

KG

11365

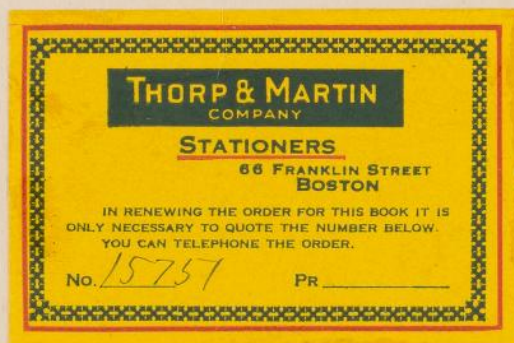
794

1

P. D.

(N O V A E)

KG 11365.794



Paul Davidovich

Measurements of spectra of Novae

Measurements of the tracings of spectra of Novae.
Nova Pictoris. Moll microphotometer. p.151.

1926.

P. Davidovich.

Measurements of spectra of Novae.

KG 11365.794



Nova Pictoris I 14521 (Handout plate)

Line	λ	τ	X	Δ	Pl.
4072	3	2	6	10.5	
4078	5.5	3	16.5		
4161	1	2			
4165	1	2			
4167	—	—			
4173	7.5	4			
4179	7	4			
4216	3.5	2.8	10		
4229	6	2.7			
4233	3.5	3.5			
4247	4	3.6			
4250	unmeasurable				
4259	3	1			
4261	3	1			
4272	variable				
4290	2	2			
4384	7.5	3.5			
4395	3.5	3.5			
4400	3.5	3			
4417	7.3	3.5			
4444	4.5	3			
4455	traces. But 4450 is strong				
4462	unvis				

Visual
mmts.
(trial pp 1-3)

2

N. Dist. X 14522

Line	λ_{E}	λ_{Z}	λ	Δ	Good plate, but slightly busy (compared to 14521)
4072	4.5	ripples	4.5		
4078	6.5	2	13	8.5	
4161	Too faint unres				
4165					
4168					
4173	7.5	3.2	22.5		
4175	7.	3.2	20		
4216	5.2	2	11.4		
4228	7	2.2	15.4		
4213	5	2.3			
4242	3.5	1.5			
4250	unresolvable				
4259	Not sharp enough Too busy and faint				
4264					
4272					
4290					
4384	7.5	3			
4395	3	2.5			
4400	2.5	2			
4417	7.6	3.2			
4444	7 (6.8)	2.5			
4455	traces				
4462					

Nova Pict.

Estimation of the background

Plate 14586 X, 1 pr. June 10,

Absorpt.

K

H+He

15

20

The stronger abs. are listed here to aid the drawing of the contin. background on the microphotometer tracings.

The numbers refer to the origin list of the abs. on May 28.

For further data see pages 164 ff.

Tracing - Blend at ## 8, 10, 28, 35, 38, 65, 72 of standard list.

Line#

- 10 on-tracings blend with ~~the~~ 9a. #9a is the 3982 and #10 is 3997-8 (see trace 814559)
- 28 " " see 814559
- 35 blend of 4258, 60, 62 and on-tracings it includes 4254 too. Take right-hand line.
- 38 On trac. blends of 4200 & 4203
- 65 - 4646-19

[About the identifi. of lines at #65 see tracing from 814559.]

Data concerning the lines measured on tracings. (Compiled July 1927).

Data concerning the lines measured on tracings. (Compiled July 1927).													
<u>no</u>		*21	4077	Si+	*38	4303	Ca	54	4469	Ti, Mn?	65a	4630	Fe+? Ti
H ₂													
*K		*H ₂			*40	4314	Heavy blend	*51	4481	Ca+ Fe	*65b	4634	Cr+
(line no 7 rejected later)													
*H+He		28	4144	13, rej.	*41	4320	Sc+	56	4489	Ti, Fe, Mn?			
(line no 10 rej. later)		*28a	4168	Ti				57	4501	Ti, Mn?	H ₂		
13, blend reject.		*31	4215	Si+	42	4325	Sc, Fe	*58	4502	Fe+	72	4924	
14, blend reject		32	4227	Ca, Fe of no much use	*47			*58a	4516	Fe+	73	5018	
16. 4046 4046 Fe		33	4233	Fe+ (V, Fe)	47	4375	Sc+, Y+	61	4564	Blend			
17. 4054 Ti, Fe		*33a	4242	Cr+	50	4400	Blend	*62	4572	Ti+			
		*34	4247	Si+	51	4417.6	Fe+bl						
20 4072 Fe		35	4261	a group, uncertain	52	4444	Blend	63	4588	Blend			

* 20 lines

(H₂ suppl.)

plate 814557 gives the abs.

Pre-maximum spectrum Nova Pictoris

measurement of tracings in order of dates (and number of plates)

X/4517 May 27				Supplement. measuram. different slit tracing	
L	D	W	21	means	
H ₂					
K					defect.
7					
H+H ₂					
10					
13					
14					
16	3.6	3.1	11.2		
17				$\frac{21}{20}$ 1.1	
20	3.3	4.3	14.2	$\frac{31}{32}$ 4.0	
21	4.7	2.8	13.2	$\frac{32}{33}$ 1.2	
H ₂	16.0	5.6	90		
29	9.3	4.1	38		
30	8.7	4.2	37	$\frac{34}{34a}$ 1.2	
31	2.7	3.0	08.7		
32	4.6	3.2	17.5	$\frac{31}{34a}$ 1.1	
33	5.0	3.6	18.0		
34	4.3	3.6	15.5	$\frac{45}{33}$ 4.3	
34a	3.0	3.8	11.4		
38	5.7	4.5	26	$\frac{40}{38}$ 1.2	
40	8.5	3.8	32		
41				$\frac{48}{59}$ 1.1	
42					
H ₂	13.6	5.2	71		
43	7.4	4.3	32	$\frac{58}{62}$ 1.2	
49	6.0	3.4	20		
52	6.0	4.6	28	$\frac{45}{47}$ 1.3	
54					
56				$\frac{32}{31}$ 1.9	
57					
58	2.5	2.9	22		
59					
61					
62	2.1	2.7	5.7		
63					
65					
H ₂	4.5	4.0	18		
72					

cut off on tracing.

X/4520 May 28				Supplement. measuram. different slit tracing	
L	D	W	21	means	
28	7.5		21		
K	71	10.5	746		
5	5.5		28		
H+H ₂	60	9.5	570	$\frac{K}{H_2}$ 1.31	
5	3.5		18		
8	4		32		
5.5	3.5		19		
16	4	3.5	14	$\frac{21}{16}$ 1.7	
6	5		30		
20	5.5	4	22		
21	7.7	3.5	27.2	$\frac{21}{20}$ 1.23	
H ₂	10.5	5.5	58/10	$\frac{H_2}{H_2}$ 5.5	
4.5	6.6	4.5	20	$\frac{21}{31}$ 1.5	
31	5.0	3.7	18	$\frac{31}{34a}$ 0.9	
32	6.5	3.1	20	$\frac{32}{33}$ 1.3	
33a	4.0	2.3	9		
34	6.5	3.2	20	$\frac{34}{41}$ 2.0	
34a	4.5	4.5	20	$\frac{40.5}{33}$ 1.25	
38	7	4	28	$\frac{40}{38}$ 1.18	
40	10.3	3.2	33	$\frac{48}{52}$ 1.7	
41	3.7	2.7	10		
42	4.7	3.5	14		
43	7.5	4.7	78	$\frac{H_2+H_2}{H_2}$ 1.05	
47	5.2	3	15.6	$\frac{H_2}{H_2}$ 0.7	
50	5.5	2.5	14	$\frac{H_2}{H_2}$ 7.45	
52	5.7	2.3	15.22	$\frac{H_2}{H_2}$ 7.6	
54	5.3	2.5	13.2	$\frac{H_2}{H_2}$ —	
56	5	3.7	19	$\frac{H_2}{H_2}$ —	
57	3.5	2.7	9.5	$\frac{32}{31}$ 1.1	
58	3.7	3.2	11.7.6	$\frac{H_2}{H_2}$ 2.40	
59	3.3	2.7	8.3		
61	2.7	2.5	6.7	$\frac{58}{62}$ 1.38	
62	3	2.7	8		
63	4.5	3	13		
65	2.7	3.5	9.5		
65a	6.2.6	4.22	5.7		
H ₂	72	3.5	8.8		
33	6	3.2	19		
29	10	3.2			
49	8.5	3.5			

double. The
two means

Shaded on violet

double
(violet group)

aberration:

$\frac{H_2 + H_2}{H_2}$ — H

814522
May 28

D W 21 R

5

See p. 6

means
of ratios for
the same date

double

1.3

double, meas.
less ref. $\frac{32}{33} 1.2$

2.0

 $\frac{H\delta}{21} 3.2$

1.5

signs of doubling

1.5

 $\frac{31}{34a} 0.8$ (814521 only) $\frac{H\delta}{32} 4.2$ 3.4 $\frac{H\delta}{37} 5.0$ 2.4

looks composite

1.2

 $\frac{48}{52} 1.8$ 1.9 $\frac{H}{H\gamma} 1.5$ $\frac{H\delta}{H\gamma} 1.25$ 1.1 $\frac{H}{H\delta} 17$ $\frac{H\delta}{H\gamma} 10.1$ 1.8 $\frac{H}{H\delta} 1.1$ $\frac{H\delta}{H\gamma} 16.0$ 1.3

1.3

2.2

double?

814521 May 28

(poor tracing)

K

(48) 11.3

H+H_E

48 9.8 470

10

~~35~~ ~~32~~

13

14

16 3.5 3.2 11.2

 $\frac{21}{16} 1.82$

17

20 3.5 3.8 13.3

 $\frac{22}{23} 1.5$

21 6.3 3.1 19.5

 $\frac{21}{20} 1.46$ H_δ 15.5 4.7 72 $\frac{H\delta}{32} 3.1$

22 8 4.7

 $\frac{H\delta}{32} 3.1$

31 4.0 3.1 12.4

 $\frac{21}{31} 1.6$

32 4.8 4.8 23

 $\frac{31}{34a} 0.8$

33 5.1 3.0 15.3

 $\frac{31}{34a} 0.8$

33a 3.9 3.0 11.7

 $\frac{34}{41} 2.77$

34 4.5 3.2 14.4

 $\frac{34}{41} 2.77$

35 4.0 3.8 15.0

 $\frac{34}{34a} 1.0$

38 6.4 4.0 25.6

 $\frac{32}{31} 1.9$

40 7.7 3.2 25

 $\frac{40}{38} 1.0$

41 2.5 2.1 5.2

 $\frac{48}{52} 1.84$

42

H_γ 11.7 4.8 56 $\frac{H}{H\gamma} 0.9$ $\frac{H\delta}{H\gamma} 1.3$

48 4.2 33

 $\frac{H}{H\gamma} 0.9$ $\frac{H\delta}{H\gamma} 1.3$

49 4.0 28

 $\frac{H}{H\gamma} 0.9$ $\frac{H\delta}{H\gamma} 1.3$

51 5.1 3.5 18

 $\frac{H}{H\gamma} 0.9$ $\frac{H\delta}{H\gamma} 1.3$

54 55 (3.4) (3.6) 12.2

 $\frac{H}{H\gamma} 7.1$ $\frac{H\delta}{H\gamma} 6.0$

56

 $\frac{H}{H\gamma} 7.1$ $\frac{H\delta}{H\gamma} 6.0$

57

 $\frac{H}{H\gamma} 7.1$ $\frac{H\delta}{H\gamma} 6.0$

58

 $\frac{H}{H\gamma} 7.1$ $\frac{H\delta}{H\gamma} 6.0$

59

 $\frac{H}{H\gamma} 7.1$ $\frac{H\delta}{H\gamma} 6.0$

61

 $\frac{H}{H\gamma} 7.1$ $\frac{H\delta}{H\gamma} 6.0$

62

 $\frac{H}{H\gamma} 7.1$ $\frac{H\delta}{H\gamma} 6.0$

63

 $\frac{H}{H\gamma} 7.1$ $\frac{H\delta}{H\gamma} 6.0$

65

 $\frac{H}{H\gamma} 7.1$ $\frac{H\delta}{H\gamma} 6.0$ H_β 4.2 3.0 12.6 $\frac{H}{H\gamma} 7.1$ $\frac{H\delta}{H\gamma} 6.0$

72

 $\frac{H}{H\gamma} 7.1$ $\frac{H\delta}{H\gamma} 6.0$

6

X14522*

May 28. (narrower slit) May 28
↓
Total
avg-es

	D	W	2I	R	
K	37	9.8	360	K 1.1 - 1.2	
H+H _e	34	9.5	323	H/H _e	(9.9)
16	—	—	—		
20	3.0	3.0	9	21 1.6	1.6
21	4.4	3.3	14.5	20 3.5	
H _δ	12.1	4.8	58	25 4.2	4.2
				32 3.7	(5.2)
29	7	4	—	25 5.3	4.8 5.1
30	7	3.7	26	33 5.3	
31	3	3.7	11	32 1.3	1.3
				33 3.4	(3.4)
32	3.4	4.0	13.6	31 —	(0.9)
33	3.6	3.0	11	34a	
33a	—	—	—	34	
34	2	2.2	4.4	34a	
38	—	—	—		(4.1)
40	6	3.7	22	40 —	1.2
				38	
H _γ	9	5.5	50	48 1.7	1.8 7
48	4.7	4.3	20	52	
49	4.3	3.7	16	58	(1.3)
52	2.7	3.7	10	62	(3.7)
58	3	4	12	25 1.1	1.1
62	—	—	—	48 1.3	1.5
H _β	—	—	—	31 3.6	(3.6)
				48 2.4	2
				2.5	

X14525 May 29 (new trig)

	D	W	2I	R	
	55.0	10.5	578	K 1.3	
	44.5	10.0	445	H/H _e	
	2.9	3.3	96		
	2.8	3.5	9.8	21 1.9	
	5.0	3.7	19	20 3.5	
	14.0	5.7	80	25 4.2	
	7.7	4.8	37	32 5.1	
	7.8	4.0	31	33 5.1	
	3.4	3.4	11.6	32 1.2	
	4.1	3.8	15.6	32 1.3	
	3.7	3.4	12.6	40 1.7	
	1.6	2.6	4.2	38	
	2.3	2.4	5.5		
	4.2	3.6	15		
	7.5	3.4	26	48 1.9	
	12.0	5.4	65	52 3.9	
	7.4	4.2	31	58 0.3	
	6.3	3.8	24	62	
	5.7	4.7	28	48 1.2	
	2.9	2.6	7.5	48	
	1.5	2.4	2.1	48 2.1	
	2.6	3.1	8		
	3.2	2.7	8.6		

X14528 May 29 (new tree)

#	WL or line				
(393)	K	63	12.7	800	$\frac{K}{H\epsilon} 1.0$
7	3944				
8	3961				
	H+He	65	11.8	767	
10	3981				
	4025				
	4030				
16	4045	3.7	3.8	14	$\frac{21}{20} 1.4$
17	4053				
20	4072	4.0	3.6	14.4	$\frac{28}{32} 4.5$
21	4077	6.0	3.3	20	$\frac{32}{32}$
H δ		19	6.2	118	$\frac{28}{33} 5.4$
29	4173	12.5	4.7	59	$\frac{33}{33}$
30	4178	11.5	5.3	61	
31	4215	3.8	3.8	14	$\frac{32}{33} 1.2$
32	4227	5.8	4.4	26	$\frac{40}{38} -$
33	4233	5.8	2.7	22	$\frac{48}{52} 1.5$
34	4247	3.7	3.2	12	$\frac{52}{52} 1.8$
34a	4250	2.3	2.7	62	
38	4302	-	-	-	$\frac{58}{62} 1.0$
40	4314	11.7	4.2	49	$\frac{58}{62} 1.0$
41	4320				$\frac{58}{62} 1.0$
42	4326				$\frac{58}{62} 1.0$
	H ϵ	16.7	6.0	100	$\frac{34}{34a} 1.9$
48	4384	10.5	5.7	60	$\frac{48}{48} 1.7$
49	4395	10.3	4.7		
52	4444	8.7	4.1	40	
54	4468				
58		2.6	2.7	7	
62		2.5	2.6	6.5	
64		4.0	3.5	14	

X14526	Z	D	W	2I	R
May 29	K	66	10.5	660	
34 lines	3944	4.5	2.5	9	$\frac{K}{H} 1.2$
	H+He	55	10	550	
10	3981 Ti	7.7	3.3	25	
13	4025 Ti	8	3.7	296	
14	4030 de	6.2	3.2	20	
16	4045 Fe	5	3.3	16.5	$\frac{21}{16} 1.6$
17	4053 Ti	6.7	4.3	28.8	
20	4072 Ti	6	3	18	
21	4077 Si	7	3.5	24.5	$\frac{21}{20} 1.4$
	H δ	18.5	4.5	83.3	$\frac{H\delta}{21} 3.7$
29	4144 Fe	5	4.7	15	$\frac{H\delta}{32} 3.2$
28	4168 Fe	6.2	5	16	
28a	4215 Si	5.0	3.2	23.5	$\frac{21}{31} 1.6$
31	4227 Fe	6.5	4	26	$\frac{31}{34a} 1.3$
32	4233 Si	7.5	2.5	18.8	$\frac{32}{33} 1.3$
33a	4242 Fe	3.2	3.0	9.6	$\frac{34}{34} 0.4$
34	4247 Fe	5.5	2.5	13.8	
34a	4250 Fe	3.3	3.7	12 E	$\frac{41}{34} 1.2$
35	4260 Fe	4	3.0	12	$\frac{32}{33} 1.4$
38	4302 Fe	7.2	3.5	25.2	$\frac{32}{33} 1.6$
40	4314 Si	10.3	3	20.9	$\frac{32}{37} 1.6$
41	4320 Si	7	5	35	$\frac{40}{38} 1.2$
	H ϵ	17	5	80	$\frac{H}{H\gamma} 1.2$
47	4375 Si	6.8	2.7	18.4	$\frac{H}{58} 1.2$
48	4400 Si	5.3	2.5	13.3	$\frac{H}{55} 4.7$
49	4395 Fe	10.5	3.7	34	$\frac{48}{52} 1.4$
52	4444 Fe	8.5	3.8	34	$\frac{48}{52} 1.4$
54	4468 Ti	5	3	15	$\frac{48}{52} 1.4$
55	4481 Mg	5.7	3.6	21	$\frac{48}{52} 1.4$
57	4501 Ti	4.2	2	8.4	$\frac{48}{52} 1.4$
58	4508 Ti	3.2	2.5	8.8	$\frac{58}{62} 0.8$
58a	4534 Ti	5	2.3	11.5	$\frac{H\delta}{H\gamma} = 1.0$
59	4563 Ti	4	2	8	
62	4572 Ti	4.2	2.5	10.5	$\frac{H\delta}{48} 1.9$
63	4582 Ti	6	3	18	
65	4629 Si	4.5	2.5	15.8	
	H β	5	3	15	
72	4624 Fe	4.5	3	13.5	

8 D W 2I R \bar{x} 14529 May 29, 1925.

R
Means

R	36.4	12.5	455	$\frac{K}{H+H_E}$	1.3	1.2	(10.9)
H+H _E	38.3	11.7	448				
16							
20*	5.5	3.7	20	$\frac{21}{20}$	2.8	1.8/4	(3.5)
21	4.7	3.3	16				
H _E	16	5.6	90	$\frac{H_E}{32}$	5.0	4.2	(5.5)
29	9.7	4.8					
30	10	4.5	45	$\frac{H_E}{32}$	5.6	5.1	(3.3)
31	27.3	2.7	738.133				
32	4.0	4.6	18	$\frac{32}{33}$	1.1	1.2	
33	4.5	3.6	16				
33a	-	-		$\frac{40}{38}$	1.9	1.6	
34	-	-					
38	6.5	3.6	23	$\frac{48}{52}$	1.5	1.4	(3.6)
40	10	4.3	43				
H _E	15	6.3	94	$\frac{58}{62}$	1.2	1.0	
42	7.7	5.0	39	$\frac{H_E}{H_E}$	1.0	1.1	
49	8.5	4.6	40				
52	6.5	2.8	25				(4.3)
58	2.0	2.5	5	$\frac{H_E}{21}$			
62	1.7	2.6	4.4	$\frac{34}{34a}$	(1.5)		(3.0)
H _E	3.2	2.7	8.6				
				$\frac{32}{31}$	2.2	1.7	
				$\frac{H_E}{48}$	2.4	2.0	

*probably some defect on plate
because #20 is abnormally deep.
Decided, however to include it.

L D W 2I R \rightarrow 14533 \leftarrow May 30

H ₃	16	9	45		
K	64	12	768	$\frac{K}{H}$	1.37
1	3	3.5	10.5		
H+H ₂	56	10	560		
10	8	3.5	028		
13	9.5	4.5	428		
14	7	4.5	31.5		
16	4	3.5	14	$\frac{21}{16}$	2.43
17	8.3	4.3	35.7		
20	6.3	3.7	23		
21	7.5	4.5	34	$\frac{21}{20}$	1.5
H ₀	17.7	6.3	60	$\frac{H_0}{H}$	3.0
28	5.2	4.7	24	$\frac{32}{32}$	
28a	5.5	4.5	15	$\frac{21}{31}$	2.2
31	4.5	3.3	15	$\frac{31}{31}$	1.7
32	6.5	5.3	32	$\frac{31}{31}$	1.7
33	5.2	3.7	19	$\frac{34}{34}$	2.6
33a	3.4	3.2	11	$\frac{34}{41}$	5.8
34	4.5	3.3	15	$\frac{34}{41}$	2.0
34a	2.5	3.7	9	$\frac{32}{33}$	5.4
35	4.5	5.5	24	$\frac{40}{38}$	1.35
36	5.7	4.52	26	$\frac{32}{31}$	2.2
40	10	3.5	35	$\frac{48}{52}$	1.4
41	2.3	2.5	5.8	$\frac{H_0}{H}$	1.9
42	2.7	1.7	4.6		
H _Y	16	5.5	88		
47	6.5	3.5	23	$\frac{48}{52}$	1.4
48	10.0	4.7	40	$\frac{H_0}{H}$	1.9
50	6.2	3	18.5		
52	8.3	4.5	4.0	$\frac{H_0}{H}$	1.9
54	6	4.2	25		
55	6	4	24		

57, 58) Defect only
58a 2.8 3.4 15 9.5 $\frac{58}{62}$ —
59 3.5 4.3

61	4.3	2.6	11	$\frac{H_0}{H}$	1.42
62	3.3	2.6	8.6	$\frac{H_0}{H}$	1.42
63	5.5	3.5	19	$\frac{H_0}{H}$	1.42
65	4.7	3.5	16	$\frac{H_0}{H}$	1.42
65a	2.6	2.7	13	$\frac{H_0}{H}$	1.42
71	3.5	3.7	12	$\frac{H_0}{H}$	1.42
72	4			$\frac{H_0}{H}$	1.42

14534 \rightarrow D W 2I R 9
May 30 # 16.5 10.5 78
K 66 13.5 831
3.5 4.5 16

H+H ₂	58	11	638	$\frac{K}{H}$	1.2
	8.2	2.6	30		
	8.5	4	34		
	6.5	4.5	29		
16	4	3.3	13	$\frac{21}{16}$	2.3
7	4.5	32			
20	5	4.5	23	$\frac{21}{20}$	1.3
21	7	4.3	30	$\frac{21}{20}$	1.3
H ₅	18.5	6.5	187	$\frac{H_5}{H}$	3.6
(28a)	4.5	3.7	17	$\frac{H_5}{32}$	4.2
	5.4	4.0	22	$\frac{21}{32}$	1.4
7	4.3	30	$\frac{32}{33}$	1.5	
(33a)	5.3	4	21	$\frac{32}{33}$	1.5
34	2.5	2.7	7	$\frac{34}{41}$	1.4
	5.5	5	28	$\frac{32}{31}$	1.4
38	7	4.1	28		
40	9.5	3.5	33	$\frac{40}{38}$	1.2
41	2	2.5	5	$\frac{48}{52}$	1.5
	2.5	2.5	6	$\frac{H_0}{H}$	1.3
H _Y	16	6	96	$\frac{H_0}{H}$	1.3
47	3.5	3	10.5	$\frac{H_0}{H}$	1.3
48	10.0	5	50	$\frac{H_0}{H}$	1.3
50	4.7	3	14	$\frac{H_0}{H}$	1.3
52	8	4.5	4.3	$\frac{H_0}{H}$	1.3
55	6.0	4.7	28	$\frac{H_0}{H}$	1.3
56	7	4	28	$\frac{H_0}{H}$	1.3
57	3.3	3.5	12	$\frac{H_0}{H}$	1.3
58a	2.3	2.5	5	$\frac{H_0}{H}$	1.3
59	2.5	2.7	5	$\frac{H_0}{H}$	1.3
61	2	2.5	5	$\frac{H_0}{H}$	1.3
62	2.4	2.7	6.5	$\frac{H_0}{H}$	1.3
63	4	3	12	$\frac{H_0}{H}$	1.3
65	4.3	3.5	14	$\frac{H_0}{H}$	1.3
65a	2.3	2.7	16	$\frac{H_0}{H}$	1.3
71	4.3	3.7	16	$\frac{H_0}{H}$	1.3
72	4	4.3	19	$\frac{H_0}{H}$	1.3

	10	W	21	R	814536
	May 30				
10	15	2.7	116	6.1	
11	57	12.5	712		
12	3.7	4.8	18		
13	58	12.5	638	$\frac{K}{H} 1.0 (0.98)$	1.2
14	11.5	3.5	40	$\frac{K}{H} 10.6$	
15	9.5	5.5	52		
16	6.5	4.3	28		
17	5.5	4.5	25	$\frac{21}{16} 1.1$	1.9
18	10	6.3	63	$\frac{H}{21}$	4.2
19	7.5	4	30	$\frac{21}{20} 0.9$	1.2
20	8.5	3.2	27	$\frac{21}{20} 3.7$	
21	23.5	6	141	$\frac{21}{31} 1.3$	1.6
22	7.5	3.5	26	$\frac{H}{32} 2.9$	3.3
23a	10.5	6.3	34		
24	8	4.3	49	$\frac{31}{34a} 1.7$	
25	11	4.5	26	$\frac{34}{34a} 1.4$	$\frac{34}{34a} 1.5$
26	7.5	3.5	20	$\frac{34}{41} 2.0$	(2.0)
27	4.5	3	19	$\frac{32}{33} 1.9$	1.8
28	5.5	5	28	$\frac{32}{33} 4.2$	
29	10	4.6	46	$\frac{40}{38} 1.8$	1.4
30	14.7	5.6	82	$\frac{40}{38} 5.4$	5.4
31	3.5	2.8	10	$\frac{48}{52} 1.4$	1.3
32	5.7	2.8	16		
33	23	4.2	97	$\frac{48}{52} 1.4$	1.3
34	7.7	3.4	26	$\frac{48}{52} 4.2$	
35	7.15	3.2	24	$\frac{32}{31} 1.5$	1.7
36	7.6	3.2	54	$\frac{32}{31} 1.5$	1.7
37	12.5	5.5	18	$\frac{58}{62} 0.9$	0.9
38	10.7	5	14	$\frac{H}{H} 1.5$	1.4
39	5	3.5	23	$\frac{H}{H} 1.5$	1.4
40	4.5	3	10	$\frac{H}{H} 1.5$	1.4
41	5.2	4.5	15	$\frac{H}{H} 1.5$	1.4
42	3.5	2.8	32	$\frac{H}{H} 1.5$	1.4
43	4	3.7	31	$\frac{H}{H} 1.5$	1.4
44	7.5	4.3	28	$\frac{H}{H} 1.5$	1.4
45	8.5	4.7	28	$\frac{H}{H} 1.5$	1.4
46	2.3	2.6	28	$\frac{H}{H} 1.5$	1.4
47	5	2.8	14	$\frac{H}{H} 1.5$	1.4
48	12.5	4.8	48	$\frac{H}{H} 1.5$	1.4

	17	W	21	R	814537
	May 31				
17	8	136			
18	11.5	532			
19	2.5	6	$\frac{K}{H} 1.2$		
20	49	9.3	456		
21	10.5	3.5	37		
22	8.5	4	34		
23	6.5	4	26		
24	4.7	4.5	21	$\frac{21}{16} 1.0$	
25	5.5	3.7	20		
26	4.7	3.5	16		
27	6.2	3.5	22	$\frac{21}{20} 1.4$	
28	17.3	4.5	79	$\frac{21}{34} 1.2$	
29	4	3.7	15	$\frac{H}{32} 3.7$	
30	6.2	3	18.6	$\frac{31}{34a} 1.7$	
31	6.5	3.3	21	$\frac{32}{33} 0.9$	
32	6.6	3.5	23	$\frac{34}{41} 1.9$	
33a	4.3	2.8	17	$\frac{34}{41} 1.5$	
34	6.2	3.5	11	$\frac{34}{41} 3.4$	
35	5.5	2.7	15	$\frac{40}{38} 1.2$	
36	7.6	4.3	33	$\frac{40}{38} 1.2$	
37	12.5	3.2	40	$\frac{48}{52} 1.3$	
38	3.6	2.5	9	$\frac{48}{52} 1.6$	
39	4.6	2.4	11	$\frac{32}{31} 1.2$	
40	16.5	4.7	78	$\frac{32}{31} 1.2$	
41	7.5	2.5	19	$\frac{48}{52} 1.3$	
42	10.5	3.7	39	$\frac{48}{52} 1.3$	
43	11.5	3.5	40	$\frac{48}{52} 1.6$	
44	6.5	3	20	$\frac{48}{52} 1.6$	
45	7.5	3.7	25	$\frac{48}{52} 1.6$	
46	5	2.5	12.5	$\frac{58}{62} 1.2$	
47	4.7	2.8	13	$\frac{H}{H} 1.0$	
48	4.5	2.2	10	$\frac{H}{H} 1.0$	
49	4.7	2.7	13	$\frac{H}{H} 1.0$	
50	4.5	2.5	11	$\frac{H}{H} 1.0$	
51	7	2.8	20	$\frac{H}{H} 1.0$	
52	4.5	2.8	18	$\frac{H}{H} 1.0$	
53	4.5	2.8	18	$\frac{H}{H} 1.0$	
54	4.5	2.8	18	$\frac{H}{H} 1.0$	
55	4.5	2.8	18	$\frac{H}{H} 1.0$	
56	4.5	2.8	18	$\frac{H}{H} 1.0$	
57	4.5	2.8	18	$\frac{H}{H} 1.0$	
58	4.5	2.8	18	$\frac{H}{H} 1.0$	
59	4.5	2.8	18	$\frac{H}{H} 1.0$	
60	4.5	2.8	18	$\frac{H}{H} 1.0$	
61	4.5	2.8	18	$\frac{H}{H} 1.0$	
62	4.5	2.8	18	$\frac{H}{H} 1.0$	
63	4.5	2.8	18	$\frac{H}{H} 1.0$	
64	4.5	2.8	18	$\frac{H}{H} 1.0$	
65	4.5	2.8	18	$\frac{H}{H} 1.0$	
66	4.5	2.8	18	$\frac{H}{H} 1.0$	
67	4.5	2.8	18	$\frac{H}{H} 1.0$	
68	4.5	2.8	18	$\frac{H}{H} 1.0$	
69	4.5	2.8	18	$\frac{H}{H} 1.0$	
70	4.5	2.8	18	$\frac{H}{H} 1.0$	
71	4.5	2.8	18	$\frac{H}{H} 1.0$	
72	4.5	2.8	18	$\frac{H}{H} 1.0$	

L	D	W	2L	R	X14538 May 31
H ₂	14	7.5	105	6.3	
K	58	11.5	667		
7	3	2.5	8		#226.?
HHe	48	10	480	$\frac{K}{H}$ 1.4	
10	5.5	4	22		
13	8	3.5	28		
14	5.2	3	15.6		
16	4.5	3	13.5	$\frac{21}{16}$ 1.2	
17	7	4.2	29		#17 Comp. on violet
20	4.2	3.5	15		
21	5.6	3	17	$\frac{21}{20}$ 1.1	
H ₂	16.5	4.3	71	$\frac{21}{31}$ 0.9	
28	8.5	4	34		
31	6.7	2.5	2.8	$\frac{31}{34a}$ 1.5	
32	7.3	3	22	$\frac{K}{32}$ 3.2 #32 Comp. on violet	
33	7.5	3	23	$\frac{32}{33}$ 1.0	
33a	4.5	3.8	17		
34	6.2	2.7	17	$\frac{34}{41}$ 1.4	
34a	3.6	3.5	13		
35	5.5	2.7	15	$\frac{34}{34a}$ 1.3	
38	7	4	28	$\frac{35}{33}$ 3.1 #226.	
40	11.5	3	25	$\frac{40}{38}$ 1.3	
41	4.4	2.8	12	$\frac{32}{31}$ 1.1	
42	6.5	2.5	16	$\frac{42}{48}$ 2.1	
H ₂	16	5.5	88		
47	7.7	3	23	$\frac{47}{52}$ 1.3	
48	7.7	2.7	21		
50	9.3	3.5	33		
52	6.5	2.5	16		
54	8.4	4	33.6		
56	5	2.5	12.5		
57	5	3	15	$\frac{58}{62}$ 1.0	
58	5.5	2.5	14		
61	4.7	2.6	12	$\frac{K}{H}$ 0.8	
62	5	3	15	$\frac{H}{H}$	
63	6.5	3	20		
65	3.5	3.0	10.5	$\frac{H}{55}$ 2.4 #3	
H ₂	4.5	4	18	$\frac{H}{55}$ 4.7	
72	3.5	2.2	7.7		

X14539 May 31	L	D	W	2L	R
Measured second time 10:16	-	-	-	-	11
	69	12	828		
	5	4.7	124	$\frac{K}{H}$ 1.5	1.4
	58	9.7	563		
	9	7	63		
	9	4	36		
	6	3.7	22		
	6	3.5	21	$\frac{21}{16}$ 1.4	1.2
	7	6.5	46		
	5.6	4.3	24		
	8.7	3.3	29	$\frac{21}{20}$ 1.2	1.2
	20.5	4.7	96	$\frac{31}{31}$ 1.7	
	4	3.5	14	$\frac{31}{34a}$ 1.5	
	5.5	3	17	$\frac{31}{34a}$	
	7.5	3.5	26	$\frac{45}{32}$ 3.3	
#	7.2	3.5	25	$\frac{32}{33}$ 1.2	
(33a)	3.0	2.5	7.5	$\frac{34}{41}$ 1.0	1.4
2	5	2.5	12.5	$\frac{34}{41}$	
34a	2.7	4.0	11.0	$\frac{34}{34a}$ 1.2	
	3.5	3	10.5	$\frac{40}{38}$ 3.8	
	6.5	4	26	$\frac{40}{38}$	
	12.5	3.5	44	$\frac{40}{38}$ 1.7	1.4
	4.5	3	13.5		
	5.7	3	17	$\frac{48}{52}$ 1.7	
#	17.5	5	88	$\frac{72}{31}$ 1.7	
48	6.3	2.7	17	$\frac{72}{31}$	
	6.11.2	2.7	16	$\frac{48}{48}$ 1.8	
#	8.5	3.3	28		
(55)	5.7	2.5	14		
	8	3.7	30		
	4.7	2.5	12		
	4.2	2.5	10.5	$\frac{58}{62}$ 1.4	
	4.3	2	8.6	$\frac{62}{62}$	
	4	2	8.5	$\frac{H}{H}$ 1.1	1.0
	3.5	2.7	8.5	$\frac{H}{H}$	
#	7.2	3.2	25	$\frac{H}{H}$ 3.6	
(656)	3.5	2.7	20	$\frac{H}{H}$ 5.3	
	6.5	3	16.5	$\frac{H}{H}$ 8.7	
	5.5	3	16.5	$\frac{H}{H}$	

2	2	W	25	R	
12					
47	69	12	828		
7	47	24	$\frac{K}{H} 1.5$		
H+H ₂	58	9.5	551		
10	8.5	7	60		
13	9.5	3.7	35		
14	6.5	3.7	24		
16	5.7	3.2	18 $\frac{21}{16} 1.5$		
17	7	5.7	40		
20	5.5	4.2	23 $\frac{21}{20} 1.3$		
21	8.7	3.3	29		
H ₂	16	5.7	57 $\frac{21}{31} 2.0$		
28	4	3.5	14 $\frac{28}{33} 2.3$		
31	5.5	2.7	15 $\frac{28}{33}$		
32	7.5	3.6	29		
33	7.2	3.5	25		
33a	3.3	2.5	8.2		
34	5	2.7	13.5 $\frac{34}{41} 1.1$		
35	3.5	2.7	9.5		
38	6.5	4	26		
40	12.5	3.5	44 $\frac{40}{38} 1.7$		
41	4.5	2.8	12.6		
42	5.7	2.7	15.4		
H ₂	17.5	5	88.2		
47	6.5	2.7	17.6		
50	6	3	18.-		
52	8.3	3.5	29		
54	5.7	2.5	14.3		
55	8	3.7	30 < 20		
57	4.5	2.2	99		
58	4.3	2.5	10.8 $\frac{58}{62} 2.2$		
59	4.5	2	9		
61	4	2	8		
62	2.5	2	5 $\frac{H\delta}{H\gamma} 0.66$		
63	7.5	3.3	25 $\frac{H\delta}{H\gamma} 2.8$		
65	4.5	3.5	19 $\frac{H\delta}{H\gamma} 2.8$		
HP	6.5	3.7	24 $\frac{H\delta}{H\gamma} 5.2$		
72	6	3	18 $\frac{H\delta}{H\gamma}$		

$\Sigma 14535$ May 31 (Second meas.)
H₂ cont off on tracing.

SHC H₂ comp. in violet
(4.5, 2.7, 6, 2)

1926phae.proj.: 235

1.) L S W 2I R → \bar{x} 14540, May 31. 13
Also see page 20

K	58	10.5	609			
7	5.5	3.5	49	$\frac{K}{H}$	1.6	(10.1)
H+He	55	10.5	578			
H _e	5.5	4.5	25			
10	9	4.3	39			
13	9	4	36			
14	6.5	3	20	$\frac{21}{16}$	2.3	1.5
16	6	2.3	13.8			3.4
17	7.5	3.5	26	$\left[\frac{H}{32} \right]$	3.0	$\frac{H}{81}$ 3.9
20	6	3.3	20			
21	9	3.5	32	$\frac{21}{20}$	1.6	(3.3) 1.3
40	18.3	5.5	180.7	$\frac{21}{32}$	13	1.5
28	3.5	3.5	12.3	$\frac{21}{33}$	4.8	26.1
31	7.3	3.5	26			(3.1)
32	7.5	4.5	34	$\frac{31}{34a}$	1.4	1.4
33	8.5	2.5	21	$\frac{32}{33}$	1.6	1.2
33a	5.5	2.6	14.3			
34	6.7	2.5	16.8	$\frac{34}{41}$	1.0	1.5 ± 0.2
34a	4.5	1.0	18			
35	6.3	3.5	22	$\frac{34}{34a}$	0.9	1.2
38	7.7	3.5	27			(4.1)
40	14.5	3.5	51	$\frac{40}{38}$	1.9	1.4
41	6.3	2.5	15.8	$\frac{48}{52}$	1.7	1.7
42	6.7	2.5	16.8			
48	28.5	5	143	$\frac{32}{31}$	1.3	1.5
47	7.5	3.2	23			
48-122	8.5	4.0	34			
50	10.5	4.7	49			(3.5)
52	7.5	4.5	34	$\frac{H}{43}$	2.3	2.2
54	10.5	5.5	53			
56	6.3	4.3	27			
58	5.5	3	16.5	$\frac{58}{62}$	1.1	1.0
59	5.5	3	16.5			
61	6.5	3	20	$\frac{H}{H_r}$	0.36	0.9
62	5.6	2.7	15			
63	8	3	24	$\frac{H}{55}$	1.4	
65	6.5	3.0	17.5	$\frac{H}{58}$	3.0	(3.6)
72	5	3.5	17.5			

14

D

W

25

R

X 14541

May 31
See page 20

55

6.4

9.0

65.6

3.4 3.0

See p. 20

L D W 2E R

X 14547. June 15

K	69	12.5	863	
9	6	5.5	33	$\frac{K}{H} 1.2$
H+He	70	10	700	
10	10	4.5	45	
13	11	5	55	
14	10	3.7	37	$\frac{H\delta}{H\gamma} 2.9$
16	6.5	3.5	23	$\frac{21}{16} 1.9$
17	11.5	4.5	52	$\frac{H\delta}{H\gamma} 3.5$
20	7	4	28	$\frac{21}{20} 1.5$
21	11.5	3.7	43	
40	24	5.2	125	$\frac{21}{34} 1.3$ Rem. HS
28	4.5	4.3	19.4	$\frac{31}{34} 1.8$
31	8.5	2.7	34	$\frac{32}{33} 1.0$
32	8.5	4.2	36	$\frac{H\delta}{H\gamma} 3.4$
23	10.5	3.5	37	
33a	6.5	3.3	21	
34	8.5	2.7	23	$\frac{34}{41} 1.1$
34a	4.5	4.2	19	
35	7.5	3.3	25	$\frac{34}{34} 1.2$
38	11.5	4.5 [2]	52	$\frac{32}{31} 1.6$
40	17.5	3.7	65	$\frac{40}{38} 1.3$
41	7.3	2.7	20	
42	8.5	2.7	23	
H γ	22.7	5.3	120	$\frac{48}{52} 1.4$
47	7.2	3.6	22	
48-133	7.5	3.5	26	$\frac{H\delta}{H\gamma} 2.0$
50	11.5	3.8	44	
54	8.5	3.7	31	
55	8.2	3.7	30	
56	8.5	4.5	38	
57	4.7	2.7	12.7	
58	5.3	2.2	11.7	$\frac{58}{62} 0.8$
59	5.4	3	16	
61	6.3	2.7	17	$\frac{H\delta}{H\gamma} 1.20$
62	5.5	2.7	14.9	
63	9.5	3.3	31	$\frac{H\delta}{H\gamma} 4.8$
65	6.5	3.7	24	$\frac{H\delta}{H\gamma} 1.2$
65a	6.5	3.7	24	
65b	6.5	3.7	24	
65c	6.5	3.7	24	
65d	6.5	3.7	24	
65e	6.5	3.7	24	
65f	6.5	3.7	24	
65g	6.5	3.7	24	
65h	6.5	3.7	24	
65i	6.5	3.7	24	
65j	6.5	3.7	24	
65k	6.5	3.7	24	
65l	6.5	3.7	24	
65m	6.5	3.7	24	
65n	6.5	3.7	24	
65o	6.5	3.7	24	
65p	6.5	3.7	24	
65q	6.5	3.7	24	
65r	6.5	3.7	24	
65s	6.5	3.7	24	
65t	6.5	3.7	24	
65u	6.5	3.7	24	
65v	6.5	3.7	24	
65w	6.5	3.7	24	
65x	6.5	3.7	24	
65y	6.5	3.7	24	
65z	6.5	3.7	24	

L 16 D W 21 R

L 14548. June 1

H ₃	24	7.5	180			
K	73	12.5	9125			
7	7.5	3.5				
H+He	66	9.7	640.2	$\frac{K}{H} 1.4$	$\frac{W}{H} 9.9$	1.3
10	10.5	4.5	47			
13	11.5	3.8	44			
14	9.5	4.5	42			
16	6	5.5	33	$\frac{21}{16} 1.0$		1.5
20	7.5	4.5	34	$\frac{21}{24} 4.2$		3.85
21	9.7	3.5	34	$\frac{21}{20} 1.0$	$\frac{W}{H} 3.6$	1.3
H ₀	25.5	5.6	143			
28	5.5	4.3		$\frac{21}{31} 1.5$		1.4
31	6.5	3.3	23	$\frac{31}{34} 1.2$	$\frac{W}{H} 3.0$	1.5
32	10.5	4.5	47			
33	7.2	3.3	24	$\frac{21}{32} 3.0$		3.5
33a	4.0	3.0	12			
34	6.5	3.7	24	$\frac{34}{41} 3.8$		2.5
34a	4.0	4.4	18	$\frac{34}{34} 1.3$		1.3
35	6	2.8				
38	10	4.7	47	$\frac{32}{33} 2.0$	$\frac{W}{H} 4.5$	
40	15	3.7	56	$\frac{40}{38} 1.2$		1.3
41	2.8	2.3	64			
42	5.5	2.7		$\frac{48}{52} 1.0$		1.5
H _γ	21	6.6	139	$\frac{21}{33} 6.0$		(4.7)
47	6	3.3	41	$\frac{32}{31} 2.0$		1.8
50	7.4	3.5	52	$\frac{47}{48} 2.5$		2.2
52	9.2	3.8	35	$\frac{W}{H} 3.8$		
54	7.5	3.7				
55	7.7	4.3	33*			
56	9.3	4.3				
57	5.7	3.7		$\frac{58}{62} 0.85$		0.9
58	3.5	2.7	94			
59	4.5	3		$\frac{H_0}{H_γ} 1.0$		1.10
61	3.7	2.7				
62	3.8	2.8	10.6	$\frac{H_0}{H_γ} 4.3$		4.6
63	7.5	4.3		$\frac{H_0}{H_γ} 1.5$		1.4
65	7.2	3.8	144			
65a	4.8	3.8	18			
H _β	4.8	2.3				
72	5.5	2.3				

125
73
3.75
875
9125

66
57
4.62
594
6402

47
105
45
585
720
47
115
58
720
345
437

2.3
255
56
1530
1275
4280

#32 half weight - because
of some defect on plate

95
578

X 14549, June 2

17

L	D	W	2I	R
H ₇	24	8.3		
K	60 58	9.5	570 550	
7	4.3	5		
H+H ₂	48.5	9	$\frac{426}{432}$	$\frac{K}{H}$ 1.43
10	7.5	4.3	32.2	
13	8.7	4.8	42.2	
14	7.5	3.3	25	
16	5.5	3	16.5	$\frac{21}{16}$ 1.3
17	6	3.8	23	$\frac{H_2}{21}$ 3.0
20	6	3.2	19	$\frac{21}{20}$ 1.1
21	7.4	3	22	$\frac{21}{20}$ 1.1
H ₁₅	15.7	4.2	66	$\frac{21}{34}$ 1.8
28	4	2.2	88	$\frac{31}{34}$ 1.1
31	4.7	2.5	12	$\frac{H_2}{34a}$ 3.1
32	5.5	2.8	21	$\frac{32}{33}$ 1.2
33	7	2.5	18	$\frac{32}{33}$ 1.2
33a	4.2	2.7	11	$\frac{34}{34}$ 1.0
34	5.2	2.5	13	$\frac{34}{34}$ 1.2
34a	3.0	3.7	11	$\frac{34}{34a}$ 3.7
35	5.2	3		$\frac{40}{38}$ 1.5
38	7.2	4	28.8	$\frac{48}{52}$ 1.4
40	10.7	4	43	$\frac{32}{31}$ 1.7
41	5.5	2.4	13	$\frac{H_2}{48}$ 1.8
42	5.4	2.5		
H ₈	12.6	4.5	57	
47	6.3	2.8	32	
50	5.7	2.5		
52	0.5	3.5	23	
54	5.5	3.3		
54/55	5.4	3.8	21	
56	6.2	3.8		
57	4.2	2.8		
58	3.6	3.3	12	$\frac{58}{62}$ 1.0
58a	4.7	2.3		
61	4.5	2.8		
62	3.5	3.5	12	$\frac{H_2}{H_1}$ 1.2
63	6.2	3.7		
65b	4.2	2.7	6.7	$\frac{H_2}{55}$ 3.1
H ₂	5.5	3.3		$\frac{H_2}{58}$ 5.2
72	5	3	18	

Compound

St. rel. side meas.

St.

St.

St.

V. 11.18

λ	D	W	21	R
18				
H ₁	25	7.3		
K	60	9.5	570	
7	3	7		$\frac{K}{H} 1.3$
H+H ₂	49	9.7	441	
10	7.5	4		
13	9	4.7		
14	7.5	3		
16	5.5	3.3	18.2	$\frac{21}{16} 1.3$
20	6.2	3.3	21	
21	7.3	3.3	24	$\frac{21}{20} 1.1$
H ₅	15.7	4.5	71	$\frac{21}{34} 1.7$
28	3	2.2		
31	5	2.7	14	$\frac{21}{34}$
32	5.5	4	22	$\frac{21}{33} 4.2$
33	6.7	2.5	17	
33a	3.7	2.3	85	
34	5.3	2.5	13.2	$\frac{34}{41} 0.9$
35	5.3	3		$\frac{32}{31} 1.7$
38	6.7	4	27	
40	11	4.2	46	$\frac{40}{38} 1.7$
41	5.7	2.7	15	$\frac{H_r}{48}$
42	5.5	2.7		
H _r	12.7	4	51	
47	6.2	2.5		
50	5.8	2.5		
52	7.5	3.8		
54	5.5	3.5		
55	4.8	3.8	18.2	
56	6.5	3.3		
57	4	2.7		
58	3.7	3	11	$\frac{58}{62} 1.0$
58a	4	2.5		$\frac{H_r}{H_r} 1.4$
59	4.5	3		
61	3.6	3	10.8	$\frac{H_r}{55} 4.0$
62	6	3.7		
63	4.27	2.3	11.6	$\frac{45}{58} 6.4$
65	5.5	3.7	20.1	
65B	5	3		
72				

X 145 #9. June 2 (Duplicate)

Broad, compound

	L	D	W	2T	R	Δ	\bar{X} 14550, June 2	19
H ₃	25.5	7.5						
K	68	10.5		711.4	$\frac{K}{H} 1.3$	115		
Z	5	3.3						
H+H ₂	56	7.5	10.7	532		142		
10	7.3	3.7				201		
13	11	4						
14	9	4			$\frac{32}{21} 1.8$			
16	5.3	3		16	$\frac{28}{16} 2.4$			
20	6.5	3.7		24	$\frac{145}{21} 3.2$			
21	9.5	4		38	$\frac{21}{20} 1.6$			
H ₁₀	21	5.7		120	$\frac{21}{34} 1.6$	199		
22	6.5	4						
21	5.5 4.5	4		18 23	$\frac{31}{34} 1.4$			
32	6.5	3.5		23	$\frac{145}{21} 4.1$			
33	7.5	2.8		21	$\frac{32}{33} 1.1$			
33a	3.8	2.4		9.1				
34	5.2	2.7		14	$\frac{34}{41} 0.7$			
34a	2.6	3.6		13	$\frac{34}{34a} 1.1$			
35	5	2.7						
38	7.5	4		30	$\frac{32}{33} 21$			
40	13	3.2		42	$\frac{40}{38} 1.4$			
41	4.6	4.5		21	$\frac{38}{38}$			
42	6	2.7			$\frac{48}{52} 1.6$			
H ₁₁	15.3	4.7		72	$\frac{145}{33} 5.7$			
47	7.9	2.5		36	$\frac{58}{62} 0.9$			
50	5.5	2.5						
52	7	3.2		22	$\frac{145}{19} 1.7$			
54	6	2						
55	5.0	3.8		19				
56	5.8	3.5						
57	3	2			$\frac{145}{55} 6.3$			
58	3.4	2.3		7.8				
58a	3.2	2						
59								
61	2.7	1.8						
62	3.5	2.4		2.4	$\frac{145}{18} 2.0$			
63	4.6	2.8						
65	3.4	2.5						
658	2.1	2.4		5.8				
H ₁₃	5	3.2		16				
72	4.7	2.5						

	D	W	2T	R	
20	15.6	7			
H ₃	49	10.3	505		
K	5.5	4.8		$\frac{K}{H}$ 1.0	
7	47	11	517		
H+He	7.2	5			
13	7.5	4.3			
14	5.7	3.3			
16	4.7	2.8	13.2	$\frac{21}{16}$ 1.5	
20	5.0	3.7	18.5	$\frac{45}{32}$ 4.2	
21	6.7	3	20	$\frac{21}{20}$ 1.1	
H ₈	19.5	6	117	$\frac{21}{20}$	
23	7.7	4.8		$\frac{21}{34}$ 1.2	
31	5.3	3.2	17	$\frac{31}{34a}$ 1.1	
32	7.7	4	28	$\frac{32}{33}$ 1.3	
33	7.7	3.2	22		
34	6.5	2.2	14.3	$\frac{34}{41}$ 2.1	
34a	4.0	1.0	16.0	$\frac{34}{34a}$ 0.9	
35	5.3	3.7		$\frac{24}{33}$ 5.3	
38	8.4	4.8	40.3	$\frac{40}{38}$ 0.9	
40	11.0	3.3	36.3		
41	3.8	1.8	6.8		
42	5.5	2.2		$\frac{42}{52}$ 2.4	
H ₇	17	5.5	94	$\frac{32}{31}$ 1.7	
47	5.7	2		$\frac{47}{48}$ 2.1	
48	11.0	4.1	45		
50	5	2.5			
52	7.5	2.5	19		
54	4.7	3.5			
55	6.4	4.0	25.6		
56	7	3.7			
57	3.5	2.2			
58	3.7	2.2	8.1	$\frac{58}{62}$ 0.5	
58a	3.3	2			
59	3.7	2.5			
61	3.7	2.5			
62	5.5	3	16.5	$\frac{48}{55}$ 1.2	
63	5.7	3.2			
65	3.4	3.0	10.2	$\frac{48}{55}$ 4.5	
65b	4.8	3.5	17	$\frac{48}{58}$ 1.5	
H ₆					
72	2.7	2.5			

(X 14541 May 31)

L	D	W	2I	R		
H ₃	4 ₂	11	462			
K	45	11	495			
7	5	43		K	1.6	1.5
H+He	29	39.7	241	H	2.1	(9.8)
10	6	5				
13	6.5	4 ₂				
14	5	3.5		W	4.4	3.9
16	5	3	15			
20	4.8	3.2	15.4	21	13	1.7
21	5.2	3.7	19.2	21	1.2	(3.6) 1.3
40	14	4.7	66	20		
22	7.7	3.8		21	1.5	1.7
31	4.7	3.8	13.2	31		(3.2) 1.4
32	5.5	3.7	21	31	3.4	3.2
33	5	3	15	21	1.0	1.1
34	7.7	2.5	9.2	34	1.5	1.1
35	3.7	4		41		1.2
38	6	3.5	21	34		(3.9)
40	8	3.3	26	40	1.2	1.4
41	2.5	2.5	6.3	38		
42	3.7	2.5		48	1.9	1.6
44	11	4.4	48	52	1.6	1.3
48	4.5	2.7	33	37	1.5	1.8
50	5.8	2.3		48		
52	5.5	3	17			(3.3)
54	3.5	2.7	14	58	0.8	0.9
56	4.5	3.5		62		
57	2.5	2				
58	2.5	2.3	4.6	48	1.6	1.5
59	2.8	2.3	6.4	44		
61	2.5	2.5				
62	2.3	2.5	5.8	48	4.7	
63	4	2.8		55		
65	2.0	1.8	3.6			
48	5.5	3.3	18.6	48	14	
72	4	3.5				

T_1	D	W	$2T$	R
22	26	8.7		
H_3	68	11.7	796	
K	6	4.3		
7	57	11.5	656	$\frac{K}{H}$ 1.2
$H+H_2$	8	3.5		
10	8	4.5		
13	8	3.7		$\frac{H_2}{21}$ 3.4
14	5.5	3.3	18	$\frac{21}{16}$ 1.8
16	8.5	5.0	28	
20	6.5	4.3		
21	9.5	3.5	33	$\frac{21}{20}$ 1.2
H_2	20.5	5.5	113	$\frac{21}{31}$ 1.7
28	10.5	4.7		
31	6	3.2	19	$\frac{31}{34a}$ 1.9
$31\frac{1}{2}$	7.5	3.7	28	$\frac{25}{32}$ 4.0
33	7.5	3	23	
33a	4.0	2.7	12	
34	5.6	3	17	$\frac{34}{41}$ 1.1
34a	3.0	3.2	10	
35	4.5	4.5		$\frac{34}{34a}$ 1.7
38	8	4	32	$\frac{32}{33}$ 1.2
40	12.5	3.3	41	$\frac{40}{38}$ 1.3
41	5	3	15	$\frac{40}{33}$ 4.9
42	6.5	3		$\frac{32}{31}$ 1.5
H_1	16.5	6	99	
47	6.5	3.3	42	$\frac{48}{52}$ 1.4
50	10.5	3.5		$\frac{48}{48}$ 2.3
52	8.5	3.5	30	
54	5.5	3.8	21	
55	6.5	4.5		
56	3.5	3		
58/58a	3.5	2.3	-7	$\frac{58}{62}$ 0.8
59	3.7	2.2		
61	4	2.8		
62	3.5	2.5	9	$\frac{H_2}{H_1}$ 1.1
63	6.5	3.7		
65	5	4.3	10	$\frac{H_2}{55}$ 5.4
65a	3.5	2.3	23	
H_2	5.5	4.2		
72	4.5	3.5		$\frac{H_2}{58}$ 16

X 14554 June 3

K 14557 June 3

23

L	D	W	25	R
H ₃	—	—		
K	—	—		
7	9.7	3.5		$\frac{K}{H} = 1.2$
H+He	61	11.5 10.2		$\frac{W}{H} = \frac{11.5}{10.5}$
10	9	5.5		
13	12.5	6		
14	9.5	4.7		$\frac{W}{21} = 3.0 \quad 3.2$
16	7.2	4	29	$\frac{21}{16} = 1.5 \quad 1.7$
17	11.5	6		
20	9.5	4.5	43	$\frac{21}{20} = 1.0 \quad 1.1$
21	11.5	3.7	43	$\frac{21}{20} = 3.6$
40	24	5.2 ^(5.4) _W	125	$\frac{21}{13} = 2.5 \quad 2.1$
23	16.5	3.2		
31	5.5	3	16.5	$\frac{31}{16.5} = 0.8 \quad 3.1$
32	9	3.5	32	$\frac{W}{32} = 4.0 \quad 4.0$
33	defect repl.			$\frac{32}{32} = 1.2$
34	4	3.2	12.8	$\frac{34}{34} = 1.2 \quad 1.2$
34a	5	4.3	22	$\frac{34}{34a} = 0.6 \quad 1.2$
5	5.7	5		
38	11.5	4.5	52	$\frac{W}{38} = 4.3$
40	16	3.5	56	$\frac{40}{38} = 1.1 \quad 1.2$
41	4.5	2.5	11	
2	7.5	2.2		$\frac{48}{52} = 1.3 \quad 1.4$
44	21	5.2	109	$\frac{44}{33} = 1.3 \quad (4.9)$
47/48	8.7	2.5	55	$\frac{47}{31} = 2.0 \quad 1.7$
50	14.5	3.8		
2	12.5	3.3	41	$\frac{W}{2} = 3.4$
5	6.6	3.2	21	$\frac{W}{48} = 2.0 \quad 2.15$
6	9.3	4.2		
7	6	2.5		
58	4.4	2.5	11	$\frac{58}{62} = 1.0 \quad 0.9$
58a	5	2.7		
61	5.2	2.5		$\frac{W}{14} = 1.15 \quad 1.1$
62	4.5	2.5	11	
3	8.5	3.5		
65	3.2	3.0	9.6	$\frac{48}{55} = 6.0 \quad 5.7$
48	7.5	3.5 ^(3.8) _W	26	$\frac{48}{48} = 1.1$
72	5.5	3.3		

14558 June 4

L	D	W	2L	R	Δ
H ₈	21	8.7			
K	54	12.3 11.3	664 610	$\frac{K}{H}$ 1.24	
7	3.3	4.5			
H+H ₂	4546	9.5 9.7	428 446		
10	7.5	5.5			
13	8.7	3.8			
14	7.5	4			
16	5	3.5	17.5	$\frac{21}{16}$ 1.3	
17	7	4			
20	4.7	3.8	18	$\frac{21}{21}$ 3.4	
21	7.3	3.3	24	$\frac{21}{20}$ 1.3	
45	18.3	4.5	82		
28	3.5	3.5		$\frac{21}{31}$ 1.7	
31	6.2	2.6	13.6	$\frac{31}{34}$ 1.4	
32	7.3	3	22	$\frac{32}{32}$ 3.7	
33	7.3	3	22	$\frac{32}{33}$ 1.0	
33a	3.8	2.7	10		
34	6.3	2.5	16	$\frac{34}{34}$ 1.5	
34a	3.3	3.8	12	$\frac{34}{34a}$ 1.3	
35	6.5	2.8		$\frac{34}{35}$ 3.7	
38	9	4.38	36	$\frac{40}{37}$ 1.4	
40	13.5	3.7	50	$\frac{40}{38}$ 3.7	
41	4.5	2.5	11	$\frac{40}{33}$ 1.7	
42	7	2.5		$\frac{40}{32}$ 1.4	
44	17.5	5	88	$\frac{48}{52}$ 2.3	
47	7.5	2.5	37	$\frac{48}{48}$ 1.0	
50	11.5	3.2			
52	8.5	3	26		
54	5.7	2.7	17		
55	6.0	4			
56	6.5	2.5			
57	3.5	2.5			
58	3.5	2.3	8	$\frac{58}{62}$ 1.0	
58a	4.5	2			
59	3.7	2			
61	3.8	2	7.6	$\frac{H\delta}{H\gamma}$ 0.44	
62	7	2.5			
63	3.5	2.3		$\frac{H\delta}{H\gamma}$ 2.3	
65	3.6	3	8.3		
65b	7.5	3	23	$\frac{H\delta}{H\gamma}$ 4.9	
72	4.5	2.8			

	D	W	2T	R	
26					
H_γ	23	9			
K	56	10.5	588		
2	3.5	4.5		$\frac{K}{H} 1.3$	
$H+H_\alpha$	49	8.7	426 441		
10	7.5	4.5			
13	9	4.8			
14	8	4.5		$\frac{21}{21} 4.0$	
16	6.3	3.5	22	$\frac{21}{16} 1.4$	
17	8	5			
20	6	4	24	$\frac{21}{20} 1.3$	
21	8	4	32		
25	21	6	126	$\frac{21}{31} 1.9$	
28	3.8	3.8		$\frac{31}{34a} 1.4$	
31	5.5	3 (1)	16.5	$\frac{21}{32} 5.5$	
32	6	8.8	23	$\frac{32}{33} 1.3$	
33	6	3	18	$\frac{34}{41} 1.4$	
33a	3.0	2.2	6.6	$\frac{34}{34a} 1.2$	
34	4.7	2.8	13.6	$\frac{34}{34a} 1.2$	
34a	3.2	3.2	12.0	$\frac{34}{34a} 1.2$	
35	1.7	3.3		$\frac{34}{34a} 1.2$	
38	8.4	4.5	38	$\frac{34}{33} 7.0$	
40	12.5	3.5	44	$\frac{40}{38} 1.2$	
41	4	2.5	10	$\frac{48}{52} 1.5$	
2	5.5	2.7		$\frac{48}{52} 1.5$	
H_γ	16.3	5.5	90	$\frac{48}{52} 1.5$	
47	5.7	3.3	42	$\frac{48}{52} 1.5$	
48	7.3	2.8		$\frac{48}{52} 1.5$	
52	8.3	3.2	27	$\frac{58}{62} 1.4$	
52	6.5	3.3		$\frac{58}{62} 1.4$	
53	6.0	3.8	23	$\frac{58}{62} 1.4$	
56	7	4.5		$\frac{58}{62} 1.4$	
57	4.3	3		$\frac{58}{62} 1.4$	
58/58a	3.5	2.7	9.4	$\frac{58}{62} 1.4$	
59	2.7	2.2		$\frac{58}{62} 1.4$	
61	4	2.5		$\frac{58}{62} 1.4$	
2	3.3	2	6.6	$\frac{58}{62} 1.4$	
3	6.3	3		$\frac{58}{62} 1.4$	
656	3.5	2.5	8.8	$\frac{58}{62} 1.4$	
H_β	7.3	2.8	20	$\frac{58}{62} 1.4$	
722	4	3		$\frac{58}{62} 1.4$	

$\bar{x} 14559$. June 4

F14561 June 4 27

L	D	W	2	I	R
H ₃	28.5	10.3			
K	61	11	671		
7	3.5	4.7			
H+H ₂	42.62	10.5	481.546	$\frac{K}{H}$	1.5 2
10	7.5	4.8			
12	9.3	4.3			
14	8.8	4.3			
16	5.5	3.8	21	$\frac{21}{16}$	1.9
17	9.5	4.5		$\frac{21}{21}$	4.0
20	6.7	4	27	$\frac{21}{20}$	1.4
21	9.8	4	39		
H ₁₅	23	6.8	156	$\frac{21}{31}$	2.6 ?
28	4.8	3.7			
31	5.3	2.8 3.0	15	$\frac{31}{34a}$	1.2
2	6	4.3	26	$\frac{H_0}{32}$	6.0
3	7.5	3	21	$\frac{32}{33}$	1.0
33a					
4	5.5	3.5	19	$\frac{34}{41}$	1.9
4a	3.7	3.7	13	$\frac{34}{34a}$	1.5
5	5	3.2			
8	9.2	4.3	40	$\frac{H_0}{33}$	7.0
40	13	3.7	48	$\frac{40}{38}$	1.2
41	3.7	2.7	10	$\frac{48}{52}$	1.3
2	5.5	2.7			
H ₂	18	5.7	103	$\frac{H_0}{33}$	6.8
49	6.5	2.8	51	$\frac{32}{31}$	1.7
50	7.3	2.7			
52	10	4	40	$\frac{H_0}{48}$	2.0
54	6.7	4.3	21		
55	7.6	4			
7	4.5	3.2			
8/58a	4.3	2.3	10	$\frac{58}{62}$	0.9
9	4.5	2.2			
61	4.2	2.8		$\frac{H_0}{H_V}$	1.5
62	3.8	3	11	$\frac{H_0}{55}$	7.4
63	8	3			
65a	4.7	2.8	12	$\frac{H_0}{58}$	15.6
65b	4.0	4.0	45		
113	9.5	4.2			
12	5	3.3			

28

D W 25 R Δ

X14563 June 4

Cut off on tracing

K	74	11.3	836	$\frac{K}{H}$ 1.3	105	1.43
7	6.5	3.7	24			

H+H ₂	58	11.5	(10.1) 667		85	
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10	12	3.7	44.4	$\frac{H+H_2}{32}$ 5.3		5.1
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13	14	4.8	67.2	$\frac{H+H_2}{21}$ 4.6		4.0
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14	11.5	4.3	49.5			
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16	9	3.5	31.5	$\frac{21}{16}$ 1.6		1.6
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17	12	4.5	54			
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20	8.3	3.6	24.30	$\frac{21}{20}$ 1.6		1.4
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21	12.0	4	(3.8) 50.8			
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H ₂	33	6.7	(5.7) 221	$\frac{21}{34}$ 1.8	60	2.0
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22	6.5	4	26			
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J ₁	9.5	2.8	3.1	26.6	$\frac{31}{34a}$ 1.3	(3.0) 1.3
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2	10.5	4	42			
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3	12	2.7	32.4	$\frac{32}{33}$ 1.3		1.1
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3a	5.5	3.5				
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4	9.5	2.5	23.8	$\frac{34}{41}$ 1.8		1.7
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4a	5.5	3.6	20	$\frac{41}{34a}$ 1.2		1.4
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8	13	4.8	(4.2) 62.4			
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40	19	4	76	$\frac{40}{38}$ 1.2		1.3
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1	6	2.2	13.2	$\frac{48}{45}$ 1.5		1.4
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2	25	7	175	$\frac{25}{33}$ 6.9	43	6.1
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47	16.8	2.6	23.4	$\frac{32}{31}$ 1.5		1.5
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50	9.3	2.5	23.3	$\frac{34}{48}$ 2.7		2.3
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2	11	3.8	39.9			
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4/5	10.5	3.8		$\frac{58}{62}$ 0.9		1.0
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6	8.2	3.0	36			
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7	5	2	10			
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8	5.5	2.4	13.2	$\frac{H+H_2}{H_2}$ 1.2		1.41 (X14558-zij)
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9	6.7	2.5	16.8			
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61	5.3	2.8	14.8	$\frac{H+H_2}{55}$ - min		34
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2	10.5	3.8	39.9			
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3	6.5	2.8	18.2	$\frac{H+H_2}{58}$ 17		
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5a	5.7	2.8	46			47
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He	10	4.6	(3.7) 15			
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72	6	2.5				
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L A w $2I$ R Δ

June 5 $\Sigma 14566$

29

K	39.3	10.3	405		
H+H ₂	35	10 10	350	$\frac{K}{H+H_2}$	1.32
16	3	2.6	7.8		
17	5.9	4.8		$\frac{21}{16}$	2.5
20	4.0	3.3	13.2		$\frac{H_2}{21}$ 5.0
21	6.0	3.3	20	$\frac{21}{20}$	1.5
H ₂	16.6	6.0	100	$\frac{21}{32}$	2.0
31	4.3	2.4 2.9	10.3	$\frac{31}{34a}$	1.3
32	4.5	4.0	18.9	$\frac{32}{33}$	1.2
33a	2.7	2.8	7.6		
34	3.8	2.5	9.5	$\frac{34}{41}$	1.4
34a	2.0	3.7	7.4	$\frac{34}{34a}$	1.3
38	7.0	3.9	21.3		
40	10.2	3.3	34	$\frac{40}{38}$	1.3
41	2.8	2.5	7.0		
H ₂	14.0	5.0	7.0	$\frac{48}{52}$	1.2
52	7.4	3.7	21		
55	5.5	3.3	18.2	$\frac{32}{33}$	1
58	4.0	2.8	11.2	$\frac{58}{62}$	0.8
58a	4.0	3.1	12.4	$\frac{H_2}{H_2}$	1.4
62	4.5	3.2	14.4		
65b	4.0	2.7	10.8	$\frac{H_2}{55}$	5.5
H ₂	8.2	4.5	37	$\frac{H_2}{58}$	9
48	8.7	3.7	32	$\frac{H_2}{33}$	6.6
33	5.5	2.8	15	$\frac{32}{31}$	1.7
				$\frac{24}{48}$	2.2

June 5 X 14567

30	δ	α	$2I$	R	Δ
K	43	12	520		
H_4H_2	41	12	490	$\frac{K}{H}$ 1.1	
16	4.5	4	18	$\frac{21}{16}$ 1.3	
20	4.5	3.6	16	$\frac{21}{20}$ 1.5	
21	7.2	3.3	24	$\frac{21}{20}$ 1.5	$\frac{H_5}{21}$ 5.0
H_5	18.5	6.7	124	$\frac{21}{31}$ 1.8	
31	4	3.2	12.8	$\frac{31}{32}$ 1.3	$\frac{H_5}{32}$ 5.0
32	4.8	5.0	24	$\frac{34a}{32}$	
33a	3.2	2.8	12.2	$\frac{34}{32}$	
34	4.5	2.8	12.6	$\frac{34}{41}$ 1.1	
34a	2.8	3.7	10.0	$\frac{34}{34a}$ 1.3	
38	9.4	4.7	44		
40	11	3	33	$\frac{40}{38}$ 0.75	
41	4	2.7	12	$\frac{41}{38}$ 1.3	
H_5	15.4	5.5	84	$\frac{48}{52}$ 1.0	
52	10.0	3.5	55		
55	5.4	3.7	20		
58	3.7	3	11	$\frac{58}{62}$ 1.2	
58a				$\frac{H_5}{H_7}$ 1.5	
62	3.2	2.7	8.6	$\frac{H_5}{55}$ 6.2	
65	3.0	2.4	7.2		
H_5	8.0	4.5	36	$\frac{H_5}{58}$ 11.3	
48	10.0	3.7	37	$\frac{H_5}{33}$ 6.5	
33	5.6	3.3	19	$\frac{72}{31}$ 1.8	
				$\frac{H_5}{48}$ 2.2	

June 5, 14568, - 31

Z	D	W	2L	R	Δ
K	18	9.5	171		
H+He	16.3	9.5	155	$\frac{K}{H} 1.1$	$\frac{W}{10.0} 1.2$
16	2.8	2.8	7.8	$\frac{21}{16} 1.6$	1.8
20	2.8	2.8	7.8	$\frac{21}{20} 1.6$	1.8
21	4	3.2	13.2	$\frac{21}{20} 1.6$	1.8
21.8	12	6	72	$\frac{21}{31} 1.6$	1.8
31	3	2.7	8	$\frac{21}{31} 1.6$	1.8
33a	2.7	2.1	6.5	$\frac{31}{34} 1.3$	1.3
34	4	2.2	9	$\frac{34}{41} 1.1$	1.2
34a	2.2	3.0	6.6	$\frac{34}{41} 1.1$	1.2
38	6	3.9	23	$\frac{34}{34} 1.3$	1.3
40	8	3.2	26	$\frac{40}{38} 1.1$	1.1
41	2.9	2.8	8	$\frac{48}{52} 1.3$	1.2
45.2	10.8	5.6	60	$\frac{52}{32} 1.1$	1.2
55	5.5	3.6	20	$\frac{32}{33} 1.1$	1.2
58	4.4	3.2	14	$\frac{58}{62} 1.4$	1.0
62	2.7	2.4	6.5	$\frac{58}{62} 1.4$	1.0
65b	2.6	1.8	4.7	$\frac{48}{44} 1.2$	1.4
71	5.6	3.8	21	$\frac{48}{55} 5.1$	5.6
72	7.2	3.7	27	$\frac{48}{58} 10.7$	10
72	4.0	3.8	15	$\frac{48}{58} 5.1$	6.1
73	4.3	3.2	14	$\frac{32}{31} 1.9$	1.8
				$\frac{48}{48} 2.2$	2.2

very small deflections on this tracing.

232

D W 2I R Δ

June 6 \bar{X} 14572

K

48 11.5

550 561

 $\frac{K}{H}$ 1.43

H+He

44.5 9.3*

400.14

16

5.5 4

22

 $\frac{21}{16}$ 1.3

20

5.4 3.2

17

 $\frac{21}{20}$ 1.7

21

9 3.2

29

 $\frac{H\delta}{21}$ 4.1

Hδ

22.6 6.0

136

 $\frac{H\delta}{31}$ 2.0

31

6 2.4 2.6

14.4

 $\frac{H\delta}{31}$ 1.3 $\frac{H\delta}{32}$ 6.8

33a

3 2.7

8

34

6.7 2.4

16

 $\frac{34}{41}$ 1.6

34a

9 3.2

11

 $\frac{24}{34}$ 1.5

38

9 4.2

38

40

12 3.1

37

 $\frac{40}{38}$ 1.0

41

4.3 2.2

9.5

 $\frac{48}{52}$ 0.9

52

16.2 5

81

 $\frac{32}{33}$ 1.0

55

77.5 2.3

29

58

3.7 2.8

12.6

 $\frac{58}{62}$ 0.8

62

4.5 3

10.4

 $\frac{H\delta}{H\gamma}$ 1.7

65b

(2.8 2.5)

13.5

 $\frac{H\delta}{H\gamma}$ 10.1

Hβ

9 4.8

7

 $\frac{H\delta}{H\gamma}$ 13.6

48

9.5 2.7

43

 $\frac{H\delta}{H\gamma}$ 13.6

32

5.4 3.7

26

 $\frac{H\delta}{H\gamma}$ 6.8

33

7.5 2.7

20

 $\frac{32}{33}$ 1.4 $\frac{H\delta}{H\gamma}$ 3.1

48

L D W 2I R Δ

June 6 814573

33

K	45 ⁶	10.5	470	483		
H+He	40	10.5	400 ²⁰	$\frac{K}{H}$ 1.2	$\frac{W}{10.0}$	1.32
16	4.8	3.7	18	$\frac{21}{16}$ 2.2		1.8
20	11.6	3.4	Defective			
21	9.6	3.8	39	$\frac{21}{34}$ 2.3	$\frac{W}{3.5}$	2.2
25	24	6.5	$\frac{W}{6.3}$ 156	$\frac{H}{H_0}$ 4.0		4.1
31	6.2	2.8	17.4	$\frac{31}{34}$ 1.9		1.6
33a	3.6	2.1	7.6			
34	7.2	2.6	18.7	$\frac{34}{41}$ 1.6		1.6
38	11	4	44	$\frac{34}{34}$ 2.1	$\frac{W}{4.1}$	
40	14.5	3.2	47	$\frac{40}{38}$ 1.1		1.1
41	5.5	2.1	11.6	$\frac{48}{52}$ 1.6		1.2
52	19	5.1	97	$\frac{52}{32}$ 1.0	$\frac{W}{3.5}$	1.0
55	8.5	2.5	15			
58	5	2.5	12.5	$\frac{58}{62}$ 1.0		0.9
62	4	3.2	12.8	$\frac{H_0}{H_1}$ 1.6		1.7
65b	4.3	2	13			
71	9	4.2	$\frac{W}{4.5}$ 38	$\frac{H_0}{55}$ 10.4		10.3
72	12.4	3.7	45	$\frac{H_0}{58}$ 12.0		12.8
32	6.4	4.3	28	$\frac{245}{32}$ 5.6		6.2
33	8.6	3.3	28	$\frac{245}{33}$ 5.5		6.2
				$\frac{32}{31}$ 1.7		1.6
				$\frac{H_1}{48}$ 2.2		2.7

34

W 21 R Δ

June 7 X 14575

7

1+He

16

20

21

218

31

33a

34 34a

38

40

41

2452

55

58

62

65b

Hβ

48

32

33

61 13 793 $\frac{K}{H}$ 1.4

48.5 ~~11.7~~ ~~6.7~~ $\frac{21}{16}$ 1.69

6.3 4 25 $\frac{21}{16}$ 1.69

6.5 4.5 29 $\frac{21}{20}$ 1.6

10.5 ~~3.8~~ 4.5 ~~47~~ $\frac{21}{20}$ 1.6

20 7.4 148 $\frac{21}{31}$ 1.8 $\frac{48}{21}$ 2.2

7 3.2 22.4 $\frac{31}{34a}$ 2.5

— — $\frac{32}{33}$ 1.0

6.7 3 20 $\frac{34}{41}$ 1.7

2.7 2.5 9 $\frac{34}{41}$ 1.7

12 5 60 $\frac{34}{34a}$ 2.2

13.3 3.2 43 $\frac{40}{38}$ 0.7

3.7 2.2 12 $\frac{48}{52}$ 1.1

16.4 6 4.0 98 $\frac{48}{52}$ 1.1

9.0 3.7 2.8 10.4 $\frac{58}{62}$ 0.7

3.5 2 7 $\frac{58}{62}$ 0.7

4.3 2.2 9.5 $\frac{48}{44}$ 0.8

2.8 2.8 7.8 $\frac{48}{55}$ 7.3

10.3 ~~4.5~~ 5.8 $\frac{48}{58}$ 10.6

10.5 3.7 39 $\frac{48}{58}$ 10.6

7.8 3.7 29 $\frac{48}{32}$ 5.1

6.7 4.3 29 $\frac{48}{33}$ 5.1

— — $\frac{32}{31}$ 1.3

— — $\frac{48}{48}$ 2.5

— — $\frac{32}{31}$ 1.3

— — $\frac{48}{48}$ 2.5

— — $\frac{32}{31}$ 1.3

— — $\frac{48}{48}$ 2.5

— — $\frac{32}{31}$ 1.3

— — $\frac{48}{48}$ 2.5

— — $\frac{32}{31}$ 1.3

— — $\frac{48}{48}$ 2.5

— — $\frac{32}{31}$ 1.3

— — $\frac{48}{48}$ 2.5

— — $\frac{32}{31}$ 1.3

— — $\frac{48}{48}$ 2.5

— — $\frac{32}{31}$ 1.3

— — $\frac{48}{48}$ 2.5

— — $\frac{32}{31}$ 1.3

— — $\frac{48}{48}$ 2.5

— — $\frac{32}{31}$ 1.3

11.7 adopted for width plotting

485
135
2425
970
485
50625

λ	D	W	$2I$	R
$H\gamma$	34	11.3	384.	
K	77	13	1001	$\frac{K}{H} 1.314$
7	9.5	6	57	
$H+H_2$	62	12 11.5	70 713	
10	12	4.7	56.4	
13	10	4.5	45	
14	(9)	(4)	36	
16	7.7	3.2	24.6	$\frac{21}{16} 2.0$
17	9	4.7	42.3	$\frac{45}{21} 3.0$
20	8	3.5	28	
21	13.5	2.7	50	$\frac{21}{20} 1.8$
$H\gamma$	25	6	150	$\frac{21}{39} 1.5$
22	6.3	2.3	20.8	$\frac{31}{34} 2.5$
31	11	3	33	$\frac{45}{32} 3.3$
2	11.5	4	46	$\frac{42}{52} 1.4$
3	11.7	3.7	43.3	
$H\gamma$	11.5	3.0	33	$\frac{34}{41} 1.7$
4	7	0.3	23	$\frac{34}{34} 2.5$
8	16	4	64	
40	17.5	3.3	57.7	$\frac{40}{38} 0.9$
1	7.5	2.5	18.8	$\frac{22}{33} 1.1$
2	10	2.7	27	
$H\gamma$	20	4.7	94	$\frac{45}{44} 1.6$
47	11.5	2.7	31	$\frac{45}{44}$
48	15	3.7	53.5	$\frac{45}{55}$
52	12.5	3.5	41.3	
4	10.5	3	31.5	
6	8.6	2.7	23.2	$\frac{45}{58} 9.4$
7	8	2.5	20	$\frac{45}{33} 3.5$
8	6	2.7	16.2	
9	8	2.7	21.6	$\frac{58}{62} 0.84$
61	7.5	2.5	18.8	
2	7.7	2.5	19.2	$\frac{32}{31} 1.4$
3	10	2.5	25	
$H\gamma$	5.7	3	17.1	$\frac{45}{48} 1.7$
$H\beta$	11	4.3	47.3	
72	6	3.3	19.8	

$\lambda 14576$ slit 0.25 35
(June 7)

L36		W	2 I	R	Δ
K ₁	52	11.5	598		
K	100	15	1500	$\frac{K}{H} 1.4$	1.3
7	10.5	5.5	578		
H+H ₂	91	11.7	1065	$\frac{W}{H} 12.1$	
10	15	4.3	65		
13	14	4.7	66		
14	+	—		$\frac{W}{H} 3.2$	3.9
16	12	4	48	$\frac{21}{16} 1.8$	1.9
17	14.5	4.7	68		
20	12.7 12.2	4.2 4.2	1053	$\frac{W}{H} 3.0$	3.1
21	21.3	4.1	887	$\frac{21}{20} 1.5$	1.5
45	39	6.5	254	$\frac{21}{20} 1.4$	1.6
28	11.2	4.3	48	$\frac{21}{31} 1.0$	1.1
31	16.7	3.5	58	$\frac{31}{33} 1.7$	2.2
2	18	4.3	77	$\frac{31}{34} 1.7$	4.0
3	17.7	4.3	76	$\frac{31}{33} 3.3$	1.8
4	17.8	3.3	56	$\frac{34}{41} 1.9$	2.1
5	10.7	4	43	$\frac{34}{34a} 1.7$	2.1
8	23.7	5.2	123	$\frac{40}{38} 2.8$	0.8
40	25.5	6.8	255	$\frac{48}{52} 1.2$	1.2
1	10.6	2.8	29	$\frac{48}{52} 1.2$	1.3
2	14.5	2.3	33	$\frac{48}{52} 1.4$	2.1
4	30	6.2	186	$\frac{48}{52} 1.4$	2.1
47	16	21.5	48	$\frac{48}{52} 1.4$	2.1
50	15.7	3.6	56	$\frac{48}{52} 1.4$	3.5
2	18.5	4.2	74	$\frac{32}{31} 1.3$	1.5
4	15	4	60	$\frac{32}{31} 1.3$	2.1
6	12	4.7	56	$\frac{32}{31} 1.3$	0.8
7	10.3	3	31	$\frac{32}{31} 1.3$	
8	7	2.5	17.5	$\frac{32}{31} 1.3$	
9	10	2.2	22	$\frac{32}{31} 1.3$	
61	10	2.7	27		
2	10.5	2.5	28		
3	36	3.2	115		
5a	7.7	2.8	21.6		
AB	Dark strip	—	—	$\frac{W}{H} 4.4$	
72	9.5	3.3	31.4		

I14576 slit 0.4

(June 7)

Checked (Remeasured
certain times)

L D W 2I R Δ

June 8 14577

37

R	42	13.5	570	$\frac{570}{347}$ 1.7	
H+He	33	10.5	347	$\frac{347}{32}$ 3.0	
16	4.5	3.2	14.4	$\frac{14.4}{16}$ 2.2	
20	4.5	4	18	$\frac{18}{21}$ 1.7	$\frac{14.5}{21}$ 3.0
21	8.1	3.8	31	$\frac{31}{21}$ 1.6	
H _v	15.6	6.0	93	$\frac{93}{31}$ 1.9	
31	5.2	3.6	18.7	$\frac{18.7}{32}$ 1.2	
33a	—	—		$\frac{34}{34a}$ 2.3	
34	6.5	3.2	21	$\frac{21}{41}$ 2.1	
34a	3.0	3.3	10	$\frac{10}{40}$ 0.8	
38	10.2	4.8	49	$\frac{49}{38}$ 1.3	
40	11.5	3.2	37	$\frac{37}{58}$ 0.7	
41	3.4	2.7	92	$\frac{92}{62}$ 1.1	
42	11.7	6.2	73	$\frac{73}{52}$ 1.1	
52	7.7	3.5	29	$\frac{29}{37}$ 3.7	
55	4.5	3.5	15.8	$\frac{15.8}{32}$ 1.6	
58	3.3	2.1	7	$\frac{7}{48}$ 2.2	
62	3.5	3	10.5		
65b	2.7	2.5	6.2		
H _β	6.8	4.8	33		
48	9.5	3.5	33		
32	6.5	4.7	31		
33	7	3.7	26		

38

D W 2V R

X 14580 June 8

K	50	12	600	$\frac{K}{H}$ 1.25	
H _ε	40	12	480	$\frac{H}{H}$	
16	4.5	4.6	21	$\frac{21}{16}$ 1.3	
20	4.5	3.7	16.6		
21	6.0	4.5	27	$\frac{21}{20}$ 1.6	
25	14.5 7.3	5.4	106	$\frac{21}{31}$ 1.4	
31	5	4 (2)	20	$\frac{21}{31}$	
33a	—	—		$\frac{21}{21}$ 2.439	
34	6.5	4.6	30	$\frac{34}{41}$ 0.46 -?	
38	9.7	4.8	47	$\frac{32}{33}$ 1.2	
40	8.4	4.0	34	$\frac{40}{38}$ 0.72	
41	11.6	5.3	65		-?
44	12.3 6.5	5.5	75 27	$\frac{44}{44}$ 1.4	
52	6.8	2.8	6.4		
55	2.3	2.8			
58	—	—		$\frac{48}{52}$ 0.9	
62	—	—			
65b	—	—		$\frac{45}{32}$ 2.36	
H _β	5	4.5	23	$\frac{45}{33}$ 2.44	
48	6.2	3.5	22	$\frac{32}{31}$ 1.4	
32	5.7	5.0	29	$\frac{44}{48}$ 3.4	
33	6.5	3.7	24		

L	D	W	ZI	R	Δ
13	16	8.7	139		37.5
K	33	10.3	340	$\frac{K}{H} 1.25$	25.5
7	5.5	4	22	$\frac{H}{H} 1.26$	
H+KE	27	10	270		20
10	5.5	4	22		
13	4	4.5	18		
14	5	3	15		
16	3.7	3.5	13	$\frac{21}{16} 1.7$	
17	4.2	4.3	18.1		
20	2.5	2.8	13.3	$\frac{21}{20} 1.7$	
21	6	3.7	22.2	$\frac{21}{20} 1.6$	
HD	10	5.7	507	$\frac{21}{37} 1.6$	13.3
23	2.7	3.5	95	$\frac{145}{27} 2.6$	
21	4	3.5	10.8 14	$\frac{145}{32} 3.3$	
2	4.7	4.0	14.8	$\frac{32}{32} 1.0$	Run
3	5.3	3.4	11.3	$\frac{32}{33} 1.0$	
4	3.7	3	11.1	$\frac{34}{41} 1.8$	
5	2.5	2.5	6.3	$\frac{145}{33} 5.1$	
8	7	4.3	30.1	$\frac{32}{31}$	
40	7	3.5	24.5	$\frac{40}{38} 0.83$	
1	2.5	2.5	6.3	$\frac{38}{38}$	
2	3.5	2.5	8.8		
14	7.7	5.7	43.9	$\frac{145}{24} 1.1$	
48	4.5	2.8	12.6	$\frac{24}{24}$	
50	4.3	2.7	11.6	$\frac{145}{55} \sim$	min
2	5.7	4.1	21.7	$\frac{145}{55}$	9.5
4	4.5	2.7	12.2		
6	4	4.5	18	$\frac{145}{58} 7.1$	
7	3.5	3	10.5	$\frac{32}{31} 1.2$	
8	2.7	2.5	6.8	$\frac{58}{62} 0.8$	
9	4	2.4	9.6	$\frac{48}{52} 1.0$	
61	3.7	2.7	10	$\frac{145}{48} 1.9$	
2	3.5	2.5	8.8		
3	4.7	3.2	15		
50	2.8	2.8	7.8		
43	4.5	4	18		15.3
72	4	3.8	15.2		

14578 (Slit 0.1) June 8 39

The image seems to be drawn a little too high, beginning from line #40.

	A	W	2I	R	Δ
40	43	11	473	*	87
H ₂	77	12.7	978		61
K	10	4.8	48	$\frac{K}{H} 1.3$	
7	66	11.5	759		46
H+H ₂	12	4.5	54		
10	11	5.5	60.1		
13	Blend	—	$\frac{WS}{21} 2.9$		
14	9	4.5	40.5	$\frac{21}{16} 1.4$	
16	9.5	4.7	44.7		
17	7	4.5	31.5	$\frac{21}{20} 1.7$	
20	13.7	4	54.8	$\frac{21}{31} 2.1$	
21	24.7	6.5	160	$\frac{31}{34a} 2.6$	29
115	5.5	4	22	$\frac{WS}{32} 4.5$	
23	7.5	3.5	26.3		
21	9	4	36	$\frac{32}{23} 1.0$	
2	10.5	3.0	34.7	$\frac{WS}{33} 4.7$	
3	9.5	3.2	30.4	$\frac{34}{41} 2.6$	
4	3.0	3.5	10		
4a	5.5	4	22	$\frac{34}{34a} 3.0$	
8	16	5	80	$\frac{40}{13} 0.724$	
40	16.5	3.5	57.8		
1	5	3	15	$\frac{32}{31} 1.4$	
2	7	2.3	16.1		
H ₂	18	5.7	103	$\frac{WS}{H_2} 1.5$	22
47	7.7	2.5	19.3		
42	9.9	3.3	46	$\frac{WS}{42} 16$	
2	10.5	4.0	30.4		
4	9.7	4.5	34		
6	7.4	4	29.6	$\frac{58}{62} 0.8$	
7	5.3	3	15.9		
8	4.5	2.2	9.9	$\frac{48}{52} 1.1$	
9	7.6	2.5	19		
61	6.5	2.2	14.3	$\frac{H_2}{48} 2.2$	min
2	5.5	2.2	12.1		18
3					
5a	8.5	3	25.5		
H ₂	10	5	50		33
72	6.5	4	26		

M4578 | Pit 0.4 (3.8) ^{diag}
June 8

1980 June 8. Prof. J. J. 735B

June 8. I 14579.

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(Checked, remeas.).

L	D	W	2I	R	Δ
K	58	12	696	$\frac{K}{H}$ 1.3	1.4
H+H ₂	48	11.3	542	$\frac{H}{H}$ $\left(\frac{W}{11.1}\right)$	
16	4.4	4	18	$\frac{21}{16}$ 1.2	1.7
20	$\frac{5.8}{4.2}$ 3.8	$\frac{22.4}{28}$ 3.3	$\frac{21}{20}$ 1.6	$\left(\frac{W}{4.0}\right)$	$\rightarrow (2.7) 3.0$
21	8	$\frac{30}{(33.6)}$ 4.2	$\frac{21}{20}$ 1.6	$\left(\frac{W}{6.4}\right)$	1.7
25	17	6.7	114	$\frac{21}{34}$ 1.9	1.7
31	5.5	3.3	18	$\frac{31}{34}$ 2.2	2.2
33a	—	—	—	—	—
34	6	3.7	22	$\frac{34}{40}$ 3.7	2.2
38	10	5	50	$\frac{34}{34}$ 2.7	(I 14580 excl.)
40	9.7	3.3	32	$\frac{40}{38}$ 0.64	0.7
41	2.7	2.3	6.2	$\frac{32}{33}$ 1.2	1.1
Hy 52	10.8	5.4	58	$\frac{40}{44}$ 2.0	1.4
55	6.2	2.5	10.5	$\frac{40}{44}$ 10.4	
58	2.1	2.7	5.7	$\frac{40}{55}$ 19	
62	3.6	2.2	7.9	$\frac{40}{58}$ 0.9	0.8
65b	2.5	2.5	6.2	$\frac{48}{62}$ 1.2	1.0
H ₂	6.5	4.7	$\left(\frac{W}{4.6}\right)$ 31	$\frac{48}{52}$ 1.2	3.36
48	8.5	3.5	30	$\frac{48}{32}$ 3.7	4.5
32	6.6	4.7	31	$\frac{48}{33}$ 1.7	1.4
33	6.9	3.7	26	$\frac{48}{48}$ 2.0	2.3

Widened by some other lines on violet.

42

L

I 14583 June 9.

D W 2I R

K

H+H₂

16

20

21

25

30

31

32

33

34

34a

38

40

42

48

49

52

58

62

H₂H₂Cut off
on
training4.8 4.1 20 $\frac{21}{20}$ 1.9

8.2 4.6 38

8.5 4.2 36 $\frac{25}{32}$ 1.4

7.7 5.8 45

6.5 4.4 29 $\frac{25}{33}$ 2.46.9 3.7 26 $\frac{32}{33}$ 1.7

4.5 3.4 15

4.2 4.5 19 $\frac{40}{38}$ 0.6(2.3 3.0) ~~2.9~~ $\frac{48}{52}$ 1.3

9.5 5.5 52

7.6 4.2 32 $\frac{58}{62}$ 0.98.5 5.0 43 $\frac{25}{27}$ 0.87.7 4.0 31 $\frac{25}{27}$ — — — $\frac{31}{34a}$ 4.2

6.0 3.9 23

1.3 2.6 $\frac{34}{34a}$ 3.21.9 2.0 $\frac{32}{37}$ 0.9— Cut off — $\frac{25}{48}$ 1.4

D W 2I

June 9. 14583..

(larger defl.)
wider slit!64.0 17.0 109 $\frac{K}{H}$ 1.3

53.0 15.3 81

6.5 4.7 31

7.5 5.3 40 $\frac{21}{20}$ 2.0

13.5 6.1 82

13.0 5.6 73 $\frac{25}{32}$ 2.3

— — —

6.5 4.3 28 $\frac{25}{33}$ 2.68.7 3.7 32 $\frac{32}{33}$ 1.1

6.6 4.3 28

7.1 5.7 41 $\frac{40}{38}$ 0.7

3.2 3.7 12

14.4 5.5 79 $\frac{48}{52}$ 0.911.5 4.6 53 $\frac{58}{62}$ 0.413.5 5.5 75 $\frac{25}{27}$ 1.013.0 5.0 65 $\frac{25}{27}$

— — —

12 6.0 72 $\frac{31}{34a}$ 2.3

(1.7 2.6) 4.4

3.8 2.6 9.9 $\frac{34}{34a}$ 3.45.2 3.3 17.0 $\frac{32}{31}$ 1.1 $\frac{25}{48}$ 1.2

L D W 2I R (Two tracings with different slits.) June 9. 814582 43					D W 2I			Averages
K	33	15	429	$\frac{K}{H}$ 1.3	Out off			
H+H ₂	27.5	12	330		on tra		$\frac{K}{H}$ -	1.3 ✓ (13.7)
16	5.5	4.8	26	$\frac{21}{16}$ 1.5	ding =			
20	5.6	4.2	24	$\frac{21}{20}$ 1.2	5.3	5.0	27	
21	9.5	4.2	40	$\frac{21}{20}$ 1.7	8.5	4.7	40	
H ₂	8.6	5.5	457	$\frac{21}{21}$ 1.86	7.6	4.6	35	$\frac{21}{20}$ 1.5 1.8 ✓ (4.9) (5.0)
31	5.6	4.4	28	$\frac{31}{31}$ 2.8	4.8	4.4	21	$\frac{25}{32}$ 1.6 1.7 (4.4)
33a	-	-	-		-	-	-	
34	5.7	4.4	25	$\frac{34}{34}$ 4.4	4.1	3.6	15	$\frac{25}{33}$ 1.7 2.1 ✓
34a	3.7	2.7	9	$\frac{34}{34a}$ 2.7	1.7	2.7	4.6	
38	9.4	5	47	$\frac{38}{38}$ 0.83	9.0	5.5	50	$\frac{32}{33}$ 1.1 1.2 ✓ (5.4)
40	7.7	5	39	$\frac{40}{38}$ 1.2	7.4	4.2	31	$\frac{40}{38}$ 0.6 0.7 ✓
41	(2.2)	(2.6)	5.7	$\frac{41}{41}$ 1.2	-	-	-	
H ₂ + 4338	8	5	40	$\frac{41}{41}$ 1.2	8	5.3	42	
52	6.0	4.7	23		5.7	4.6	26	$\frac{48}{52}$ 1.3 1.1 ✓ (4.8)
55	-	-	-		-	-	-	
58	2.2	2.5	5.5	$\frac{58}{58}$ 0.3	1.7	2.3	4.0	$\frac{58}{62}$ 0.53 0.6 ✓
62	3.6	3.8	13.7	$\frac{58}{62}$ 0.5	2.3	3.3	7.6	
65b	6.	4.7	28	$\frac{48}{52}$ 1.67	-	-	-	$\frac{48}{52}$ 0.8 1.0 ✓
H ₂	6	4	24		cut off on tra.			
48	7.2	4.1	34	$\frac{48}{32}$ 1.4	7.5	4.6	35	$\frac{31}{34a}$ 4.5 3.4 ✓
32	7.0	4.7	33	$\frac{48}{33}$ 1.7	5.6	4.0	22	
33	6.4	4.4	28	$\frac{32}{31}$ 1.3	5.3	3.7	20	$\frac{34}{34a}$ 3.2 3.1 ✓ (3.7)
				$\frac{48}{48}$ 1.2				$\frac{32}{31}$ 1.0 1.1
								$\frac{48}{48}$ 1.2 1.3

Line	Reg	No
		8
	13-	
(H)		
	18	
	36	
	38	
	42	
	44	
	45	
	49	
	52	
	54	
	K	
	H	
	H	
	H	
	H	
	49	
	50	
	570	
	at	
	n	
	w	

Day by day comparison of post-maximum spectra of Nova Pictoris

Line Ref No	Wave length	X14522 May 28	X14534 June 10	Absorption.
8	3961 Å	abs.	+	(A plus means intensification)
13-14	4025 4030	abs	+	on both sides so that a group of 4 lines appears instead of the two lines on May 28.
(H γ)	4102	abs)		
18?	4053	abs	+	
36?	4260	abs	+	
38	4302	abs	+	
42-43	4326 4330	abs	+	
44	4338	abs	±	
44	4341 H γ	abs	+	
45	4341 H γ	abs	+	
49	4395	abs	+	(slightly)
52	4444	abs	+	(slightly)
54	4468	abs	+	slightly

(All absorptions became wider and hazier).

K	3934		Emission, on red edge (and in all following lines). Faint
H+H γ	3969		Em. Faint
H δ	4102		Em. faint (on edge!!!)
H γ	4341		Em
H β	4861		Em
4924			Em
5018			Em
5769			Em

Continuous spectra faded away. The max. of intens. which was about in the middle (nearer to H β) between H β & H γ on May 28, now (June 10) is not so pronounced. The spectrum on June 10 extends farther into violet as well as to the red. A softer plate?

W.L.	X14584	X14606	Exp. 10 & 14 min resp.	Absorption
W.L.	June 10	June 17		
4, H _γ ✓ 3889	single	double		Contin. backgr. stronger on June 17.
5, K ✓ 3934	"	"		Almost no separation between components. Broad base
9, H+H _ε ✓ 3969	"	"		widely separated
22, H _δ ✓ 4102	"	"		{ greater wt. comp. is double, so the line is triple The compon. of the greater wt. comp. are very sharp and narrow
18 ✓ 4053		+		
27 ✓ 4144		+		and sharper
8?				The abs. lines become very ^{"compressed"} sharp ("chromospheric" character) by June 17 (45. June 18)

	June 10	June 17	Emission
12 ✓ 4012	-	-	Hydrogen em. can be easily followed till H _α
13 ✓ 4025	+	+	Structure of H _δ and H _γ can be briefly described as:
14 ✓ 4030	+	+	1. Very strong, displ. abs.
24-25 ✓ 4164 4164	+	+	2. Emission space
29-30	++	++	3. A narrow, sharp abs. pair; viol. comp. stronger H _δ
33 ✓ 4233	+	++	4. Emiss. maximum
47-48 ✓ 4375	-	-	5. emiss. wing sharply outlined on red edge V _R
56 ✓ 4489	++	++	

The remaining emission lines are much stronger on June 17, being only traceable on June 10.

1. V. strong displ. abs.; double, viol. comp. much fainter V
2. Emission space
3. Double abs., narrow; viol. comp. stronger.
4. Emiss. max.
5. Extrem. narrow, sharp abs.
6. emiss. wing strongly outlined on red edge. V_R

H_β has apparently a similar structure, but on account of compressed scale the details are not clear.

4924 line has structure which reminds that of hydrogen
A number of other emission narrow lines are visible.

X14606 X14613
June 17 June 19

Exp. 14 & 14 min.

Obs.

- 1) Continuous sp. became much weaker
- 2) The v. comp of H abs. (strongly displ.) became intensified, but flatter

++ this emiss. distinctly intensified on PT 19 (comp. to PT 17)

68

H β cm

wider than on PT 17

72 4924

++

73 5018

++

- 3) Many of the metallic emiss. show a reversal - a dark line in the middle of the emission. -

No other substantial changes.

Plate X14610, June 18-19 does not show any noticeable changes from X14606, June 17-18

X14613 X14614

June 19 June 20

V. compon. of H abs. disappears leaving a diffuse haze at its place. Only at H γ it remains rather sharp (is it anyway displaced H or something else)
 In the displaced sharp abs. pair of H — H γ ^{the component} seems to be closer to each other $\#$ on June 20 than on June 19.

Narrow maximum seen to appear in the red wings of H γ H β
 Absorption becomes perhaps a little weaker and certainly hazier. It is difficult to judge however what is absorption and what merely spaces between the emission bands. These bands are very sharply outlined and are rather narrow giving many fictitious "absorption lines".

X14614 X14618
 June 20 June 22

The double, sharp abs. in H ($H\delta, \gamma, \beta$) moves away ^{towards violet} from the maxima of intensity in emission bands.
 Also the emission max. in the violet wings becomes displaced towards violet, apparently being driven together with the above-mentioned abs. pairs.

The width of H slightly increases.

The emission maxima at the edges of red-side wings become intensified.

The strong, heavy absorption pair (the much displaced one) at the violet edge of $H\gamma$ becomes narrower and a little more intense.

It is difficult to make definite statements about similar abs. lines in $H\gamma$ and $H\beta$ because of a less good definition.

The spectrum is in general more sharp.

X14618 X14665
June 22 July 22

Exp. 14 & 19 min resp.

1. The most important change - a tremendous increase of intensity of continuous spectrum which extends far into ultraviolet.
2. The strongly displ. abs. in H disappeared. ~~abs.~~ The former double absorption is (not so much displaced as the previous abs.) much intensified. No double lines are seen ~~instead~~, but strong single lines, the width of which is greater than the width of the former doublets.
3. Among the more prominent absorption are 4173-78, 4216, 4233, ^{group 4290} 4314(?), 4384, 4400, 4415-17, 4444, & 50(3), 4469, 4481, and groups between 4501-4534, 4534-4554 (latter strong), 4583. Also several strong abs. in the UV which cannot be identified because of lack of standards and displacement.
4. The structure of H bands becomes simple - a strong emission fading away to the red and a strong absorption on its violet edge.
5. Emission bands except H are not very prominent. A ^{large} number of them (incident) is seen in the UV.

I 14665 I 14677
 Jul. 22 Jul. 27

4398.9*

-

Exp. 19 min. each.

1. Abs. considerably stronger ^{and sharper} especially in the more refrangible part of spectrum.
2. Curiously the abs. of $H\beta$ is contrary to the rest of H lines fainter on Jul. 27.
3. Contin. spec. became stronger and the max betw. $H\gamma$ and $H\beta$ is more pronounced
- 4* about the only case when abs. became fainter. But this is probably due to the intensification of the adjacent ^{bands,} min.
5. Emission, espec. H becomes stronger.
6. The structure of H becomes a little more complex a minimum being seen on red side of the "max emiss" and a very faint secondary ^{emiss. max.} to the red of that faint minimum.

Z14677 $\bar{\lambda}$ 14681
 Jul. 27 Jul. 30

Exp. 19 m. each

1. Cont. sp. becomes very strong.
2. Abs. is very strong in the violet part but rapidly decreases towards the red
3. H δ abs. seems to be double, the γ component being stronger.
4. In general abs. becomes narrower
5. Emiss. sp. ~~is~~ is strongly shaded off towards the red
6. H β ^{emiss} becomes strangely narrow, about the same width as its neighbour 4924.

X14681/X14685

Jul 30 Aug 4 Exp. 19 m. each

Both contin. sp. and emission became fainter (photographic effect or decrease of brightness of the Nova?).

Structure of emiss. indistinct.

The Emiss. 5018 faded away a little compared to 4924.

No other changes.

Z 14685 / K 14698
 Aug. 4 Aug. 8

Exp. 19 in each.

Contin. sp. strong, though the
 emiss. hardly increased in intensity.

Max. in emiss. bands rather pronounced
 ($H\gamma$ & $H\delta$).

abs. becomes narrower and sharper.

abs. in $H\gamma$ becomes ~~the~~ double also
 in $H\beta$ but not so distinct ($H+H_2$ also)
 Probably all H lines become double.

A strong abs. appears in $H\beta$, which
 abs. was hardly visible on Aug 4.

5018 em. slightly fades away (?) compared
 to 4524

X14699 X14703
 Aug 8 Aug 10

9
 Exp. 12 in. & 10 in resp.
 (Cont. sp. faded away) ~~May be a little imp.~~
 Emiss. became ~~stronger~~ also weaker
 (Plate 14703 is fogged)
 Spectrum is not so sharp (fog?,
 guiding?, or a real change?)
 Poor comparison

14703 14719
Aug. 10 Aug 17

Exp. 10 & 15 m. resp.

Cont. is slightly fainter, cuts off
before 5018 (on 14703 extends beyond 5018)
Emiss. increased Intens., espec. H β and 4924
5018

Abs. at H β disapp. probably due to the
expansion of H β emission.

14720
Aug 17

Expos. 10 m. spectrum narrower; same features as
previous.

14715 14733

Aug 17 Aug 24

Exp. 10 μ & 59 m ?? resp. something wrong
with the exp. indicated on cover, probably 19 μ .

Cont. sp. faded away a little.

Limits about the same.

Emiss. intensified. Less detail (not
because of overexposure. It is a correct one)

abs. stronger. No doubling.

X 14733/14735
 Aug. 24 Sept. 3

Epp. c 19 m resp.

Cont. sp. faded away a little, but
 does extend farther in the vial, than on
 prev. date. Emiss. a little fainter.

K. line of Ca+ faded away considerably
 No structure seen in H emiss.

H abs. double the more displaced
 component being by far the stronger
 abs. becomes sharper

^X
14735 14751
R3 R8

Exp. 19 + 20 in resp.

Contr. sp. stronger, but does not
go into violet conspicuously farther.

H double, become still narrower and
sharper, hence still better separation.
K line seems to be also double, but
not quite certain, the components
of K (abs.) are of ~~the~~ equal intensity.

\bar{x}
14751
Sept. 8

\bar{x}
14766
Sept 15

Exp. 20 & 19 m. resp.

Spectrum much weaker (xy? or Nov
faded away). -

{ Abs. H extremely sharp; double.
Even H β shows the doublet
K abs. very (poor frons).

(Absorpt. decreases in intens. from V-to-R
While emiss. (H) increases.

All emiss. H and metallic become much
sharper

14766 / 14784
 1x15 1x23

Exp 19-e 17 m. resp.

Sp. much stronger
 same features, no especial
 changes.

68

$\bar{X} 14791$ / 14792 / 14793 Two prism plates
 $\bar{X} 26$ / $\bar{X} 28$ / $\bar{X} 30$

Exp 25 & 30 in resp.

~~Spectra in General Stronger.~~

Continuous sp. a little fainter

Emiss. sp. stronger;

especially enh. iron.

K line both in em. and abs.
very weak

No especial changes on Sept. 30

X14793 / 94
Sept. 30 Oct 5

Two prism pl.

Exp. 20 m. each

Spect. in general a little stronger

Viol. comp. of the double H becomes
weaker and diffuse.

70

\bar{x} 14784/14800
 Sept. 23rd Oct 7-8

all further plates - with 1 prism.

Exp. 17 & 30 m. resp.

Contin. sp. much weaker
 Emission appears relatively more
 prominent.

H γ lines appear a little wider.
 The double H β abs. persists but
 becomes hazy.

14784/14808
Sept. 23 Oct. 13

Exp. ~~30~~¹⁷ + 19 m. resp.

Spectrum much weaker (shorter exp.
and the moon a little fainter).

5018 em. became much weaker than 4924
(on Oct 7 the reverse was true) - which
however seems to be a photographic
effect, both ends of the spectrum
being cut off because of much lesser intensity.
photo. effect due to long exp. of Oct. 7!

The v. comp. of the double H becomes
fuzzy and disappears, whereas the less dis-
placed one (α) is intensified.

The spectrum is cut off at H_3 .

72

$\frac{114800}{14808}$
Oct 7 Oct 13-14

Exp 30m & 19m resp.

Same conclusions as on p. 71.

20 X 14808/14820

Oct 13-14 Oct 15-16

Exp. 19^m Exp. 11^m

Spectrum stronger. Increase of light
of the Nova or more clear sky?

H γ em. becomes wide. It seems
that some other line ~~becomes~~ superposed
on the ~~front~~ on its less refrangible side.

The H em. show more structure —
for example the maximum intensity
is very pronounced and sharply outlined.

The more displaced component of
the double H reappears and is
rather sharp

74

\bar{x} 14810 / 14812
 Oct 28-29
 Exp 15 m

1. Contin. ~~being~~ becomes very prominent and the whole spectrum gets a "clogged up" appearance reminding of the earlier stages; however
2. Emission bands are the same as on Oct 15.
3. The double H abs. is strong, ~~the~~ the less disp. comp. ~~has~~ becomes very narrow and sharp

20 X 14812 14813

Nov. 5 - c

Exp. 25 m.

Spectrum weaker

The continuous background weaker
and the em. bands stand out stronger.

15. H γ em. shows three maxima and is
in this respect different from other H —
H β and H δ being good (sharp enough for compa-
rison). The latter two have ^{each} only one
max. ~~max.~~. Apparently one or two lines
are superposed on H γ from the red side.

The v. comp. of the double H abs. becomes
hazy and shows a tendency to disappear,
whereas the r. comp. is very sharp.

X 14813 / 14819

Nov. 7-8

Exp 25^m

Spectrum stronger, both
contin. absorp. and emission

H gets winged on the red side
and the wing is sharply outlined

The ν comp. of the double H
becomes remarkably distinct and is
almost as sharp as the ϵ component

Curiously 4924 and 5013 ^{each} get
also a pair of absorption and
likewise the H lines the ν component
is stronger than the ϵ comp.

X14819/14822

Nov 13-14

Exp. 25 m.

Sp. somewhat fainter

Emiss. stands out better

The structure of H bands becomes more complicated, and $H\beta$ as well as $H\delta$ (this is not so well seen on $H\epsilon + H$ because of a poorer definition) show a structure similar to that of $H\gamma$. The latter was previously ascribed to ~~two~~ a superposition of two lines, but now when the other H's show it also (though in a fainter degree) ~~we~~ we must conclude that it is a feature of all H bands.

The structure of a H band ^($H\gamma$ - as the most typical ^{in the} best definition) can be described as follows: (from V to R)

1. Strong, sharp abs.
2. weak emiss.
3. narrow ^{very} sharp abs
4. Emission which at a certain distance from the abs (3) reaches a maximum
5. Strong emiss. wing with two maxima one about at the middle, the other at the edge.

A very ~~weak~~ abs. is seen ~~at~~ at the violet edge of $H\delta$ and $H + H\epsilon$ shows apparently ~~the~~ ^{the} same sort of (uncertain) abs. line but quite definitely.

The double abs. ~~is~~ associated with 4924 & 5013 become more distinct.

X 14822/14825

Nov 16-17

Exp. 25

Sp. a little weaker

No especial changes in the emission

The v comp. of the double H α abs becomes very diffuse and weak in $\Delta\lambda$, ~~that~~ and H β (γ). In H δ (instead of the the v comp. there are two long lines at its place, the first coinciding with the v) the long (third) abs. becomes stronger and because the v component weakens a ~~double line~~ pair of lines are seen. The same holds for H+He, only the two lines are diffuser and almost coalesce. The v component is embodied in the emission part and is sharp and strong in all H.

X 14828/14829

Dec 4

Exp 25m

Sp. a little weaker.

No special changes.

There is a plate for Nov 21-22
(Exp 25m), but it is rather
weak (poor transparency of neg.)
and does not show anything
of interest.

X 14829

14830

14833

Dec 8-9

Dec 16-17

Exp 25 m

Exp. 25 m

Sp. a little stronger.

The em. stand better out on Dec 8-9,
 No special changes by Dec 16.

x 14833 / 14840

Dec. 30-31

Exp. 25

Contin. sp. weaker

The emiss. stands ^{out} better and are sharper.

The distant component (ν) of the double H absorp. is not seen.

The ν comp. is good in H γ and not quite so in H β . Not seen in H β .

The wings of H are weaker.

The maximum in H emiss moved still more to the red (within the emission band) and their structure can be described as follows:

1. Traces of abs. ν
2. Faint narrow sharp ν abs. \sim
3. Main part of emission consisting which can be described either as emission with two maxima, ν -fainter ν -stronger or as emission with a reversal
4. Wing (red) in H γ double strong. Only a little haze in other lines. Again it seems that the H γ wing (red) is due to one or two (metallic) emission lines right close to H γ . The first ^{one} of these (that one closer to H γ) may ^{possibly} coincide with 4352 ^{abs. edge}, but ^{sp.} the farther one does not seem to have any abs. line at its place. Corresponding to its place.

* Cr, Mg, Sb.

X 14840 / 14841 / 14844

Jan 7-8

25 m. exp.

Jan 13, same exp.

+218d

{ Contin. sp. considerably weaker
Emiss. about the same intensity
No other changes.

The temp. in emiss. is now almost
at the edge (red edge).

X14844/14845 / 14846
Jan 13-14 March 2-3 March 8-9

30 m. exp.

Spectrum in general stronger.

2
218
18
28
2
266

The lines of Helium showing only traces (4472 & 4026) on Dec 30-31. ~~XXXXXX~~ is present but we cannot tell if it is the Helium line or one of the early ^{lines} emission, probably metallic lines. They may become prominent, especially 4472 shows an unusual increase of intensity. Probably because of the intensification of He 5015 the line 5013 becomes widened from the violet side. The nebular line 3689 of which ~~only~~ only traces on Jan 13 were seen on Jan 13 is now strong.

H is intensified.

No changes on plate X14846, March 8-9.

14849

March 8-9

March 13

Apr. 14-15

Sept 30 m

Exp 35th

Rather weak spectrum

Egg 30 m Egg 35^m / No especial changes on March 13, but

Important changes on April 14.

1. The spectrum has an extreme chromo-spheric character, the lines are a little narrower and very sharply outlined.
 2. At the place of the group of lines one third of the distance from H β to H γ , ~~in which no lines appear~~ four lines appear; two of them the stronger ones are 4686 & 4640 and do not coincide with any of the old lines, the two other lines the faint ones belong to the former set of lines. They will probably gradually fade away. The line at 4640 is apparently composed of two close lines, because an "overlapping strip" is seen in the middle of it.
 3. { The neb. line 3869 ~~was~~ was a little fainter than H β and much fainter than H γ . It is a little stronger than H γ on April 14.
 4. The neb. line 4363 becomes stronger
 5. Traces of 4959 appear.
 6. ~~The red max. becomes weaker and the blue max. becomes stronger~~
 7. H loses all traces of wings
 8. The contin. backgr. becomes very faint
 9. The red max. in each of the emiss. bands approaches in intensity the viol. disp.
- Spectr. of N. Pic. can be compared with N. Aql. 1918 between June 28, 29 and July 24, 1918 (plates I 13129, 13130 & 13148). The most conspicuous difference is that:
1. the neb 3869 is weaker in N. Aql., hardly visible or absent
 2. The ~~nebular~~ He 4472 & 4026 absent. He + 4686 weaker in N. Aql.
 3. The emiss. bands are ~~narrower~~ narrower in N. Pic. about 4 times,

Σ 14849/14851

Apr 20-21

35 m.

Spectrum about three times as narrow as that on Σ 14849 and therefore "rather dense".

The neb. 3869 becomes appreciably stronger than H_γ. Also 4363 neb. is intensified. 4959 neb. is well seen.

Because of the good ~~inter~~ density of plate, the compound line 5007 + 5015 is ~~not~~ easily ^{seen} to be made of two lines sticking together, the former (the Neb) line is the stronger.

Lines in the spectrum Σ 14849 Apr. 14-15

3869	neb.	a little stronger than H _γ
H _γ	H	good
H _β	H (H of Ca + probably absent, because K is invisible)	Fairly strong
4026	He	weak
4068	γ Car	weak line
4144	He	strong
4179	Fe + (blind)	weak
4233	Fe +	traces
4244	γ Car	weak
4287	γ Car (4277 γ Car. traces)	
H _γ	H, strong	
4363	neb.	Fairly strong; stronger than H _β , but < than H _γ
4388	He	faint. About equal to 4068
4416	γ Car	weak, a little stronger than 4388
4472	He	strong, a little weaker than H _δ
4505	line?	very broad
4556	faint.	Fe +
4584	Fe +	
4640		

Apparently there is another but a weak line ^{close} on the red side of 4640, ~~their~~ ^{over} overlap. ~~cont-d over~~ →

\bar{x} 14851 / 14852
 Apr. 20-21 Apr. 28-29
 Ex. 35 Exp 35 m.

Spectrum a little stronger
 H γ is intensified
 He intensified (4471-e 4026)
 He+ no change
 4363 neb. intensif
 3869 neb. int. intensif.
 4640 no change
 4922 weaker
 4959 } neb. weaker
 5007 }
 5015 He weaker

Cont. from page 85.

4657? Ti (^{trans} III cl.) and Fe+

4686 Fairly strong. Has a maximum intensity on the violet edge
 [overlapped by some line?]

4713 He

4815? γ cor. traces.

H β H. The strongest line in this spectrum

4910? traces of some line Fe? High level E.P. 3.38 vels.

4922 He

4959 neb

5007 neb.

5015? He, traces.

X14852/14858

Apr 28th May 1-2

35m 55m.

Cont. sp. much weaker

~~14852~~ emiss. intensified

H intensified strongly

He 4471 intensif. (a little), but 4026 weaker

He + intensif.

4640 int. a little

3889 neb. int. a little

4363 int. a little

4929 stronger

4959 neb. str.

5007 & 5015 stronger.

The red max. in the em. becomes still
less different from the viol. max.

$\bar{X}14858$	$\bar{X}14862$
mag 1	May 4-5
35 m	35 m.

Contin. sp. weaker
Emiss. stronger

H stronger

He 4472 same intensity, but
4026 weaker (?),

4922 weaker (??)

2869 weaker

4363 ~~at all~~ stronger

4640 stronger

4886 He + much stronger

4959 & 5007 weaker (?). This is rather
strange and is probably due
to greater contrast of the plate.
 $\bar{X}14862$ (effect of development?)

G. March 13
Lambertian
Wien's law.

$\bar{x} 14862 / 14880$ $/ 14893$
 May 12-13 May 19-20
Exp 30 m. 30 m.

3869 int. (neb) $\bar{x} 14880$
 4686 Not weaker, considerably and diffuser.

No other prominent changes.

$\bar{x} 14893$
 3869 a little intenser
 4686 (again) much intenser

$\Sigma 14893$	$\Sigma 14898$	$\Sigma 14901$	$\Sigma 14898$ (plate fogged.)
May 19	May 26	May 29	
30 m	20 m.	30 m	

3867 intensif.

4686 weaker

$\Sigma 14901$
May 29

4686 intensif.

14901/14909
 Jan 2-3
 30m

Spectrum rather narrow and
 fairly strong.

Not quite suitable for an
 intercomparison, the previous
 plate being rather weak.

4663 much intensif

4688 much intensif

Because of the good intensity of spectrum some
 additional lines can be seen

4630-34 Fe+? 4629.3 and 4634.1 Cr+?

4732. ✓ Fe+? 4732.1

also

4110 Cr lines of III-d temperature class.

Additional
Lines

(for pages
 85-86)

A comparison of 14909 & 14916 is not possible
 because the previous plate is so much stronger
 than the second one.

92

$\bar{x} 14916 / 15048$
Aug. 2-3
25 m.

2869 Intensif.

4686 weaker.

~~15048~~/15075
Aug 16-17
25 m

4068 ^{7^{car}} suddenly became intensified and is a little stronger
than 4026 He, whereas the reverse was true
previously

4188 intensified

X15075 / 15121
 Sept. 1
 25 m

4068 becomes again a little stronger

4686 very much intensified! It is almost as strong as $H\gamma$ and $H\beta$, whereas on the previous plate it was only a little stronger than $H\gamma$

The most prominent lines are now —
 hydrogen, ioniz. helium, 4363 and 3869 (hel)

$\bar{x}15121$ / 15149 15167 15172 15203 *)
 Sept 7-8 Sept 17-18 Sept 27-28 Oct 2-3
 25 m 25 m 25 m 25 m.

on $\bar{x}15149$ same character of spectrum
 4640 perhaps a little weaker.

on $\bar{x}15167$ same character of spect.

on $\bar{x}15172$ same

on $\bar{x}15203$ same

*)

And the same character is maintained
 until the last observation in Arequipa
 (before the transfer of the station to S. Africa)
 on

Measurements of
microphotometer Readings of
Spectra of Nova Pictoris -
(for abs. magnitude.)

Spectral Class of Nova Pictoris

May 28, 1925

June 8, 1925

14...

Nova Pictoris

List of Readings

May 27. 14517.

May 28. 14520, 21, 22 (two)

May 29. 14524

May 30.

May 31. 14541

June 1.

June 2. 14551 (two)

June 3.

June 4.

June 5. 14568

June 6. 14574

June 7. 14576

June 8. 14579, 14580

June 9. 14582, 14583

June 10. 14585

June 11.

June 16.

June 21. 14617

June

For the study of absolute magnitude 151

Nova Pictoris. #

X 14520

Line	D	W	2T	R	D	W	2T	R
K	36	8.5	306	1.3	46	8.5	391	1.5
H+He	30	8	240		40	6.5	260	
4072	3.2	2.2	9.6	1.8	3.2	2.7	8.6	1.7
4078	5.3	2.3	17.5	2.8	5.3	2.8	14.8	3.4
48	11	4.5	49.5	1.9	12.5	4.2	52.5	7.3
4161	3.2	—	—		—	—	—	2.9
4165	1.8	—	—		—	—	—	
4173	7.8	3.5	27.3	1.3	5.5	3.5	17.5	0.96
4173	6.7	3.3	20.1		5.8	3.2	18.6	
4216	3.5	2.7	9.5	1.6	3	2.5	7.5	1.4
4227	4.8	3.2	15.4	1.2	(3)	(3.5)	(10.5)	1.8
4233	5.0	2.3	11.5		3.3	2.2	7.3	1.5
4247	4.8	2.7	13	4.3	3.7	2	5.4	
4250	1.8	1.5	2.7	3.5	1.5	2.5	3.8	1.4
4300	—	—	—		—	—	—	2.0
4314	—	—	—		—	—	—	
4272	4.7	3.3	—		4	1.4	—	Uncertain - in a band
4290	4.2	2.2	9.0		4	2.5	—	
H γ	8	4.3	34.4	2.3	8.5	3.5	29.8	2.7
4384	5.2	3.3	15.6	1.0	4.5	2.5	11.3	1.1
4395	5.6	2.7	15.2	1.9	5.0	2	10	1.7
4400	3.7	2.2	8.1	2.9	3.2	1.8	5.8	1.9
4407	8.7	3.3	23.1	1.4	5.8	2.8	16.2	2.8
4444	5.7	2.3	11.5	1.4	3.8	2.2	7.6	1.4
4455	1.2	2	2.4	4.8	1	2.2	2.2	3.5
4462	—	—	—		2.4	2	4.8	

H γ is on all tracings
 Blended with 4338

Ti+

Remeasured with another mean curve for background

N. Pict.

 \bar{x} 14517 \bar{x} 14521

Line	D	W	2I	R
------	---	---	----	---

4072	3.7	2.5	7.5	#
------	-----	-----	-----	---

4078	5.3	2.7	15	2.0
------	-----	-----	----	-----

410	13.4	3.5	45.6	1.8
-----	------	-----	------	-----

4173	7.0	3.5	24.5	1.0
------	-----	-----	------	-----

4179	7.5	3.3	24.8	1.0
------	-----	-----	------	-----

4216	4.7	2.3	10.8	1.6
------	-----	-----	------	-----

4227	5.0	3.3	16.5	1.2
------	-----	-----	------	-----

4233	5.3	2.5	18.2	1.2
------	-----	-----	------	-----

4247	4.5	2	9	1.8
------	-----	---	---	-----

4250	3	1.7	5.1	2.0
------	---	-----	-----	-----

4272	Effect of plate	-	-	-
------	-----------------	---	---	---

4290	5	2.7	13.5	-
------	---	-----	------	---

43	10.7	3.5	37.5	2.2
----	------	-----	------	-----

4384	6.2	2.7	16.7	1.8
------	-----	-----	------	-----

4395	5.5	1.6	8.8	1.9
------	-----	-----	-----	-----

4400	3.8	1.2	4.6	3.4
------	-----	-----	-----	-----

4417	6	2.5	15	0.9
------	---	-----	----	-----

4444	4.7	2.3	10.8	1.6
------	-----	-----	------	-----

55	unmeas-ble	-	-	-
----	------------	---	---	---

62	62 - stronger	55	-	-
----	---------------	----	---	---

4300-03	Ti 5.2 4.7	2.2 2.2	11.4 16.5	1.2
---------	------------	---------	-----------	-----

4314	Ti 7.8	2.5	19.5	1.2
------	--------	-----	------	-----

4314	Ti 7.8	2.5	19.5	1.2
------	--------	-----	------	-----

4314	Ti 7.8	2.5	19.5	1.2
------	--------	-----	------	-----

4314	Ti 7.8	2.5	19.5	1.2
------	--------	-----	------	-----

4314	Ti 7.8	2.5	19.5	1.2
------	--------	-----	------	-----

4314	Ti 7.8	2.5	19.5	1.2
------	--------	-----	------	-----

D	W	2I	R
---	---	----	---

3.8	2.3	8.7	1.3
-----	-----	-----	-----

4.4	2.5	11	4.4
-----	-----	----	-----

13	3.8	49.4	1.0
----	-----	------	-----

7.4	3.2	23.7	1.0
-----	-----	------	-----

8.2	3	24.6	1.0
-----	---	------	-----

2.8	2.3	6.4	1.8
-----	-----	-----	-----

3.6	3.2	11.5	1.3
-----	-----	------	-----

3.2	2.7	8.6	1.3
-----	-----	-----	-----

3.5	1.8	6.3	-
-----	-----	-----	---

-7	-7	-	-
----	----	---	---

4.2	1.3	5.5	-
-----	-----	-----	---

2.8	2.5	7	-
-----	-----	---	---

8.5	3.7	31.5	2.5
-----	-----	------	-----

5	2.5	12.5	1.1
---	-----	------	-----

5.2	2.2	11.4	3.0
-----	-----	------	-----

2.7	1.4	38.4	3.2
-----	-----	------	-----

5.6	3	16.8	1.3
-----	---	------	-----

4.1	2.7	10.8	1.0
-----	-----	------	-----

1.1	62.3	1.3	8.3
-----	------	-----	-----

1.1	62.3	1.3	8.3
-----	------	-----	-----

1.1	62.3	1.3	8.3
-----	------	-----	-----

1.1	62.3	1.3	8.3
-----	------	-----	-----

1.1	62.3	1.3	8.3
-----	------	-----	-----

1.1	62.3	1.3	8.3
-----	------	-----	-----

1.1	62.3	1.3	8.3
-----	------	-----	-----

1.1	62.3	1.3	8.3
-----	------	-----	-----

4.2	2.2	13.9	1.1
-----	-----	------	-----

6	2.3	13.8	1.1
---	-----	------	-----

4.2	2.2	13.9	1.1
-----	-----	------	-----

4.2	2.2	13.9	1.1
-----	-----	------	-----

4.2	2.2	13.9	1.1
-----	-----	------	-----

4.2	2.2	13.9	1.1
-----	-----	------	-----

4.2	2.2	13.9	1.1
-----	-----	------	-----

unmeas-ble

band line

band line

band line

band line

band line

band line

band line

band line

band line

band line

band line

band line

band line

band line

band line

band line

N. Pict.

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 $\Sigma 14579$

Line	D	W	2I	R
4072	4.7	3.2	13.4	} 1.9
4077	6.8	3.5	23.8	
407	11.5	5.5	63.3	} 2.6
			$\frac{407}{3} = 1.8$	
4173	8.1	4.5	36.5	} 1.0
4175	8.3	4.5	37.4	
4216	3.6	2.8	10.1	} 2.0
4227	5.2	3.8	19.8	
4221	4.7	2.8	13.2	
4248	4.5?	2.2	9.9?	} 3.3
4250	2.7	1.5?	3 - ?	
			$\frac{4216}{3} = 3.3$	
4300-03	8.4	3.5	29.4	} 0.8
4314	7.5	3	22.5	
431	8.4	4.5	37.8	} 1.7
4384	6.2	3.5	21.7	
435	5.8	3	17.4	} 1.3
4400	4	2	8	
17	5.8	3.2	18.6	} 2.2
44	4.3	3.2	12.9	
55	4.4	3.2	14.4	} 2.7
62				

Hard Fe + core equally
transparent. cup-like
shape $\Sigma 14522$

D	W	2I	R
2.2	2.0	4.4	} 1.9
2.2	2.0	4.4	
12.3	3.5	43.1	} 2.8
6.2	2.5	15.5	} 0.9
6.7	2.6	17.4	
2.7	1.8	4.9	} 1.8
3	3	9	
4	1.8	7.2	
2.6	2.2	5.2	} 1.3
1.8?	1.2?	4.0	
3.3	3.2	10.6	} (1.5)
6.7	2.5	16.8	
9.7	4.5	43.7	} 2.6
5.6	3	16.8	
4.4	3	13.2	} 1.3 =
2.0	1.7	5.4	
5.7	2.7	15.4	} 1.1
3.2	2.5	8	

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Σ 14524

Σ 14583

Line	D	W	2I	R	D	W	2I	R
4072					4.6	3.3	15.2	
4073					7.3 6.8	3.5	25.6	
408					7.3 6.8	3.5	23.8	
413					9.5	3.5	33.3	
4175					8.4	3.3	27.7	
4210					5.5 6	3	15	
4227					6	3.3	19.8	
4233					5.3	3	15.9	
4247					4.7	3.2	15.0	
4250					2	2.5	5	
4272					6.2	4.2	26.0	
4290					6.5	3.3	19.8	
H _γ					7.3	4	29.2	
c 4384					7.4	3	22.2	
4395					5.7	3	17.1	
4400					3.8	2.2	8.4	
17					8.2	3.5	28.7	3.4
4441					6.8	3.2	21.8	
55					unmeasurable			
62					62 > 55			

$\bar{X} 14551$

L	D	W	2I	R
---	---	---	----	---

4072	4.4	2.3	10.1	
------	-----	-----	------	--

4078	5.2	2.3	12-	
------	-----	-----	-----	--

*				
---	--	--	--	--

408	13.5	4	54	
-----	------	---	----	--

4173	8.7	3	26.	
------	-----	---	-----	--

4179	8	2.5	20	
------	---	-----	----	--

4216	3.3	2.6	8.6	
------	-----	-----	-----	--

4227	4.8	2	9.6	
------	-----	---	-----	--

4233	4.5	1.8	8.1	
------	-----	-----	-----	--

4247	2.8	1.4	3.9	
------	-----	-----	-----	--

4250	(0.5?)	0.5?	(0.3?)	
------	--------	------	--------	--

4272	— band lines uncertain. —			
------	---------------------------	--	--	--

4290	3.8	2.3	8.7	
------	-----	-----	-----	--

4300-03	$\frac{5.6}{2.8}$	$\frac{2}{1.3}$	$\frac{11.2}{5.6}$	14
---------	-------------------	-----------------	--------------------	----

4314	8	2.7	21.6	
------	---	-----	------	--

Hy	11.-	3.5	38.5	
----	------	-----	------	--

4384	7.2	2.8	20.2	
------	-----	-----	------	--

95	6	2.3	13.8	
----	---	-----	------	--

4400	4.7	1.3	6.1	} 3.8
------	-----	-----	-----	-------

17	9.2	2.5	23
----	-----	-----	----

44	5.4	2.3	12.4
----	-----	-----	------

55	} immeas-ble			
----	--------------	--	--	--

62	} 62 > 55.			
----	------------	--	--	--

 $\bar{X} 14582$

D	W	2I	R
---	---	----	---

\bar{x} 14568

D

W

2T

R

 \bar{x} 14551 (2nd tracing)

D

W

2T

R

X 14522 (Rem)

X 14577

Line	D	W	2I	R		D	W	2I	R	
4072	3	2.7	8.1			3.8	3	11.4		
4073	5	2.8	14	1.7		6.5	4	26	2.3	
				3.2		"			2.0	
H δ	12.5	4	56			10.3	5	51.5		
4075	7.1	3.3	24.1	2.1		6.7	3.7	24.2	2.1	
4078	7.2	3	21.6	1.1		6.5	4	26	1.0	
4216	3.2	2.3	7.4			3.3	3.5	11.6		
4217	3.2	3.5	11.2	1.5		4.2	4.3	18.1	1.6	
4218	4	2.5	10	1.3		5.1	3.1	15	1.3	
4247	2.2	1.8	4.0			5.8	3.1	17.4		
4250	2.0	1.8	3.6	1.1		3.2	1.8	5.8	2.0	
				2.1						
4302					re from diff. to mean	5.7	4	22.8		
4314	6.8	2.5	17			7.2	3	21.6	1.1	
H γ	9.5	4.2	39.9			8.3	5.5	45.7		
4384	5	2.7	13.5	3.0		6.5	3.5	22.8	2.0	
95	4.3	3	12.9	1.1		5.7	2.7	15.4	1.5	
4400	2.2	2	4.4	2.3		3.8	2.0	7.6	2.0	
				3.1		6.1	3.1	18	2.4	
17	5.7	3	17.1	1.3		4.6	3.1	13.8	2.5	
44	3.3	2.8	9.2	1.6		1.0	1.2	1.2	1.2	
55	1.2	1.1	1.3	7.0						

X 14578

	A	W	2I	R
K	30	8.2	246	$\frac{K}{H\beta}$ 6.0
(H+He)	25.3	8.5	215	1.15
4072	2.3	4.4	9.2	
4078	5.1	3.5	18.6	2.3
				2.2
415	8.3	4.7	41.4	1.5
4173	7	4	28	1.0
4178	6.7	4	26.8	
4216	3.2	3.4	19.6	1.6
27	4.2	1.7	15.5	
33	5	3	15	1.4
4247	4	2.5	10	
50	1.8	2.	3.6	2.8 2.7
4302	7	4	28	1.3
4314	7.2	3	21.6	
H γ	8	5.5	44	1.7
4384	6.5	4	26	1.2
95	6	1.5	21	1.7
4400	4	3	12	2.2
17	7.5	3.5	26	2.2
44	5.2	3.3	17.2	1.0
55	1.8	1.2	2.2	2.2

X 14579 (provisional mens.)
poor tracing

	A	W	2I	R
K-29	7.7	Comp	$\frac{K}{H\beta}$ 8.9	
H+He-23	7	16.1	1.4	
		7.8	1.4	
		25.0	3.1	
		9.9	2.5	
		8.6	1.0	
		3.7	2.1	
		7.7		
		22	2.9	Mg+
		7.7	0.9	Ti+
		9.2	2.1	Ti+, Sc+
		4.4	1.6	Ti+, Sc+
		7.0	1.1	Fe+, Ti+
		4.8	1.6	Ti+
		1.2	4.0	Ca

Not of much value
— too dense a plate for
lit 0.25.

14580 (0.4 lit)

14520 (lit 0.4)

	D	W	2I	R
4072	4.2	3.2	13.4	1.8
4078	7.5	4.2	24	3.7
408	15	6	90	2.0
4073	10.2	4.3	43.9	1.0
4078	9.8	4.4	43.1	
4216	5.4	3.5	18.9	1.3
27	6.8	3.5	23.8	
33	7.6	3.2	24.3	1.3
47	7	3.5	24.5	3.3
50	3	2.5	7.5	2.5
4302	10	3	30	1.04
14	8.7	3.3	28.7	
112	12	5	60	3.6
4352	5.5	15.3	16.5	2.0
4384	8	3.7	29.6	1.4
95	7.2	3.0	21.6	2.3
4400	5.3	2.5	13.2	0.9
17	10	4	33	1.4
44	7.3	3	21.9	5.0
55	2.1	2.2	4.4	

D	W	2I	R
4.2	2.5	10.5	
5.5	2.7	14.3	1.2
15	4	56	3.9
8.5	4	34	1.8
8.8	3.5	20.8	1.1
3.7	2.3	8.5	2.1
4.7	4	18.8	
4.8	3	14.4	
4.7	2.2	10.3	1.9
2.7	2.7	5.4	2.6
5.2	3.2	16.6	0.7
8.3	3	24.9	
11.5	5	57.5	4.1
5	2.7	13.5	2.0
7.5	14	28	1.3
7	3.2	22	
4	2.3	9.2	3.0
7.3	3.2	23.4	1.2
5.8	3	17.4	1.6
1.5	2	3.0	5.8

somewhat uncertain

Σ 14521 (slit 0.4)

	A _v	W	2T	R
K				
H+H ₂				
407	4.5	2.7	12.2	} 1.5
73	7.3	2.5	18.3	
				} 3.8
415	17	4.3	73	
4173	8.8	3.1	27.3	} 2.7
72	9.2	2.7	24.8	
				} 1.1
4216	4.5	2.2	11.5	
427	4.5	3.0	15.5	} 1.2
33	6	2.3	13.8	
4247	5	2.7	13.5	} 1.6?
50	4	2.5	8.4	
				1.4
4302	7	3.5	24.5	} 2.5
14	8.6	2.7	23.2	
43	12.5	4.3	53.8	} 1.2
4352	5.8	2.2	12.8	
84	7.2	3.2	22.2	} 1.2
95	7.7	2.5	19.2	
4400	5.8	2.4	14.6	} 1.9
17	8.4	3	25.2	
44	5.3	2.3	12.5	} 1.7
55	2.6	2.2	5.7	

End of measurements of N.Pic. tracings for
absolute magnitude — (H.C. 295, 1926)

Comparison of the post-max. spectrum of Nova Pictoris and γ Argus.

Comparison is made of a tracing from plate X 13739 γ Argus. May 10, 1923

and trac. of Nova P. June 21, Sept. 15, Oct. 7, Dec. 8, 1925

Best likenesses found between γ Arg. and N. Pic. on June 21. Spectrum of Dec. 8 is comparable in the almost complete disappearance of K line of Ca, but differs considerably in the relative intensity of hydrogen and metallic lines. In γ Argus the hydr. emis. is ~~about~~ ^{emission} the same order of intensity or even fainter than the metallic blends. The intermediate spectra (Sept. 15 and Oct. 7) are [but in the Nova the H is much stronger, especially on Dec. 8 when H predominates]. seriously different from γ Arg. chiefly in the fact that the nova shows very strong absorption at that time. The point of greatest resemblance are the bands H β , 4924 ^{Fe+} and 5018 and perhaps 5169.

γ Argus and Nova Pict. June 21 \bar{x} 14617NOVA γ Argus

No. original	No. emiss.	γ Argus	Scale	Scale	Star No.
			W 900 int	W 900 int	
1	H ₂	absent			
4	H ₃	absent			
5	K	absent	3.2C 2.5W		
9	H+H ₂	absent	2.2W 3.5C 4.5W		
14-15	Mn group	present abs.	3.3		
16	Fe	} ?	3.2		
17	Ti+	} ?	3.2		
18	Fe	present, abs. em	3.3		
22	H ₂	present abs. em	3.5W 4.3W 6.5(2)C		
29	4173	present abs. em	4.3W 5.5		
30	4178	present em	5.5		
32	4227	absent	4.7		
33	4233	pres. abs. em	5.6		
34	4247	pres. abs. em	4.2		
35	Fe	traces em	4.5		
36	Fe	pres. abs. em	4.5		
37	4290	pres. abs. em	4.5		
38	4300	pres. em	4.5		
40	Set	pres. em. weak	4.5		
44	H ₂ 4338	pres. em.	5.5W 6.5W 7.7W 6.0W		
45	4338	absent	5.5		
48	4385	pres. em	5.5		
51	4417	pres. em	5.5		
52	4444	Another abs. em	5.5		
53	4450	absent	5.5		
54	4469	pres. em	5.5		
55	4471	abs. em	5.5		
56	4489	pres. abs. em	5.5		
58	4508	pres. em.	5.5		
59	4550	abs. em	5.5		
60	4554	abs. em	5.5		
63	4583	em	5.5		
64	4605	em	5.5		
65	4629	em	5.5		
66	4655	abs. em	5.5		

Cont - 2 from p. 162

Stand. list
No. Nova η Argus

67 \checkmark 4737 em

4732 in η Argus.

68 \checkmark 4775 no abs. ~~absorption~~ present as emiss. in nova

4775 in η Argus.

71 \checkmark H β pres. abs. em

A conspicuous emiss. in η Argus to the \checkmark from #69

72 \checkmark 4924 pres. abs. em

Two faint emiss. are seen in η Argus between H β + 4924

(73) \checkmark 5018 pres. em

(73) \checkmark 5169 pres. em

traces of 5169 on Dec. 2.

Nova η Argus.
width Scale K width Scale K

5.5 W

6.3 W

6.5 W

6.3

6.3

5.8

35

Although the spectrum of Nova Pictoris (June 21) shows many points of resemblance with η Argus, there are also ~~serious~~ serious divergences. ~~the two spectra hardly can be called~~. Among them the following are the most important ones:

1. The H and K emission is absent in η Arg., but ~~is~~ presented in η Arg.
2. The nebular band 4363 is present, and strong in η Arg., but ~~completely~~ absent in ~~the nova~~ ^{the nova}.
3. Hydrogen emiss. is the strongest in the nova, but in η Arg. other emission - metallic and 4363 (nebular) are competing with hydrogen.
4. The continuous spectrum is much fainter in η Argus (until Dec. 1905) than in the nova.

Tests of the sources of systematic differences on tracings.

Difference in deflection, does it affect the relative intensity of close pairs of lines?



depends upon

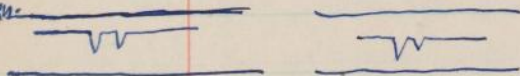
- a) width of slit
- b) length of slit
- c) density of spectrum
- d) fog on plate
- e) voltage of lamp
- f) set of instrument and thermo-couple.

The sources a, b, d, e and f form one group. The density of the spectrum stays apart. Two ~~exposures with same~~ tracings taken under exactly the same conditions of the first group will show a different slope of the apparent energy curve, this difference arising from the fact that the relation between the photographic blackening and the amount of the light fallen (during the exposure of the spectrum), that relation will be different. The both ends of the tracing-curve will fall down steeper on a less dense spectrum, and inversely so on a more dense one. A similar effect, but from another reason will arise on ~~comparative~~ tracings ^{which have} a different total deflection.

For relative intensities it is correct

compl. dense

clear film



The difference of intensity of two lines is more pronounced on less exposed plates. "Saturation effect".

Standard list of emission bands in the post-maximum spectrum of Nova Pictoris. - [Early stages] [About until December 1925]

Plate and tracing X14617.

	<u>Wave length referred to H.C. 289 (abs.)</u>	<u>Possible origin.</u>
1	H ₃	H
x 2	K	Ca+
x 3	H + H ₂	Ca+, H
x 4	Mn group 4031-41	Mn
5	4054 + 4067 (Not very certain).	Ti ²⁺ , Ni ²⁺ , Fe?
x 6	H ₂	H
x 7	4173 + 4178	Fe+, Fe+, Fe, Fe+.
x 8	4233 4234 . Does the 4227 give an emission?	Fe+; Ca ²⁺ ?; Zn ²⁺ ?; Cr?
9	4290 ff (3) and 4295. 4300?	Ti, Cr ?? Fe ?? Fe?, Ca?
10	H _γ + 4338 (Fe+)	H, Fe+
x 11	4377 4384 (?)	Mg+, Cr, Fe.
x 12	4417 4418 (?)	Fe, Sc+, V, Fe+, Ti+.
x 13	4469 - (4481) - 4489 4489 with two maxima	Ti, - Fe+ *
x 14	4501 4501-4508, with several maxima	Ti+, Fe+.
15	4554	Ba+
16	4572 - 4583?	Ti+, Fe+.
17	4621 - 4629 ? 17a	Fe+ *
x 18	H _β	H
x 19	4924 Fe+	Fe+
x 20	5018 Fe+	Fe+

26
 26
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 37

Micrometer measurements of selected post-maximum spectra of Nova Pictoris.

Mar. -	2 nd Set Mean -	λ	Rem -	Plate X14617, June 21, 1925. (3-11)
26.341	347		ce, faint	Abbreviations: ce - center emission se - shorter wavelength edge line le - longer wavelength edge line ca - center absorption
26.712	716		ce, good	
27.153	160		ce, diffuse	
27.768	752		ce, diff, broad, diffie.	
28.046	045		ca.	
28.294	290		c.e. H β , companion to K diffuse. wing? or Ist max.	
28.554	559		{c.e. strong (K line) has a faint reversal in c.? - wing to K (red)	
28.760	750		resol. wing to H+H ϵ	
29.675	686		ce, H+H ϵ , red wing diffuse (and long maximum)	
30.012	006		{c.e. band, very broad, viol. half is more intense than the red one. Probably group of lines.	
32.178	182		c.e., Homog. intensity	
33.029	022		ce. Homog. intensity	
33.482	482		O.e. Ist max HD {34.503 (Abs. at 34.418). Width 0.139 Rev. 34.638	
34.569	568		c.a.	
34.688	686		c.e. H γ (main max.) {se 34.717 le 34.896	
34.819	824		c.e. of the wing	
35.195	185		s.e. } faint	
35.427	420		l.e. }	
35.624	624		s.e. } faint	
35.683	680		l.e. }	
35.881	881		c.e. diffuse, faint.	
36.217	219		s.e. }	
36.591	592		l.e. } a narrow sharp reversal (?) about in the center	
36.858	860		s.e. edge of or wing or of a line	
36.963	963		s.e. } edges of strong narrow emiss. (4227? 33?) or it	
37.106	111		l.e. } is a broader emiss. with a dark reversal? ←(reversal?)	
37.255	252		s.e. }	
37.276	273		l.e. } this emiss. slightly weaker than the previous. a weak wing to the red.	
37.409	414			

Meas.	2 nd reading	mean	Δ	Remarks
37.922	919			s.e
38.218	217			l.e
38.824	823			s.e
38.963	959			c.e. Two lines the more ref. stronger
39.118	116			l.e. 4242?
39.566	560			s.e
39.854	859			l.e. Double or triple line - two spaces seem to be seen in the band.
41.627	626 *			s.e. s. edge of wing to H γ
41.958	960			c.e. 1st max, weak
42.063	064			s.e. - II nd, main max. } H γ
42.242	244			l.e. - line on border of red wing of H γ - <u>not</u> a II nd max
42.392	395			s.e. - line on border of red wing of H γ - <u>not</u> a II nd max
42.528	531			l.e. - line on border of red wing of H γ - <u>not</u> a II nd max
53.494	495			s.e. edge of wing (violet)
53.710	716			c.e. 1st max (weaker, H β)
53.812	809			s.e. II nd, the stronger max } H β
53.970	973			l.e. II nd, the stronger max
54.108	112			c.e. near the border of red wing (indigo line)
54.191	182			l.e. edge of red wing.

* From here only H γ and H β measured.

Continued -

Special measurements of post-maximum spectra.

Width of emission, (Distance between maxima in each band)

Width and (Distance between double absorption. - by subtr.)

1	H ₂	154	33.860	864
2	K	350	34.049	055
3	H ₂	210	34.164	172
4	Mn	—	34.282	290
5	H ₂	545	34.385	402
6	H ₂	130	34.828	826
7	H ₂	59	38.465	462
8	Net +	311	38.799	800
9	H, Fe +	—33	41.277	262
10	Net +	—34	41.422	429
11	Net +	52	41.530	531
12	Net +	48	41.632	638
13	Net +	—	41.747	744
14	Net +	—	42.195	197
15	Fe +	48	53.080	087
16	Fe +	54	53.223	228
17	H	364	53.335	339
18	Fe +	86	53.362	375
19	Fe +	77	53.465	471
20	Fe +	—	53.773	762
		—	54.407	412
	Absorp	54.245	244	

2 165
3 200
(6)
(10)

sa } π , strong abs. H₂ X 14784
Sept. 23, 1925

sa } π , weak abs. H₂

ce - Emiss. is not quite symmetrical

l.e - edge of red wing, uncertain

s.e } 4314?

sa } I + strong comp. of H₂

l.a } π , weak abs. of H₂ } H₂

c.e.

l.e = edge of wing (red)

sa } I + strong abs. in H₂

c.a, too narrow for width meas.

s.e } H₂

c.e } em.

s.e } 4924 not very certain in measurements, - rather diffuse lines.

		30.005	008
1	246	31.195	204
2	246	31.391	394
3	H _e	550 31.573	570
4		321 31.703	703
6	H _δ	677 32.080	090
7		235 32.467	461
8		101 32.684	673
10		300 32.813	808
11		25 32.880	880
12		28 39.035	042
13		29 39.303	295
14		32 39.404	402
15		75 39.737	727
16		115 50.340	251
17		99 50.502	502
17a		69 50.582	592
18	H _β	603 50.675	685
19		213 50.790	796
		51.068	065
		51.788	785

s.a. Diffuse Int

l.a. } Abs. (strong)

s.a

l.a. } Ind abs (weak)

c.e

l.e. edge of red wing, unc. Diffuse

s.a

l.a. } Int abs, strong one

s.a

l.a. } Ind abs, weak one

c.e.

l.e. 1st edge of the shaded red wing

c.e. - a weak emiss. in the red wing

l.e. edge of the whole wing, unc. Diffuse

s.a

l.a. } Int strong abs.

s.a

l.a. } Ind weak abs.

c.e

l.e. edge of H_β (red)

s.e

l.e. } 4924

X 14812

Oct 28, 1925

Absorption.

3	200
6	67
10	26

Deep drop of curve
between emiss 12 & 13.

1 cut off
2 K 480
3 H₁₁ 705
4 352
5 H₁₀ 805
7 331

Aug 8

4.1
V
2.21
✓(2)
✓?
✓0.08
✓6.4
✓?
✓
22.78
2
2
✓1.45
✓3.8
✓.650
✓47
✓?
✓? .8
✓.940
✓.013
✓.078
✓? .700
✓
✓6.2
✓
✓
✓
✓
✓(2.1)

Micrometer-measurements of premaximum spectrum
of Nova Pictoris 1925.4. Gaertner machine ~~W. H. F. G.~~ (M. Mitchell obs.)

Constants of Cornu formula used for this spectrum: n_0 104.818; λ_0 5.17267; λ_0 2.022.3.

Ch.	Rem			means	λ in \AA			means	λ in \AA		
v		21.005	987	20.996	3797.8	v	25.712	716	25.717	3903.7	very near
?	21.390?	21.416	406	21.411	3806.6	v	25.816	808	25.817	3906.1	diffuse
v	(2) 780-85	21.770	767	21.769	3814.2	v	26.133	138	26.136	3913.8	str.
v	?	21.852	857	21.855	3815.2 3816.2	v	26.260	252	26.256	3916.6	Ch. 240
v	0.50? =	22.030	037	22.034	3820.0	v	26.360	362	26.361	3919.1	Diff. Diff.
v	Diffie?	22.272	263	22.269	3825.1	v	26.407	404	26.406	3920.2	Diff. v. faint
v		22.321	325	22.323	3825.7 3826.3	v	26.458	457	26.458	3921.5	same
v	no diff.	22.730	727	22.729	3835.2	v	26.567	552	26.563	3924.1	Good
v	22.782 (257)	22.959	955	22.957	3840.3	v	26.649	648	26.649	3926.2	v. f. line?
v	Diffuse	23.135	130	23.133	3844.2	v	26.690	700	26.695	3927.3	Diff. line? no
v	Very faint	23.374	372	23.373	3849.5	v	26.820	820	26.820	3930.3	v. f. —
v	Diffuse	23.627 (631)	624	23.628	3855.3	v	26.953	960	26.957	3933.7	K line
v	Diffuse, diff	23.740	751; 49	23.744	3858.0	v	27.150	147	27.149	3938.4	
v	?	23.810	813	23.812	3859.5	v	27.317	314	27.316	3942.6	
v	?	23.902	908	23.905	3861.6	v	27.394	394	27.394	3944.5	Diff. th?
v	Uncertain	24.067	065	24.066	3865.2	v	27.462	464	27.463	3946.2	Ch. 470
v	Very diff.	24.151	152	24.152	3867.2	v	27.532	532	27.532	3947.3	v. f. line?
v	Triplet	24.346	346	24.346	3871.7	v	27.585	578	27.582	3949.2	
v	no line (Ch)	24.358	360	24.349?	3872.0??	v	27.676	675	27.676	3951.5	
v	faint center to next l.	24.436?	422	24.429	3878.2	v	27.712	716	27.714	3952.5	v. f. line?
v	6.000 good	24.790	792	24.794	3882.0	v	27.742	744	27.743	3953.2	
v		24.988	984	24.986	3886.5	v	27.834	836	27.835	3955.6	
v		25.050	042	25.046	3887.9	v	27.876	870	27.873	3956.4	
v	seems to have three maxima	25.014	097	25.005	3889.3	v	27.923	920	27.927	3957.7	good
v	H ₃ center	25.164	160	25.162	3890.6	v	28.021	026	28.024	3960.3	one line with 3 maxima distinguished
v	very distinct good	25.371	371	25.371	3895.5	v	28.046	048	28.047	3960.8	
v	strong	25.566	562	25.564	3900.1	v	28.083	085	28.084	3961.8	Good

rem	meas.	2nd read	mean	λ	meas.	2nd read	mean	λ
meand. 175 ch.	28.136 ?	140	28.138	3963.1	30.226	221	30.224	4017.4
	28.195 (China mean)		28.175	3964.0				
	28.191 ?	192	28.192	3964.5	30.355	343.50	30.349	4020.8
	28.225 ?	224	28.225	3965.3	30.367	360	30.364	4021.0
	28.267 ?	270	28.269	(3966.5)	30.411	415	30.413	4021.2
	28.366	370	28.368	3969.0	30.483	494	30.489	4022.5
	28.536	538	28.537	3973.3	30.521	572	30.522	4024.5
	28.572	568	28.570	3973.7	30.619	612	30.616	4025.4
	28.674	673	28.674	3974.1	30.645	652	30.649	4028.0
v.f.; line?	28.724	727	28.726	3976.8	30.771	769	30.770	4028.4
v.f.; line?	28.798	792	28.798	3978.1	30.834	834	30.834	4028.8
v.f.; line?	28.831	832	28.832	3980.0	30.898	894	30.894	4032.1
edge of next l.	28.860	862	28.861	3980.8	31.030	1034	31.032	4033.9
strong, diff. line	28.893	890	28.892	3981.6	31.131	1139	31.135	4035.5
with max. st.	28.980	979	28.980	3982.4	31.199	202	31.201	4039.2
faint:	29.053	057	29.052	3984.7	31.230	234	31.232	4042.1
	29.093	087	29.090	3986.5	31.274	273	31.274	4043.9
	29.196	197	29.197	3987.0	31.350	353	31.352	4044.7
v. uncertain, line?	29.305	313	29.309	3987.5	31.404	405	31.408	4045.9
v. unc. diffuse	29.383	386	29.380	3990.3	31.454	454	31.454	4048.0
good, but diff	29.467	470	29.469	3993.2	31.522	519	31.521	4049.5
band	29.570	570	29.570	3995.1	31.576	578	31.577	4050.2
diffuse, unc.	29.652	657	29.657	4000.0	31.658	656	31.657	4050.9
	29.760	758	29.759	4001.8	31.692	688	31.690	4052.7
	29.785	785	29.785	4005.1	31.828	817	31.818	4054.3
v.f. unc. line v. sharp	29.895	884	29.890	4005.8	31.905	904	31.905	4056.5
comp. to next l.	29.966	970	29.968	4008.5	32.021	025	32.023	4057.4
diff. band	29.915	916	29.916	4010.6	32.086	086	32.086	4061.0
comp. to next	29.988	988	29.988	4009.2	32.135	140	32.138	4063.4
good line	30.042	042	30.042	(4011.1)	32.214	205	32.210	4066.7
v.f.; line?	30.152	155	30.154	4012.5	32.302	297	32.300	4068.5
				4015.5				4070.0

* Comp. not in the follow. tab.

Rem	meas.	2 nd read.	Mean	λ	meas	2 nd read.	Mean	λ	Rem
	32.339	244	32.341	4075.1 4075.7	36.050	053	36.052	4186.5	94
408 Strong.	32.410	406	32.408	4077.6	36.418	422	36.420	4198.1	241?
32.1	32.520	527	32.524	4081.6 4081.9	36.582	553	36.558	4202.5	
line? v.f. 2/3	32.665	662	32.664	4084.9	36.674	671	36.673	4206.2	Load?
line? v.f.	32.810	809	32.810	4089.1	36.727	724	36.726	4207.9	line? 96?
no	33.244	257	33.251	4101.8	36.793	801	36.797	4210.2	
of	33.441	436	33.439	4107.3	36.860	862	36.861	4212.3	
close 32.1	33.557	554	33.556	4110.7	36.952	955	36.954	4215.2	4215 Strong
	33.588	586	33.587	4111.6	37.078	082	37.080	4219.8	
line?	33.755	750	33.753	4116.5	37.162	170	37.166	4222.1	
	33.822	822	33.822	4118.5	37.250	252	37.251	4225.0	4222 Strong
	33.886	885	33.886	4120.4	37.302	307	37.305	4226.7	4222 Strong
Strong	33.978	972	33.975	4123.0	37.380	385	37.383	4229.2	4222 Strong
Strong	34.164	166	34.165	4129.3	37.495	502	37.499	4233.1	4222 Strong
good	34.280	298	34.279	4132.1	37.600	594	37.597	4236.2	v.f. line?
meat. diffuse, dift	34.455	458	34.457	(4137.4)	37.676	672	37.674	4238.8	
32.1	34.656	667	34.662	4143.6	37.770	770	37.770	4241.9	4238 Strong
line? narrow	34.738	736	34.737	(4145.9)	37.797	795	37.796	4242.9	4238 Strong
Strong 32.1	34.844	847	34.846	4149.2	37.907	910	37.909	4246.6	4238 Strong
The whole region	34.942	942	34.942	4152.1	38.020	018	38.029	4250.2	4238 Strong
between 34.165- seems to be all covered with abn. lines especially betw. 34.660 and	35.004	010	35.007	4154.1	38.123	126	38.125	4253.8	4238 Strong
	35.245	244	35.245	4161.4	38.255	248	38.252	4258.0	4238 Strong
close triple	35.291	287	35.289	4162.8	38.327	323	38.325	4260.5	4238 Strong
	35.322	322	35.322	4163.8	38.440	443	38.442	4264.4	4238 Strong
strong	35.454	456	35.455	4167.9	38.554	558	38.556	4268.3	4238 Strong
4173	35.597	602	35.600	4172.3	38.629	625	38.627	4270.7	4238 Strong
"	35.644	643	35.644	4173.8	38.664	670	38.667	4272.0	4238 Strong
narrow extreme faint	35.726	728	35.727	4176.8	38.852	850	38.857	4278.3	4238 Strong
v. str. "4178"	35.788	787	35.787	4178.2	39.013	013	39.013	4283.9	4238 Strong
32.1 str.	35.956	952	35.954	4183.4	39.122	121	39.122	4287.6	4238 Strong

see previous line	39.160	164	39.162	4289.0	42.020	014	42.017	4392.0	
	39.202	201	39.202	4290.4	42.102	103	42.103	4395.3	v. str.
perhaps middle line	39.293	295	39.294	4293.4	42.288	239	42.239	4400.5	str.
v.f.	39.373	374	39.374	4296.3	42.345	338	42.342	4404.4	} close
strong pair	39.462	465	39.464	4299.5	42.387	337	42.387	4406.1	} pair
	39.548	550	39.552	4302.7	42.494	492	42.493	4410.1	} close
strong pair	39.691 ?	695 ?	39.693	4307.5	42.541	546	42.544	4412.1	} pair
v. str. 1st made and 2nd 2x3-5nd	39.827	820	39.824	4312.1	42.686	687	42.687	4417.6	v. str.
	856	857	857	4313.2	42.837	835	42.836	4423.4	
	885	883	884	4315.2	42.944	948	42.946	4427.6	extra close pair
	39.995	995	39.995	4318.1	43.124	119	43.122	4434.5	v. close pair
v. str. line	40.054	052	40.053	4320.0	43.372	369	43.371	4444.3	v. str.
v. str. 86?	40.187	178	40.183	4324.8	43.537	539	43.538	4450.9	str.
v.f. line?	40.262	265	40.264	4327.7	43.691	684	43.688	4456.9	a pair diff. strong
str. diff.	40.338	337	40.338	4330.3	43.837	826	43.832	4462.6	diff. pair
v.f. line?	40.391	390	40.391	4331.3	43.994	996	43.995	4469.1	good
faint	40.453	456	40.455	4334.5	44.082	086	44.084	4472.7	
v.f. line?	40.492	505	40.502	4336.2	44.290	294	44.292	4481.1	str. v. strong
comp. to H ₂	40.540	536	40.538	4337.5	44.494	495	44.495	4489.4	good
H ₂ 86? 2nd .022	40.617	617	40.617	4340.0	44.565	572	44.569	4492.4	86. line?
	40.743	752	40.749	4345.2	44.706	700	44.708	4498.1	
v.f. line?	40.800	803	40.802	4347.0	44.785	782	44.784	4501.3	86. v. str.
v. str.	40.944	938	40.941	4352.1	44.925	923	44.924	4507.1	} 86
								4508.0	
faint 86	41.107	106	41.107	4358.2	44.966	968	44.965	4508.8	
v.f.	41.158	156	41.157	4360.0	45.089	089	45.089	4514.0	} 86
extrem. f. 4025 pairs?	41.244	237	41.241	4363.1	45.130	124	45.127	4515.5	
2nd wave	41.386	395	41.391	4368.7	45.255	253	45.254	4520.9	} 86
H ₂ strong	41.553	558	41.556	4374.8	45.308	305	45.307	4523.1	
	41.716	713	41.715	4380.6	45.466	460	45.463	4529.6	86.
v. strong H ₂ broad	41.832	834	41.833	4385.1	45.583	585	45.584	4534.8	

86?	45.727	725	45.726	4540.8	52.017	023	52.020	4841.1	
	45.827	825	45.826	4545.1	52.186	179	52.183	4849.7	
good has a small on it.	45.941	943	45.942	4550.0	52.328	332	52.330	4857.7	vial comp to H β
	46.034	028	46.031	4553.9	52.392	391	52.392	4861.0	H β
	46.096	097	46.097	4556.7	52.676	673	52.675	4876.5	line?
	46.159	160	46.160	4559.4	52.784	788	52.786	4882.5	line?
str. off	46.278	271	46.275	4564.4	52.958	954	52.956	4891.9	line?
str. imperfect	46.449	453	46.451	4572.1	53.090	092	53.091	4899.3	line?
	46.558	554	46.556	4576.7	53.285	283	53.284	4910.2	line?
str.	46.726	720	46.723	4584.0	53.472	472	53.472	4920.7	86.
	46.847	852	46.850	4589.6	53.577	574	53.576	4923.2	86.
fine?	47.478	472	47.476	4617.4	53.690	696	53.693	4933.3	str.
pair	47.523	529	47.526	4620.0	53.868	867	53.868	4943.3	
diff	47.673	674	47.674	4627.6	54.555	563	54.559	4983.4	
86	47.757	757	47.757	4630.4	54.987	987	54.987	5005.8	
	47.844	846	47.845	4634.5	55.070	075	55.073	5014.0	86.
line?	47.974	976	47.975	4640.5	55.146	142	55.144	5018.9	86.
v.unc. chain	48.324	322	48.326	4656.7	55.330	330	55.330	5029.6	86.
line?	48.440	443	48.442	4662.1	57.492	492	57.492	5167.0	86.
line?	48.576	570	48.573	4668.3	57.873	873	57.873	5192.5 ?	86.
Two different lines very close	49.134	125	49.130	4694.7					284 line?
rather good	49.230	231	49.231	4699.6	[40.627]	[622]			H γ checks
line?	49.898	897	49.898	4732.1	[33.246]	[242]			H δ
	50.305	302	50.304	4752.3	[26.955]	[960]			K line
line?	50.547	540	50.544	4764.3					
extra f	50.964	959	50.962	4785.6					
extra f	51.223	226	51.225	4799.3					
line	51.347	350	51.349	4805.7					
extra f	51.703	703	51.703	4824.2					
v. f	51.862	859	51.861	4832.5					

Position of plate did
not change.

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Computations of λ .

$n_0 - n$	83.822	82.549	81.445	80.752	80.024	79.447
$f(n_0 - n)$	1.92336	1.91671	1.91089	1.90715	1.90322	1.90008
$g_1/n_0 - n$	3.24931	3.25596	3.26178	3.26552	3.26945	3.27259
$c/n_0 - n$	1775.5	1802.8	1827.2	1842.9	1859.7	1873.2
λ	<u>3797.8</u>	<u>3825.1</u>	<u>3849.5</u>	<u>3865.2</u>	<u>3882.0</u>	<u>3895.5</u>

83.407	82.495	81.191	80.666	79.832	79.254
1.92121	1.91643	1.90950	1.90669	1.90218	1.89902
3.25746	3.25624	3.26317	3.26598	3.27049	3.27365
1784.3	1804.0	1833.0	1844.9	1864.2	1877.8
<u>3806.6</u>	<u>3826.3</u>	<u>3855.3</u>	<u>3867.2</u>	<u>3886.5</u>	<u>3900.1</u>

83.049	82.089	81.074	80.472	79.772	79.101
1.91934	1.91429	1.90888	1.90564	1.90185	1.89819
3.25333	3.25838	3.26379	3.26703	3.27082	3.27448
1791.9	1812.9	1835.7	1849.4	1865.6	1881.4
<u>3814.2</u>	<u>3835.2</u>	<u>3858.0</u>	<u>3871.7</u>	<u>3887.9</u>	<u>3903.7</u>

82.963	81.861	81.006	80.459	79.713	79.001
1.91889	1.91308	1.90852	1.90558	1.90153	1.89764
3.25378	3.25959	3.26415	3.26709	3.27114	3.27503
1793.9	1818.0	1837.2	1849.7	1867.0	1883.8
<u>3816.2</u>	<u>3840.3</u>	<u>3859.5</u>	<u>3872.0</u>	<u>3889.3</u>	<u>3906.1</u>

82.784	81.685	80.913	80.189	79.656	78.682
1.91795	1.91215	1.90802	1.90412	1.90122	1.89587
3.25472	3.26052	3.26465	3.26855	3.27145	3.27680
1797.7	1821.9	1839.3	1855.9	1868.3	1891.5
<u>3820.0</u>	<u>3844.2</u>	<u>3861.6</u>	<u>3878.2</u>	<u>3890.6</u>	<u>3913.8</u>

78.562	78.169	77.502	77.142	76.891	76.626
1.89521	1.89303	1.88931	1.88729	1.88588	1.88488
3.27746	3.27964	3.28336	3.28538	3.28678	3.28829
1894.3	1903.9	1920.3	1929.2	1935.4	1942.2
<u>3916.6</u>	<u>3926.2</u>	<u>3942.6</u>	<u>3951.5</u>	<u>3957.7</u>	<u>3964.5</u>

78.457	78.123	77.424	77.104	76.794	76.593
1.89463	1.89278	1.88827	1.88707	1.88532	1.88419
3.27804	3.27989	3.28380	3.28560	3.28735	3.28848
1896.8	1905.0	1922.2	1930.2	1938.0	1943.0
<u>3919.1</u>	<u>3927.3</u>	<u>3944.5</u>	<u>3952.5</u>	<u>3960.3</u>	<u>3965.3</u>

78.412	77.998	77.355	77.075	76.771	76.549
1.89438	1.89202	1.88849	1.88692	1.88520	1.88394
3.27829	3.28059	3.28418	3.28575	3.28747	3.28873
1897.9	1902.0	1923.9	1930.9	1938.5	1944.2
<u>3920.2</u>	<u>3930.3</u>	<u>3946.2</u>	<u>3953.2</u>	<u>3960.8</u>	<u>3966.5</u>

78.360	77.861	77.286	76.983	76.734	76.450
1.89409	1.89131	1.88810	1.88640	1.88499	1.88338
3.27858	3.28136	3.28457	3.28627	3.28768	3.28929
1899.2	1911.4	1925.6	1933.2	1939.5	1946.7
<u>3921.5</u>	<u>3933.7</u>	<u>3947.3</u>	<u>3955.6</u>	<u>3961.8</u>	<u>3969.0</u>

78.255	77.669	77.236	76.945	76.680	76.281
1.89351	1.89025	1.88782	1.88618	1.88468	1.88242
3.27916	3.28242	3.28485	3.28649	3.28799	3.29025
1901.8	1916.1	1926.9	1934.1	1940.8	1951.0
<u>3924.1</u>	<u>3938.4</u>	<u>3949.2</u>	<u>3956.4</u>	<u>3963.1</u>	<u>3973.3</u>
				3964.0	

76.248	75.957	75.438	75.059	74.776	74.405
1.88223	1.88057	1.87759	1.87540	1.87377	1.87160
3.29044	3.29210	3.29508	3.29727	3.29890	3.30107
1951.8	1959.3	1972.8	1982.8	1990.2	2000.2
<u>3974.1</u>	<u>3981.6</u>	<u>3995.1</u>	<u>4005.1</u>	<u>4012.5</u>	<u>4022.5</u>
76.144	75.926	75.349	74.928	74.664	74.329
1.88163	1.88039	1.87708	1.87465	1.87311	1.87116
3.29104	3.29228	3.29559	3.29802	3.29956	3.30151
1954.5	1960.1	1975.1	1986.2	1993.2	2002.2
<u>3976.8</u>	<u>3982.4</u>	<u>3997.4</u>	<u>4008.5</u>	<u>4015.5</u>	<u>4024.5</u>
76.092	75.838	75.248	74.850	74.594	74.296
1.88134	1.87989	1.87650	1.87419	1.87270	1.87097
3.29133	3.29278	3.29617	3.29848	3.29997	3.30170
1955.8	1962.4	1977.7	1988.3	1995.1	2003.1
<u>3978.1</u>	<u>3984.7</u>	<u>4000.0</u>	<u>4010.6</u>	<u>4017.4</u>	<u>4025.4</u>
76.020	75.766	75.161	74.902	74.469	74.202
1.88093	1.87948	1.87600	1.87449	1.87197	1.87041
3.29174	3.29319	3.29657	3.29818	3.30070	3.30226
1957.7	1964.2	1979.5	1986.9	1998.5	2005.7
<u>3980.0</u>	<u>3986.5</u>	<u>4001.8</u>	<u>4009.2</u>	<u>4020.8</u>	<u>4028.0</u>
75.986	75.728	75.033 ^(each place 10 min)	74.830	74.454	74.169
1.88074	1.87926	1.87525	1.87408	1.87188	1.87023
3.29193	3.29341	3.29742	3.29859	3.30079	3.30244
1958.5	1965.2	1983.5	1988.8	1998.9	2006.5
<u>3980.8</u>	<u>3987.5</u>	<u>4005.8</u>	<u>4011.1</u>	<u>4021.2</u>	<u>4028.8</u>

74.048	73.617	73.364	73.000	72.608	71.567 * exch. w. next two
1.86952	1.86692	1.86548	1.86332	1.86099	1.85471
3.30315	3.30569	3.30719	3.30935	3.31168	3.31796
2009.8	2021.6	2028.6	2038.7	2049.7	2079.5
<u>4032.1</u>	<u>4043.9</u>	<u>4050.9</u>	<u>4061.0</u>	<u>4072.0</u>	<u>4101.8</u>

73.984	73.586	73.297	72.913	72.518	[72.008
1.86913	1.86680	1.86508	1.86281	1.86045	1.85738
3.30354	3.30587	3.30759	3.30986	3.31222	3.31529
2011.6	2022.4	2030.4	2041.1	2052.2	2066.8
<u>4033.9</u>	<u>4044.7</u>	<u>4052.7</u>	<u>4063.4</u>	<u>4074.5</u>	<u>4089.1</u>

73.924	73.544	73.241	72.915	72.477	72.154
1.86878	1.86654	1.86476	1.86210	1.86020	1.85822
3.30389	3.30613	3.30791	3.31057	3.31247	3.31441
2013.2	2023.6	2032.0	2044.4	2053.4	2062.6
<u>4035.5</u>	<u>4045.9</u>	<u>4054.3</u>	<u>4066.7</u>	<u>4075.7</u>	<u>4084.9</u>]

73.786	73.466	73.161	72.732	72.410	71.379
1.86792	1.86609	1.86428	1.86172	1.85980	1.85357
3.30469	3.30658	3.30839	3.31095	3.31287	3.31910
2016.9	2025.7	2034.2	2046.2	2055.3	2085.0
<u>4039.2</u>	<u>4048.0</u>	<u>4056.5</u>	<u>4068.5</u>	<u>4077.6</u>	<u>4107.3</u>

73.683	73.413	73.128	72.680	72.294	71.262
1.86737	1.86578	1.86409	1.86141	1.85910	1.85286
3.30530	3.30689	3.30858	3.31126	3.31357	3.31981
2019.8	2027.2	2035.1	2047.7	2059.3	2088.4
<u>4042.1</u>	<u>4049.5</u>	<u>4057.4</u>	<u>4070.0</u>	<u>4081.6</u>	<u>4110.7</u>

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71.231	70.539	69.876	69.363	68.864	68.092
1.85267	1.84843	1.84433	1.84113	1.83799	1.83310
3.32000	3.32424	3.32834	3.33154	3.33468	3.33957
2089.3	2109.8	2129.8	2145.6	2161.1	2185.6
<u>4111.6</u>	<u>4132.1</u>	<u>4152.1</u>	<u>4167.9</u>	<u>4183.4</u>	<u>4207.9</u>

70.996	70.361	69.811	69.218	68.766	68.021
1.85124	1.84734	1.84393	1.84022	1.83732	1.83265
3.32143	3.32533	3.32874	3.33245	3.33529	3.34002
2096.2	2115.1	2131.8	2150.0	2164.2	2187.9
<u>4118.5</u>	<u>4137.4</u>	<u>4154.1</u>	<u>4172.3</u>	<u>4186.5</u>	<u>4210.2</u>

70.932	70.156	69.573	69.174	68.398	67.957
1.85084	1.84607	1.84244	1.83994	1.83505	1.83223
3.32183	3.32660	3.33023	3.33273	3.33762	3.34044
2098.1	2121.3	2139.1	2151.5	2175.8	2190.0
<u>4120.4</u>	<u>4143.6</u>	<u>4161.4</u>	<u>4173.8</u>	<u>4198.1</u>	<u>4212.3</u>

70.843	70.081	69.529	69.091	68.260	67.864
1.85030	1.84560	1.84216	1.83941	1.83417	1.83164
3.32237	3.32707	3.33051	3.33326	3.33850	3.34103
2100.7	2123.6	2140.5	2154.0	2180.2	2192.9
<u>4123.0</u>	<u>4145.5</u>	<u>4162.8</u>	<u>4176.3</u>	<u>4202.5</u>	<u>4215.2</u>

70.653	69.972	69.496	69.031	68.145	67.738
1.84901	1.84492	1.84196	1.83905	1.83345	1.83074
3.32366	3.32775	3.33071	3.33362	3.33922	3.34193
2107.0	2126.9	2141.5	2155.9	2183.9	2197.5
<u>4129.3</u>	<u>4149.2</u>	<u>4163.8</u>	<u>4178.2</u>	<u>4206.2</u>	<u>4219.8</u>

67.652	67.221	66.799	66.262	65.696	65.354
1.83028	1.82751	1.82477	1.82126	1.81754	1.81527
3.34239	3.34516	3.34790	3.35141	3.35513	3.35740
2199.8	2213.9	2227.9	2246.0	2265.3	2277.2
<u>4222.1</u>	<u>4236.2</u>	<u>4250.2</u>	<u>4268.3</u>	<u>4287.6</u>	<u>4299.5</u>

67.567	67.144	66.693	66.191	65.656	65.266
1.82973	1.82701	1.82408	1.82080	1.81727	1.81469
3.34294	3.34566	3.34859	3.35187	3.35540	3.35798
2202.7	2216.5	2231.5	2248.4	2266.7	2280.4
<u>4225.0</u>	<u>4238.8</u>	<u>4253.2</u>	<u>4270.7</u>	<u>4289.0</u>	<u>4302.7</u>

67.513	67.048	66.566	66.151	65.616	65.125
1.82939	1.82639	1.82325	1.82054	1.81701	1.81375
3.34328	3.34628	3.34942	3.35213	3.35566	3.35892
2204.3	2219.6	2235.7	2249.7	2268.1	2285.2
<u>4226.6</u>	<u>4241.9</u>	<u>4258.0</u>	<u>4272.0</u>	<u>4290.4</u>	<u>4307.5</u>

67.435	67.022	66.493	65.967	65.524	64.994
1.82889	1.82621	1.82278	1.81933	1.81640	1.81287
3.34378	3.34646	3.34989	3.35334	3.35627	3.35980
2206.9	2220.6	2238.2	2256.0	2271.1	2289.8
<u>4229.2</u>	<u>4242.9</u>	<u>4260.5</u>	<u>4278.3</u>	<u>4293.4</u>	<u>4312.1</u>

67.319	66.909	66.376	65.805	65.444	64.961
1.82813	1.82548	1.82201	1.81826	1.81587	1.81266
3.34454	3.34719	3.35066	3.35441	3.35680	3.36001
2210.8	2224.3	2242.1	2261.6	2274.0	2290.9
<u>4233.1</u>	<u>4246.6</u>	<u>4264.4</u>	<u>4283.9</u>	<u>4296.3</u>	<u>4313.2</u>

64.934	64.480	64.201	63.661	62.985	62.431
1.81247	1.80943	1.80755	1.80388	1.79924	1.79540
3.36020	3.36324	3.36512	3.36879	3.37343	3.37727
2292.9	2308.0	2318.0	2337.7	2362.8	2383.8
4315.2	4330.3	4340.3	4360.0	4385.1	4406.1

64.823	64.427	64.069	63.577	62.715*	62.325
1.81173	1.80907	1.80664	1.80330	1.79738	1.79467
3.36094	3.36360	3.36603	3.36937	3.37529	3.37800
2295.8	2309.0	2322.9	2340.8	2373.0	2387.8
4318.1	4331.3	4345.2	4363.1	4395.3	4410.1

64.765	64.363	64.016	63.427	62.801*	62.274
1.81134	1.80864	1.80629	1.80227	1.79797	1.79431
3.36133	3.36403	3.36638	3.37040	3.37470	3.37836
2297.9	2312.2	2324.7	2346.4	2369.7	2389.8
4320.2	4334.5	4347.0	4368.7	4392.0	4412.1

64.635	64.316	63.877	63.262	62.579	62.131
1.81047	1.80832	1.80534	1.80114	1.79643	1.79331
3.36220	3.36435	3.36733	3.37153	3.37624	3.37936
2302.5	2313.9	2329.8	2352.5	2378.2	2395.3
4324.8	4336.2	4352.1	4374.8	4400.5	4417.6

64.554	64.280	63.711	63.103	62.476	61.982
1.80992	1.80808	1.80422	1.80007	1.79571	1.79226
3.36275	3.36459	3.36845	3.37260	3.37696	3.38041
2305.4	2315.2	2335.9	2358.3	2382.1	2401.1
4327.7	4337.5	4358.2	4380.6	4404.4	4423.4

61.872	60.986	60.249	59.729	59.234	58.721
1.79149	1.78523	1.77995	1.77618	1.77257	1.76880
3.38118	3.38744	3.39272	3.39649	3.40010	3.40387
2405.3	2440.3	2470.1	2491.7	2512.5	2534.4
4427.6	4462.6	4492.4	4514.0	4534.8	4556.7

61.696	60.823	60.110	59.691	59.092	58.658
1.79026	1.78407	1.77895	1.77591	1.77153	1.76833
3.38241	3.38860	3.39372	3.39676	3.40114	3.40434
2412.2	2446.8	2475.8	2493.2	2518.5	2537.1
4434.5	4469.1	4498.1	4515.5	4540.8	4559.4

61.447	60.734	60.034	59.564	58.992	58.543
1.78850	1.78343	1.77840	1.77498	1.77079	1.76747
3.38417	3.38924	3.39427	3.39769	3.40188	3.40520
2422.0	2450.4	2479.0	2498.6	2522.8	2542.1
4444.3	4472.7	4501.3	4520.9	4545.1	4564.4

61.280	60.526	59.894	59.511	58.876	58.367
1.78732	1.78194	1.77738	1.77460	1.76994	1.76617
3.38535	3.39073	3.39529	3.39807	3.40273	3.40650
2428.6	2458.6	2484.8	2500.8	2527.7	2549.8
4450.9	4481.1	4507.1	4523.1	4550.0	4572.1

61.130	60.323	59.803	59.355	58.787	58.262
1.78625	1.78048	1.77708	1.77346	1.76928	1.76539
3.38642	3.39219	3.39559	3.39921	3.40339	3.40728
2434.6	2467.1	2486.5	2507.3	2531.6	2554.4
4456.9	4489.4	4508.8	4529.6	4553.9	4576.7

58.095	57.061	56.245	54.274	52.957	52.143
1.76414	1.75634	1.75009	1.73459	1.72393	1.71719
3.40853	3.41633	3.42258	3.43808	3.44874	3.45548
2561.7	2602.1	2646.0	2742.0	2810.2	2854.2
4584.0	4630.4	4668.3	4764.3	4832.5	4876.5

57.968	56.973	55.688	53.856	52.798	52.032
1.76319	1.75567	1.74576	1.73124	1.72261	1.71627
3.40948	3.41700	3.42691	3.44143	3.45006	3.45640
2567.3	2612.2	2672.4	2763.3	2818.8	2860.2
4589.6	4634.5	4694.7	4785.6	4841.1	4882.5

57.342	56.843	55.587	53.593	52.635	51.862
1.75847	1.75467	1.74498	1.72910	1.72128	1.71485
3.41420	3.41800	3.42769	3.44357	3.45139	3.45782
2595.4	2618.2	2677.3	2777.0	2827.4	2869.6
4617.7	4640.5	4699.6	4799.3	4849.7	4891.9

57.292	56.492	54.920	53.469	52.480	51.727
1.75809	1.75199	1.73973	1.72810	1.71999	1.71372
3.41458	3.42068	3.43294	3.44457	3.45268	3.45895
2597.7	2634.4	2709.8	2783.4	2835.8	2877.0
4620.0	4656.7	4732.1	4805.7	4858.1	4899.3

57.144	56.376	54.574	53.115	52.426	51.534
1.75697	1.75110	1.73651	1.72522	1.71955	1.71209
3.41570	3.42157	3.43616	3.44741	3.45312	3.46058
2604.4	2639.8	2720.0	2801.9	2838.7	2887.9
4626.7	4662.1	4752.3	4824.2	4861.0	4910.2

51.346	49.881	46.945
1,710.51	1.69794	1.67159
3.46216	3.47473	3.50108
2898.4	2983.5	3170.2
4920.7	5005.8	<u>5192.5</u>
		<u><u>5</u></u>

51.302	49.745
1,710.14	1.69675
3.46253	3.47592
2900.9	2991.7
4923.2	5014.0

51.125	49.674
1,708.64	1.69604
3.46403	3.47663
2911.0	2996.6
4933.3	5018.9

50.950	49.488
1,707.14	1.69450
3.46553	3.47817
2921.0	3007.3
4943.3	5029.6

50.259	47.326
1,701.21	1.67570
3.47146	3.49757
2961.1	3144.7
4983.4	5167.0

line-by-line comparison of Nova Pictoris spectra

λ	R	X 14519. V 28	X 14577. V 8	λ	V 28	V 8	Intensity given on
3797.8	20.996	unmeasurable		3953.2	..		Remarks
3806.6	21.411	"		3956.4	..		
3815.2	21.805	→ +		3957.7	..		
3820.0	21.034	Too faint		3961.3	2		
3825.7	22.295	Too faint		3964.0	..		
3835.2	22.729	→ broader		3966.5	..		
3840.3	22.957	seems to (mean) or H γ interferes, —	H+H ϵ	3969.0	50	—	K line is slightly fainter than H+H ϵ on May 28, but the reverse is true on June 8.
3849.5	23.373	Too faint		3973.7	3		
3855.3	23.627	→ —		3978.1	..		
3859.5	23.812	unmeas. ble		3981.6	2-3		broad.
3865-72		→ "		3982.4	—		
3878.2	24.629	→ —		3987.0	2		
3882.0	24.794	unmeasurable		3990.3	..		
3886.5	24.986	no change, or +		3993.2	..		
3889.3	25.105	wider but — ?		3995.1	1		
3895.5	25.371	unmeas. ble	contin. larger fainter	3997.4	..		
3900.1	25.564	broader, but —		4001.8	3	disappears?	narrow
3903.7	25.717	→ — ?		4005.1	3		
3906.1	25.817	broader, but —		4008.5	..		168
3913.8	26.136	broader, but —		4009.2	3..		
3916.6	26.256	unm. ble		(4011.1)	..		
3919.1-24.2		same —		4012.5	2-3		
3927.3-30.3		same —		4015.5	..		
3933.7 (K)	26.957	40 wider, but + broader		4017.4	..		
3944.5	Discontinued to rewrite the R.	3, broad		4021.0	..	Become	
3946.2	↓	..		4022.5	2-3	hazy	Double? 30.400 445
3947.3	↓	1		4024.5	2		30.505
3949.2	↓	..		4025.4	3		
3951.5	↓	1		4028.4	2		
3952.5	↓	1		4032.1	1		

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estimates and (on May 28).
 taken May 28, 1925 and June 8, 1925 Gaertner machine 213

on a decimal scale		Y28	V18	Rem				
4033.9	2			2oub. 30.810 30.860	4145.9	..?		line?
4035.5	1				52.1	1	-	?
4039.2	..				61.4	3	-?	not
4043.9	..?			One wide line at 31.258	62.8	3	-?	Probably no change
4045.9	3?				63.2		+	
4048.0	..?				67.9	..		line?
4050.2	1			somewhat hazy	72.3	(3)-4	+	Difficult
4052.7	3			wide; hazy	73.8	(3)-4	+	to separate
54.3	3			pair	78.2	8	+	less transparent than H β , but wider
56.5	..				83.4	2		wide
57.4	..				86.5	1		wide, very f.
61.0	..			group	4198.1	..		narrow
63.4	..				4202.5	1		
66.7	2				06.2	1-2		Cor. 36.660
72.0	3-4			+ slight	10.2	1-2		
75.1	..			line?	12.3	..		Cor. 36.850?
77.6	5-6			+	15.2	4	+	
4089.1	..			< 32.402 wide < 32.612; not ..	19.8	1/2		Cor 37.070
H β 4101.8	10			-	22.1	..		line??
07.3	..			by June 8 { one or two lines appear on violet side or wing?	25.0	2	+	
10.7	1				26.7	4	+	Cor 37.315
11.6	..				29.2	..		line??
16.5	..?			< 33.730 line? line?	33.1	5	+	
18.5	(1)2			+?	36.2	..		line?
20.4	..			line?	38.8	1		line? 38.86?
23.0	2				42.4	3	-	
29.3	3			-	46.6	6	+	
32.1	2			Cor. 34.260	50.2	2		
37.4	..				53.8	..		
43.6	2			+	4258.0	1		Cor. 38.260?

	λ	Int	May 28	June 8	Rem		λ	Int	May 28	June 8	Rem
	4260.5	"					4400.5	4-5		-	
	68.3	1					04.4	2-3		- ?	
	70.7	1					06.1	"			} a pair of lines?
	72.0	2-3			sharp narrow on a broad base		10.1	2		- ?	
	83.9	"			Cor 39.00 ?		12.1				} a pair
	87.6	2					17.6	8		+	wide sb.? not very strong.
	89.0	2			} wide, with 3 max		23.4	1			
	90.4	2					27.6	"			line?
93.4 >	93.4						34.5	"			line?
	96.3	1					44.3	5-6		+	
	4299.5	4		++	Cor 39.487		50.9	4-5		no change?	
	4302.7	4		only slight increase			56.9	"			line?
	07.5				Cor 39.390 middle		62.6	"			line?
	15.2	7 end			} double? wide		69.1	5		+	
	18.1	1					72.7	1			
	20.0	3		+			81.1	4-5		+	wide
	24.8	5		+			89.4	4		+	heavy, wide roule
	30.3	2-3		-	Cor 40.360		4498.1	"			
	34.5	"					4501.3	4		+	
	37.5	4		++	Cor 40.570		08.0	3		+	*
Hy	40.0	8		-	40.630		14.0	2		+	*
	45.2	1					15.5	2-3		+	*
	52.1	4.5		+			20.9	3?		+	*
	60.0	"					23.1	3?		+	*
	63.1	1					29.6	3		-	
	68.7	3			} + another line on violet side appears		34.8	3-4		+	
	74.8	4		+			40.8	3		+	
	80.6	"					45.1	"			
	85.1	5		+	ab. 1 1/2 times wider than most lines		50.0	3		+	
	92.0	2		- ?			4553.9	1		+	
	4395.3	6		+	another line appears on violet edge or the line has simply widened toward violet.						

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d / from pp. 212-13

	λ	Int	May 28	June 8	Rem		λ	Int	May 28	June 8	Rem
	4556.7	3-4		+	Hazy, sharp, max.		4910.2	2			Group? 53.278 .332 .382
	59.4	1-2					20.7	} 4			
	64.4	3-4		+			23.2			+	} 53.500. Broad, double?
	72.1	4		+	de.?		33.3	3		-	
	76.7	1					43.3	1		-?	From here on
b.?	84.0	5		+			4983.4	..			Cor. 54.545 un-
mp.	4589.6	4-5		+	Composite		5005.8	..			(certain estimates)
	4617.4	3		+	Broad, hazy		14.0	2		+	Cor. 55.025 de.?
	20.0	3		+	With 2 max		18.9	3		-	Cor 55.155?
	27.6	100			narrow		5029.6	1-2			Cor 55.275?
	30.4	2					5167.0	3		+	
	34.5	2-3		+	narrow - one or two faint lines on red side		5192.5	1			< 57.680 appears on June 8. uncertain line?
	40.5	..									
	56.7	1									
	62.1	1									
	68.3	1-2			2 lines?						
	4699.6	1			2 lines?						
	4732.1	2		+			4375				
	4785.6	..									
	4799.3	1			Line at 57.175?		4395				
	4805.7	2-3		+	different backgr. Cor. 57.335						
	24.2	3-4		+	slightly broad		Hy				
	32.5	..									
	41.1	..			Cor 55.035?		Ho				
	49.7	3									
	57.7	..			Cor 52.310? line?						
HP	61.0	4-5		± or:	difference in backgr. 1/2 turns.						
	76.5	1-2		+	< 52.555						
	82.5	..		-	line?						
	91.9	1			line, hazy						

Intensity scale for previous table (above).

Hardly visible line	1
4392 Å	2
	3
4375	4
	5
4395	6
	7
Hy	8
	9
Ho	10
uncertain (too faint)	..

Ref. 77

Ultra violet absorption lines in Nova Pictoris. Beyond K line.

Ref.	Dist. from H ₂ in "P"	Ref.	Wavelength	Notes
A	5.2	3850	3849.97 Fe (E.P. 0.74) (p. 268 R). Int 40, Cl II.	3850.8 Fe (same as previous)
B	4.2	3857	3856.4 Fe (5;5), but no line of Fe+ in R _s . ^{though there is:} 3856.4 Fe. Int. 50. E.P. 0.0 Hardly possible in a Nova. No other line is apparently present at that place. 3855.4 V (Cl I) p. 258.	
C	3.9	3859	3859.9 Fe (p. 266) E.P. 0.0. Not probable line? Very great intens. (R.) 200 R	
D	3.0	3866	3865.5 Fe (p. 268)	
E	2.1	3872	3872.5 Fe (p. 268). 3873.1, 3873.9. Two intense Co lines E.P. 0.4 (p. 277) Int 600 40 (R) Cl II	
F	1.25	3879.4	3878.6 Fe (p. 268). (?) Though intense 100 (R _s). 3878.0 Fe (p. 268)	
C	0.95	3882	3881.9 Co (Cl I) (p. 277 R _s) (2+ 25 R _s). Cr 3883.3 (Cl I) (p. 263 R _s)	
H	0.3	3887	3886.3 La+ (E.P. 0.0; E.P.?) (R _s 278 R). 3886.3 Fe (Cl. I. Int 40 R) (R _s p. 266)	
			3887.0 Fe (E.P. 0.94) (R _s p. 268) Int 15. 3888.5 (E.P. 1.5) Cl II (R _s p. 270) Fe	
K	0.5	3891	3891.8 Ba+ (Int 50 R _s) Cl. V. (p. 240 R _s).	
L	4.7-8	3894	3894.98 Co (Int. 60, E.P. 0.4, Cl II): R _s p. 277	
M	4.2-3	3898	3898.5 Ti (E.P. 0.0, Int 8, Cl II): R _s p. 248. (Near it is Fe 2899.7 Int 30 R Cl I, E.P. 0.0, p. 266 R _s)	
			3898.0 Fe (E.P. 0.94, Int 10, Cl II): R _s p. 268	
N	1.1	3906	3907.5 Fe (Int 75, E.P. 0.0, Cl II): R _s page 245. Near to it is Ca 3908.8 (Cl I. R _s p. 263) Kayser gives also Eu (Int 30; 20 3907.1.	
P	2.4	3913	3913.5 Ti+ (R _s page 255). Kayser gives Int+ (0;6) 3912.8.	
Q	2.1	3916	3916.3 Cr (E.P. 0.98, Cl I) ^{p. 263} Not quite probable line from Nov. 3917.2 Fe (Int 8; Cl II) R _s p. 268	
R	1.15	3924	3924.5 Ti (Cl II. I R _s 248. ^{3915.9} ^{3916.0} ^{3916.4} ^{3916.4}	
S	0.6	3929	3929.9 Ti (Cl II) R _s p. 248. 3928.7 Cr (Cl I) R _s p. 263. Zr 3929.5 (8;5). La+ 3929.4 (R _s)	

Continued from page 218 (over)

- 66 - 4646.3 C_2 (12,10) | 4646.4 V (1stD-2ndP'). EP 1.05 Int 15th | αm
- 66 a { ~~4655.5~~ 4656.5 1stF-1stG' Ti (0.0) Can this line be present in a star like Nova?
 αTi 4656.1 1stP-3rdD', Int. 6, Cl III. EP 1.7. | 4657.6 1stD-mF LP 2.25 Fe
 4655.5 La+
- 66 b { 4667.6 Ti 1stF-1stG' Int 30, Cl I 2? 7 4668.2 Fe 1stD-mF EP 3.25 Cl IV
 c { 4670.5 V 1stD-2ndP'. Int 25, Cl III. EP 1.05. ~~4671.7 Mn EP 4.4 Int 3 Cl II~~
 (Also at 4667.3 N+ EP 15.2, IP 24. mP 2ndP' Int 2) | 4666.8 1stD-1stF' Int 1.54 (p. 267 R)
 and at 4670: 4671.7 Mn. EP > 4.41 (IP 7.41) 1stD-1stF' Cl V (Int. 3 Run.)
- 67 4734.1 Se Cl III EP 3.0 (p. 245) Int 20
 4736.8 Fe, EP 3.25 (p. 272 R) and 4737.7 Se Cl III Int 50, EP? > 0.0
- 68 4766.6 V, EP 2.05 (p. 261 R). 4766.4 Mn EP > 4.4 but Unkn. Cl III (p. 265 R)
 4765.9 Mn same, Int 10, 4765.5 weak Fe line EP 1.54 (p. 267 R) Int 11.
 4766.3 Ti, EP 2.24 (p. 253 R). Int. 4. Perhaps with it a green line at 4.3 Co (7,5) + Zn (6,10)
 Dint. 4.6 (from H β) 4784. 4783.5 Mn (10,6); 84.3 S₂ (10,4); 84.9 Zr+ (4,5)
 68c 4790? 88.7 Zr+ (4,4), 89.4 Cr (5,-), 89.7 Fe (4,-), 92.9 Co (3,8)
 68d 4798. 4796.9 V+ (9,10) and 4799.9 Cd+ (10,10). 4796.2 + 97.99 Ti (EP 2.23, Cl III
 68e 4808. 4807.6 V+ (10,8). 09 La (6,-). 095 Zr (6,-)?
 68f 4814. 4811.8 Se (15,8), 48.5 Co (9,10), 15.6 Zr (8,-). Ti 9812.2 (R. p. 214)
 70a 4848.2 Cr+ (-,6) || 706 D.0.3? Compare to H β (Vial) 4854.9 X+ (10,15), 55.1 Se (10,4), 10.4 N+ (10,7)
 56.0 Ti (6,5); R. p. 253

Identifications to pp 219-20

1926phae 1927735B

218

Requies, microm.

- 6 3937.41 3936 Ba (R. 219). 3941.5 Ca (R. 219). 3944.7 Co (R. 219)
- 6a Al+ (10;10) 3944.0
- 7 Y+ (12;12) and V+ (0;15); 3950.4 + 3952.0
- 7a Ca! n Ca 3957.1 (5;4) Zr+ 3958.2 (8;15) or
 (R. 219, p. 237) Ti 3956.3 (10;5) R. 248
- 8 3961.5 Ti 3962.3 (R. 248) Al+ and perhaps 3963.7 Cr+ (8;8)
- 9a 3973.7 V+ (0;10) and perhaps 3973.7 Ca (6;0)?
- 10 1.4 3981.8 Ti and 3982.6 Y+ (12;12)
- 10a 2.0 (3986 - no line of known origin is found in Kayser)
 possibly 3988.5 (10;15) La, and 3989.8 (10;6) Ti
- 10b { 3990.6 (8;6) V+; 91.1 (8;12) Zr+; 91.2 (6;4) Cr+
 and -91.7 (0;8) Co+.
- 10c { 3995.5 (10;10) Co+ and -97.2 (10;8) V+; 97.9 (10;10) Co+
 and possibly Ti+ 98.9 (10;6) + Zr+ (8;12) 98.96
- 10d { 4005.26 Fe+ (5;6) and probably 4005.7 V+ (0;20)
 4008; 4008.9 Ti (II) (R. 248)
- 12 4012. Ti+; Thel. ref.
- 21a 4086. 4085.7 Zr+ (4;4). 86.3 (9;8). 86.7 (10;10) La
- 27a 4141.7 La+ near it is only the line 4147.7 Fe (R. 219)
- 28a 4149.2 + 4150.78 (10;15) + (5;6) 4149.4
- 28b 4160.7 Co (8;8). 41.2 Zr+ (8;10). 41.8 (10;20)
- 28c 4163.7 Ti+ (4;10)
- 28d 4166 Ba+ (5;7) + 4167.4 Mg (weak)
- 30a 4183 V+ (-10). 30.8 4183.7 Fe (R. 219)
- 33a 4239.3 Zr+ (6;10) 4240.5 I6 III Ca
 4239.9 Fe (0;5) but 2 Ce III (17-17)
- 33b No Cr+ line is indicated by Kayser. Near it are lines of Zr, L+, Pb+??, Rb+ (-;15) 4244.3
- 34a { 4250.1 Fe (25) 2.46 Id-m'd (4250.8 Kayser Fe)
 4254.3 Cr+ (500R) 15-17
- 35 4258.2 (17) 2 p-1 F' (2.68) Fe+ and 4260.5 (1735) 17d-m'd Fe (2.66)
- 36 Count. #36a 4283 Ca, Ba? V+?
- 37 Double
- 37a { 4294.1 Ti+ (1.08), 4294.1 Fe (1.5), 4293.9 (-;10)
 4294.8 (10;14) Sc+ (1.5). 42.5 (5;4) 4294.8
 4296: 4296.8 Ti (7;4) V+ (8;8) 4296.1

- 44a 4344.5 Cr+ (9;10)
- 50a 4404. 4401.4 Fe+ (10;10), 4400.5 (15;15), 4402.6 Ba (8;6) and 4404.8 Fe+ (8;15)
- 50b 4409. 4408.5 V+ (15;20); 4407.7 (4;-) 4408.4 (4;-)
- 53 4457.6 4458.3 Mn (5;4 both), 57.4 Ti (10;5) 4459.0, Ni (10;8), 59.1 Fe (5;-), 59.8 V (8;6)
- 53a 4455 Ca. A blend of 4454.3 Ca (10;10)
 54.8 Zr (5;4)
 55.0 Mn (5;-)
 55.3 Ti (9;4)
 55.3 Mn (5;-)
 55.8 Mn (5;-)
 55.9 Ca (8;6)
 56.4 Ca (4;4)
- 58a 4455.3 (6) 25-1 F' and 4457.9 Cr+ (6;6), 12.7 Ti (10;5)
 4457.5 (17) 17-3 S Ca [12.8 Al+ (-;5)]
- 58b,c A close pair. 4457.9 Ti 4458.0 (8;8), and Fe 4457.5? (8;1) Kayser Fe
- 58d 4452.9 Al+ (-;10), 4450.7 Cr (7;7), 4450.75 Co+ (10;10)
- 59a 4450.5 Cr+ (7;7); 4450.7 Cr+ (7;7); 4452.2 Zr+ (5;5)
- 59b 4458.8 [15-2 F] Ti, 4459.5 (17-1 D), 4459.6 Ti+ (5;10) and 4459.6 V+ (5;8)
- 60 Besides Ba+ must contain Co? 4454.9 (15;-) Cr+ 4454.1 (-;8) Ti+ 4454.5 (-;8)
- 62a 4457.9 La (8;8); 4457.5 Zr+ (5;8); V+ 4457.2 (6;8)
- 63a 4459.2 V+ (-;8), 4459.4 Cr (8;8), 4459.5 Ni (10;4) 4458 Cr+ 4459.1 V+ (10;10); 4459.1 Eu (10;2)
- 64 Must be double, but hardly resolvable 4455-17. Cr (8;8) 4456.1, Ti+ (8;8) 4457.3 and? Cr+ (-;10) 4458.9
- 65 4462.3 Ti (17), 4462.3 Co (9;5), Fe+ 4462.3 4463.0 Zr+ (6;8), 4463.1 Cr+ (-;7)

For the remainder see p. 217.

Provisional ident. from Loefer
Final with red ink Rayser, Am. Well
e 3945-A AC 3944.0 11/21/22

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558
(58)

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43

4541
tense

on.

d
3.7
78.7
d'

d')

H β (706) component on viol. edge 4855.4? Chromorph. line H α
Dist 0.3? from H β

Dispersion λ , 1 μ (new)1d - 15A $H_{\beta}-H_{\gamma}$ 521 \AA 35d 1d — 14.9 \AA

Magnification on microph. tracings (slow rotat. of drum) 6.8 - 6.9 times.

List sent to Hy.

X14524 $\bar{V}29$

28 "

29 "

81 $\bar{V}9$

X p. 1 p. 3

 $H_{\epsilon}-K$ 4.2 8.5 \AA - 1 p.

