.5	—	—	—	—	—	—	—	
4272	20		4.5		2		3		
4290	27	- 1.3	3.5	0.77	2	1	2.8	0.93	1.0
4455	8		1.5?		—		1.8?		
4462	4	0.5	1.5?	1	—	—	1.5?	0.83	0.77

Spectrum too dense — and the tracing shows the lines poorly.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

ζ Scorpii.

Line	D $\frac{\bar{\lambda}\ 7657}{\text{Sep}}$ (2 prs)	Ratio	D $\frac{\bar{\lambda}\ 5778}{\text{Sep}}$	Ratio	
4072	20	1.75	6.5 *	1.46	1.6
4078	35		9.5		
4161	17.5	1	8.0	0.81	0.9
4165	same		6.5		
4167	2.2		2.-	0.25	
4173	48.5		13		
4179	49.5		16		
4216	21.5	[1.37	7.5	[1.6	1.49
4227	30.5		12		
4233	30.0	1.9]	9.5	1.27]	1.6
4247	18		8.7		
4250	13 *	0.61	7.2	0.96	0.73
4259	15		8.5		
4261	20		7		
4272	29	0.9	14	0.43	0.67
4290	25		6		
4455	6.5	0.46	1.5 ?	0.85	0.67
4462	3.-		1.3 ?		

W 7657	W 5778	I 7657	I 5778	R 7657	R 5778

* uncertain

* Inconvenient for Meas.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

Nova Pictoris - May 28, 1925

Line	☉14521 Sc P	Ratio	☉14520 Sc P	Ratio	☉14522			
4072	3.2	1.6	2.4	2.1	2.2	2.2	2.3	2.0
4078	5		5.5		5.	5		
4161	3.5	1.14	4.	1.12	4.3	5.0	1	1.1
4165	4		4.5		4.2	4.7		
4167	—		—		—	—	—	
4173	6.3		5.2		7.0	7.0		
4179	7.0		6.0		6.8	6.1		
4216	2.5	1.4	3.5	1.086	3	3.1	1.2	1.15
4227	3.5	1.3	3	1	3.5	4.5		
4233	3.3		3.5		4.3	4.2	1.4	1.23
4247	3		2.5					
4250	—	1.2	2.5	0.71	2 (each)		0.67	0.86
4259	2		2.		2.5 (each)	3.2	1	
4261	2.5		2.5			2.6		
4272	4	1:1.5	2.5	1	3.5	3.0	1:1.5	1.1
4290	2.7		2.5		2.2	1.2		
4455	1 ?	1.2	0.8 ?	1.5	0.8?		0.75	1.15
4462	1.2 ?		1.2		0.6?			

* 4250 unvis.? or too faint.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

ℓ Velorum

Line	λ 4515 SeP	Ratio	λ 4502 SeP	Ratio	λ 6405 SeP	Ratio	
4072	3.7	2.83	3.8	3.16	8.5	2.18	2.72
4078	10.5		12.–		18.5		
4161	6.5	1	7.5	0.97	15	1	1.0
4165	the same		7.3		15		
4167	—	—	—	—	—	—	
4173	8.7		18.5		28		
4178	7.3		17		32		
4216	3.–	1.67	4.6	1.61	11.5	1.27	1.52
4227	5.–		7.4		13.5		
4233	7.–	2.33	8.8	1.91	16.–	1.39	1.88
4247	15.5		60		8.3		
4250	3.5	0.83 (4216)	2.5	0.54 (4216)	6.–	0.52 (4216)	0.62
4257	4.8		5.6		9.5		
4261	4.–		6.–		»		
4272	8.–	0.63	9.–	0.72	17.–	0.53	0.62
4290	5		6.5		9.		
4455	1.5 ?	0.8	1.5 ?	1.2	—	—	1.0
4462	1.2 ?		1.3 ?		—		

* Peculiar form of curve at this place = steeply falls down.

\) Rem. twice

□ Uncertain – violet edge too steep.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

Nova Pictoris. May 29 / other two plates of Nova Pict. see [redacted] in Nova Rec. Book

Line	Sc P	Ratio	Sc P	Ratio
	X14524			
4072	3.5	2		
4078	7			
4085				
4161	3.5	1.1		
4165	4			
4187	–			
4173	8.5			
4173	10			
4216	4.5	1		
4227	4.5			
4233	7	1.4		
4247	5 each			
4250		4216: 1.1		
4259	2.2			
4261	2.5			
4272	4	1.1		
4290	4.5			
4455	1.8	1:1.1		
4462	1.6			

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

ρ Puppis

Line	I 6165 Sep	Centis	D	W	2I	R
4072	2.7	4.7	6	2.7	16.2	4.4
4079	12.7		15	4.7	70.5	4.2
H5			37	8	296	4173=7.2
4168	—					
4166	2or.3	*				
4167	—					
4173	11		10.5	3.8-4	41	2.1
4179	7		6.3	3.2	20	3.9
4216	2.5	3.0	2.3	2.2	5.1	4.5
4227	7.5		6.5	3.5	22.8	
4233	3.5	1.4 (4216)				
4247	2.7		Too undistinct			
4250	1.8	4216 0.72				
4253	2.7		same			
4261	Same as 59					
4272	3.5		hard	—	—	
4290	4.5	1.3.3	3.5	3.5 hard line	12.3	
H8			25	7	175	
4384	3.8	0.8	5.5	3.3	18.2	4.8
4395	3.0		2.5	1.5?	3.8	
4400			3.3	2?	6.6? 4384 2.8	
4417			1.7	3	11.* 4384 1.7	
4444		4444	4	2.5	10	0.9
4455		4455	5	2.2	11	
4462			4.5	2.9	9.9	

* Peculiarities in this region — 4178 abnormally faint: in comparis. to 4172.

both adjust of the same intensity

The mean hazy curve was not comparable with the 1st

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

κ Reticuli

Line	I.P. λ 5927	Ratio	D	W	2I	R	D	W	2I	R	λ 7309 Not quite sharp lines
4072	~~2.0~~ 2.2	3.1	3.5	2.5	8.8		3.6	2.5	9.0		
4078	~~6.5~~ 6.8		8	4	32	3.6	7.2	3.8	27.4		
Mn			39	7.5	293	9.2	30.3	8.5	258		
4161	2										
4165	smear 61	1 / ?									
4167	— *	—				11.3					
4173	8.5		8.3	3.5	~~29~~		6	2.5 *	15		* somewhat uncertain
4179	5.5		5.5	2.6	14.3	2.3	4.2	1.8 *	7.2	2.1	uncertain peculiar shape
4216	3.8		5.3	3.5	18.6		3.5	2.5	8.8		
4227	8.5	2.2	10	4.5	45	2.4	6.3	3.5	22.1	2.4	
4233	5.2	1.4	4.5	3	13.5	0.74	3	2.2 m	6.6	0.75	m undistinct
4247	3.5		5	3	15		2.5	1.5 ?	3.8		
4250	2.5	0.66	4	2.5	10	1.5	2.5	1.3 ?	3.3	1.1	smear.
	4216					4216 1.9			4214	2.6	
4257	3.6										
4261	3.0										
4272	5.2	0.96	6.5 band line	2.5	16.2	1.5	3.2	2.2	7.0		
4290	5.0		8. band line	3 ?	24 ?		4.5	2.5	11.3		
Hγ			37	7	259		24	6.5	156		
4384	4 ?	0.75	5.7	3.7	21.1	2.6	4	2.4	9.6	2.7	
4395	3 ?		3.3	2.5	8.3		3.2	1.6	3.5		
* 4400			3.5	2.2	7.7	2.7			unmeas.		
4417			4.2	3.2	12.8	1.65	3.2	2.5 ×	8.0	1.2	× Band line
4444			3.5	2.5	8.8	1.0	2.7	3	8.1	1.0	
4455			~~47~~	1.8	8.5		3.3	2.0	6.6		
4462			3.7	1.6	5.9		3.0	1.3	3.9		

The dark particles that the line is too faint for measurement

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

c6309 α Canis Minoris (Rem) c6309

	D	W	2I	R	D	W	2I						
4072	2.5	3.5	8.8	2.4	3	27	8.1	2.47					
4078	4.5	4.5	20.3		5	4	20						
H8	20.5	5	102.5	0.14	20,5	5	102.5	5.10					
4173	2.8	5	14		4	5	20	mean 18.5 5.3	3.5	5.0	17.5	4.0	4.5 18.8
4179	2.7	2.5	5	0.36	2	4.5	9	2.5	2.5	4	10	2.5	4 10
4216	2.-	2.5	5		4	4	16	1.64					
4227	4.5	4	18		6	4.5	27						
4233	1.2	2.5	3.6		27	3?	8.1	2.-					
4247					2	2,7	5.4	1.35					
4250					2	2 ?	4	4216: 4					
4272					broadband								
4290					1,7	2.5	4.3						
Hγ	12	4.5	54		13	4.5	58.5						
c 4384	2.	3.5	7		3	3.5	10.5	1.54	2.2	2.8	6.2		
4395					2.5	2.7	6.8		1.8	1.8	3.2	1.9	
4400													
4444													
4455													
4462													

Too poor for measurement

Meas. without mean Baeyer. line — Mean Baeyer. line used

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

C 5207 — α Persei — (Rem.) C 5207 | C 5257

	I			II	D	W	2I	R	D	W	2I	R	
			×										
4072	4	3	12		4.8	4.3	~~20.6~~ ~~13.5~~		~~7.7~~	~~3.8~~	~~29.3~~ ~~26~~		
4078	10	5	50		10.5	4.3	45	2.1	24.5	4.5	110	~~2.38~~	2.9
HD	19.5	10	~~195~~		20.	8.5	~~150~~	3.8	48.5	9	~~43.7~~ ~~28~~	4.0	3.9
4173	10	7	70	0.40	9.5	6	67	3.0	17.5	7	123	3.5	2.2
4179	8	5	40	0.57	8	5	40.	1.42	15.5	5.5	85	1.4	1.4
4216	6	4	24		6	3.5	21	1.5	10	3.5	35	2.	1.8
4227	9.5	4.5	43		8.5	4.2	~~35.7~~ ~~33.3~~		16.5	4.3	71	1.1	1.2
4233	6	3	18		6	3	18	1.2	10	3.3	33		
4247					7	2.5	17.5	2.–	8.3	3.5	29	1.9	2.0
4250					4.–	2.2	8.8		6.8	2.5	15		
4272					6.5	2.7	17.6	1.4	8	3.7	29.6	1.5	1.5
4290					9.3	2.7	25		12.5	3.7	46.3		
Hγ	20.5	7.5	154		20.5	~~#7~~	~~143.5~~ ~~126~~		36	6.8	~~34.5~~	7.3	6.1
c 4384	7.5	4.5	34		7.5	3.5	26.3	1.9	9.5	3.5	33	2.3	2.1
4395					5.5	2.5	13.8		5	2.7	13.5		
4400					7.5	2.5	18.8	1.4	6.5	3.3	21.4	1.6	1.5
4414					7.5	4	30	2.1	7.5	4	30	1.1	2.1
4455					5.2	2.7	14		8	2.8	30.4	1.9	2.0 = 4444/4455
4462					3.5	2.3	8	1.7	5.5	3	16.5	1.5	1.6
									4.5	2.5	11.3		

No mean curve used

~~Mean curve used~~

mean backgr. int. curve used

N.P.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..790

	$\bar{\lambda}$ 4423				$\bar{\lambda}$ 6541			
	D	W	I	R	D	W	I	R
4072								
4078								
HS								
4173								
4179								
4216								
4227								
4233								

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...796D

χ 5901 — π Sagittarii B 7834

	D	W	I	R	D	W	I	R
4072	1.2	2.2						
4078	3.0	3.2						
H 7	8	7						
4173	4	3.2						
4179	3	3						
4216	2.5	4						
4227	4.5	4						
4247	2	2.5						
4250	1.3	1.3						
4272	3	4?						
4290	3	3						
Hγ	17.5	6.5						
c 4384	3	3.7						
4395	2.2	2.5						
4400	2.5	2						
4417	4	4.5						
4444	2.7	3.5						
4455	2	2.5						
4462	1.5	2.5						

Mean continuous background curve used.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

2, Scorpii. See p. 122 (Rem)

Another mean curve drawn (higher)

	D	W	2I	R	D	W	2I	R	D	W	2I	R	Mean
	$\bar{X}$ 5778				$\bar{X}$ 7657				$\bar{X}$ 5778 Rem				
4072	10	4	40	1.7	23.5	7	165	1.7	12.5	4.2	53	1.5	1.6
4073	14	5	70	4.7	37.5	7.5	281	3.8	16	5	80	3.8	3.8
40	41	8	328	3.86	83.5	13.5	1086	3.8	43.5	7	305	2.6	3.2
4173	21.3	4	85	0.87	46.5	6	279	1.0	24.5	4.8	118	1.1	1.1
4179	18.5	4	74		48.5	6.5	291		22	5	110		
4216	7	2.7	19	21.42	23	6	138	1.6	11.5	3.7	42.6	1.4	1.5
4227	11.5	4	46		30.5	7	214		14.6	4.2	61.3		
4233	11	4	44	2.32	29	6.5	179/174	1.3	14	4.5	63	1.5	
4247	9	3.3	29.7	1.2	22.5	5	113	1.1	12 ?	4	48 ?	1.1	1.1
4250	7.5	3.3	24.8		15.5	6.5	101	(42.6) 1.4	10.5 ?	4	42 ?	1.0	1.2
4272	11	4.5	50	0.84	24	6	144	1.4	13.5	5	67.5	1.4	1.4
4290	10	4.2	42		29	8.2	203		12	4	48		
4303					42	6.5			22	4.7			
4314					46				19	4.2			
Hp	44.5	5.5	242		91	14	1274	3.8	47	6	282	4.5	4.1
4384	16.5	3.5	58	1.6	45	7.5	338	1.6	18	3.5	63	1.3	1.5
95	14.5	2.5	36		35	6	210		15	3.2	48		
4400	11.5	2.5	29	2.0	33	6	198	1.7	12	3	36	1.3	1.3
17	18.5	4.2	78	2.7 1.4	48	7.5	360	1.8 1.1	12.5	4	50	1.4 1.2	1.2
44	14	3	42	10	44	7.5	330	8	15.5	3.2	49.6	1.2	1.1
55	2.2	1.8	4.-		12	3.5	42		3.5 ?	4.6	5.6	8.3	
62	2.5	1.3	4.5	1.1	12.5	3.5	44		3.3 ?				

A mean curve was drawn through the upper ends of the waves of the spacing. The values obtained in this way are considerably different from those on p. 122

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

ζ Velorum

	D	W	2I	R	D	W	2I	R	D	W	2I	R
		χ 4515				χ 4502				χ 6405		
1.6	4072 9	4	36	1.21	6.5	3	19.5	2.44	16	5	80	1.66
3.8	4078 13.5	3.5	47		12	4	48		26.5	5	133	
	HS 37.-	5.2	192	4.1	42	5.5	231	4.80	65	8	520	3.9
3.2				-3.30				-3.47				2.96
1.1	4173 14.5	4	58	1.04	17.5	3.8	66.5	1.0	37.5	5.6	176	
	4179 14	4	56		16.5	4.	66		34	5.6	190	1.08
1.5	4216 5	4	20	1.22	4.5	3	13.5	1.70	12.5	3.3	41	1.66
	4227 7	3.5	24.5		6.5	3.5	23		15	4.5	68	
	4233 8.5	3	25.5	1.27	8.5	3	25.5	1.88	18	4.7	85	2.0
1.1	4247 5.5	3	16.5	1.37	6.5	2.7	17.6	2.80	11.5	3.	35	1.25
1.2	4250 4	3	12	4216-1.66	2.5	2.5	6.3	-2.14	9.5	3.	28	4247-1.46
1.4	4272 7	4.5	31.5	-1.4	6.5	4	26	1.30	14	5	70	-1.32
	4290 7.5	3	22.5		8.	2.5	20		15	3.7	53	
4.1	Hy 26.5	6	156		27.5	4.5	124		60	6.5	390	
1.5	c 4384 10.5	3.7	39.	1.22	12	3.7	44.	1.10	24	4	96	
	95 9.2	3.5	32		12	3.3	40		22	3.5	77	-1.23
1.8	4400 8.5	3.5	30	1.30	6.5	3	20	2.20	18	4	72	1.33
1.2	17 14	4.5	63	-1.61	12.5	4	50	-1.27	29	5	145	-1.51
1.1	44 8.3	3.5	29	1.34	8.5	3.5	30	1.41	18.5	4	74	1.30
	55 (3	2?)	6?	5.0	(1.2	2.5)?	3?	10	invisible			
	62 (2	1.5?)	3?		(3.5	2.5)?	8.8?	—	on the tracing.			

Mean cont. backgr. curve used (therefore different from p. 124)

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

γ Carinae (cF5) X 4065.

line	W	D	2I	R
4072	} Cut off on the tracing			
4078				
48	15.5	4.5	69.8	} 4.5
4173	5.5	2.8	15.4	} 1.5
4179	7.2	3.1	22.3	
4216	2.4	1.5	3.6	} 2.3
4227	3	2.7	8.1	
4233	5.6	1.8	10.1	2.8
4247	3.4	1.7	5.8	- 1.6
4250	2.2	1.7	3.7	
4272	Band like		—	
4290	3.5	1.8	6.3	
Hγ	13.2	3	39.6	
c 4384	5.7	2.7	15.4	} 1.2
95	5—	2.5	12.5	
4400	3.3	1.4	4.6	- 3.3
17	5.5	2.7	15.4	1.0
44	4.7	2.3	10.8	1.4
55	1.5	1.2	1.8	6.0 4462
62	Innumerable but can be estimated to be fainter than 44 55			

Compared with Nova Pictoris & γ Carinae must have the abs. Mag. −5.5 to −6.0 M

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

α Chamaeleontis Ē6145 (F5)

Line	W	D	ΣI	R
4072	2	2	4	
4078	6.5	4.5	29.3	
H8	13	6.7	87.1	
Hγ	5.3	3	15.9	
4179	3.8	2	7.6	
4216	2.8	2.2	6.2	
4227	5.7	3.2	18.2	
4233	blends with next line to the red			
4247	3	2	6	
4250	2.2	1.5	3.3	
4257	} blends			
4290				
4303				
4314				
Hγ	18.5	7	130	} 11.8
4384	3.6	3	10.8	} 2.4
95	1.8	2.5?	4.5?	
4400	2.2	2.5	5.5	
17	2	2.5?	5?	2.1
44	Defect in plate			
55	unmeasurable			
62	but 55 appears stronger than 62			

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

cE'8 δ Canis Majoris.

Line	W	D	2I	R

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

ζ, Scorpii X 5778 (Short diaphragm)

Line	W	D	2I	R
4072	3.6	3.5	12.6	
4073	5	4 (3.2)	20 (18.6)	1.6
Ni	11	6.3	69.3	3.4
				2.9
4075	6.2	3.3	20.5	
4075	6	3.3	19.8	1.0
4216	2.7	2.2	5.9	
4217	4.2	3.5	14.7	2.4
4233	3.7	3.2	10.6	1.8
4247	3.8	~~2.2~~	7.6	
4250	2.6	1.8	4.7	1.6
4303	6	3.2	19.2	4216 1.3
4314	6.5	3	19.5	1.0
Hγ	13	5.7	74	
				3.4
V584	6.8	3.2	21.8	
95	6.2	3	18.6	1.2
4400	4.7	2.3	10.8	1.7
17	6.2	3	18.6	1.7 1.2
44	4.7	3	14.1	1.6
55	1.4	1.1	1.5	9.3

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..7960

Changes in Abs. Magn. lines

Line	Dwarfs (k Ret, d Cham, f Pup, d Leo Min)	Giants (i Sc, b Vel, g Cor, d Berni)
4384	present; good ris; but much fainter than Hγ. —	enhanced.
4395	Much fainter than 4384. —	Becomes nearly equal to 4384.
4400	faint, but equal or even somewhat stronger than 4395 —	Increases in intens., but slower than 4395 and is fainter than the latter.
4417	~~Appears at the latest~~ Slightly fainter than 4400. —	Stronger than 4400
4444		Becomes stronger in giants
4455	Sometimes equal to 4444. Stronger in k Retic & f Pup. —	Becomes weaker in giants

This suggests the ratios:

$$\frac{4384}{4395} : \frac{4395}{4400} : \frac{4400}{4417} : \frac{4444}{4455} : \frac{4384}{4417}$$

4352	somewhat fainter than 4384	Grows relatively considerably fainter than 4384 in Giants because the latter increases much.

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

γ Carinæ $\bar{\lambda}$ 4065 (2nd trac.)

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

2, Scorpii (remeasurement) (8I)

λ	D	W.	ZI	R
4092	23.2	6.5	151	1.7
78	37.5	7	263	
85	83.5	12.3	1027	3.9
				3.2
4093	46	7	322	
4119	49	7	343	0.9 1.0
4216	22	6	132	1.9
4227	30	8.5	255	
4247	22.3	5.2	116	1.4
50	15	5.5	82.5	
4303	41	8	328	
14	46	6.5	299	
Hγ	91	13.5	1229	
4352	27.2	5	136	
84	46	8 (7.8)	368	3.3
95	34.5	5.5	190	1.9
4400	35	6	210	1.7
17	49	7.2	353	1.1
44	42	6.7	281	1.3
55	12.5	2.7	33.8	8.6

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj...7960

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..796D

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..796D

Scale of spectra taken with 1 pz. 13 in Boyden.

	1 div. "P" scale
H_β – 5018 (Fe+)	19.1 Å
H_β – 4686 (He+) —	17.1 Å
4686 – 4472	14.6
4472 – $H_{\gamma_{4342}}$	12.6
H_γ – 4227	11.5
4227 – $H\delta_{4102}$	10.3
$H\delta$ – H_ε (H)	9.1

Disp. X 1 prism

1d – 15 Å. H_β – H_γ 521 Å 35d 1d – 14.9 Å mica. magn. 6.8 x – 69

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

1926phae.proj..796D

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System