

ASTRONOMISCHE NACHRICHTEN.

N^o 2763.

Catalogue No. 5 of Nebulae discovered at the Warner Observatory.

No.	Date of discov.	α 1885.0	δ 1885.0	Descriptions and remarks
1	1886 Oct. 21	0 ^h 9 ^m 5 ^s	— 7° 59' 30"	pB; pS; R; vmbM; 1 st of 3.
2	" " 21	0 9 25	— 7 45 14	vF; pS; R; 2 nd of 3.
3	" " 21	0 9 45	— 7 48 30	vF; pS; R; wide D = nr.sp.; 3 rd of 3.
4	" " 21	0 11 55	— 7 26 15	eeF; vS; R; in vacancy; e diff.
5	" " 21	0 12 52	— 15 57 10	vF; S; R; vFD = close f.
6	" " 22	0 13 25	+ 5 49 26	vF; vS; R; triangle nr. np.
7	" " 31	0 19 15	+ 12 15 21	pF; pS; lE; inside of and near p. corner of equilateral triangle.
8	" " 22	0 33 5	+ 6 25 41	yF; S; lE; 3 or 4 st. nr. sp.
9	" " 22	0 39 15	+ 5 28 55	vF; S; R; * nr. s.
10	" " 22	0 52 50	+ 6 29 40	vF; S; R; 5 or 6 st. nr. s. in a curve.
11	" " 22	1 8 16	+ 5 19 10	pF; vS; R; F = nr. np.
12	" " 21	1 8 35	— 1 38 3	vF; S; R; B = nr. sf.; GC. 254 nr.
13	" " 31	1 16 40	— 1 28 17	eF; pL; R; lbM.
14	" " 22	1 33 40	+ 6 39 30	vF; pS; R.
15	" " 22	1 34 55	+ 7 23 50	eeeF; pS; R; ee diff.; lone * nf.
16	1886 Sept. 25	1 42 55	+ 12 28 55	vF; S; R; lbM; sp. of 2.
17	" " 25	1 43 0	+ 12 29 10	eeF; S; R; nf. of 2.
18	1886 Oct. 2	1 52 45	— 0 1 27	eF; pS; R; B = 30 ^s f. 1 ^s s.
19	1886 Nov. 1	1 58 5	— 10 28 50	eeF; S; R; pB = nr.; e diff.
20	" " 1	1 59 0	— 9 16 45	vF; S; R.
21	" " 1	2 4 55	— 10 51 55	eeeF; pL; ee diff.; * nr. nf.; 495-7-8-9 in field.
22	1886 Oct. 31	2 7 40	— 1 14 30	eF; S; lE; F = close.
23	" " 3	2 78 40	— 1 15 51	pF; pS; lbM; np. of 2.
24	" " 3	2 89 50	— 1 18 6	pF; pS; R; lbM; sf. of 2.
25	" " 3	2 10 10	— 1 14 51	eF; pS; R.
26	" " 7	2 11 12	+ 0 42 40	eF; vS; R.
27	" " 31	2 13 55	— 1 18 0	vF; vS; R; lbM.
28	" " 3	2 20 20	— 0 51 6	vF; pS; R.
29	1886 Nov. 1	2 23 25	— 11 1 50	vF; pS; R; forms D neb. with 547.
30	1886 Sept. 29	2 31 50	— 11 31 49	eeF; pS; R; lbM; 1 st of 3.
31	" " 29	2 31 55	— 11 30 17	eeeF; vS; R; eee diff.; 2 nd of 3.
32	" " 29	2 32 10	— 12 0 50	eeF; vS; R; bet. 2 distant D st.
33	" " 29	2 32 18	— 11 29 19	eeeF; vS; R; eee diff.; 3 rd of 3.
34	1886 Oct. 2	2 34 8	+ 1 1 18	vF; pS; R; lbM; np. of 2.
35	1886 Sept. 29	2 34 8	— 2 13 47	eeeF; vS; vE; eee diff.; 581 in field.
36	1886 Oct. 2	2 34 55	+ 0 50 20	eeeF; S; R; ee diff.; sf. of 2.
37	" " 21	2 35 50	+ 41 0 35	vF; vS; lE; 4 st. in line s. point to it one close.
38	1886 Sept. 29	2 36 35	— 15 35 2	eeF; pS; * nr. s; B = p; e diff.
39	" " 29	2 37 15	— 8 46 42	eeF; pS; R; bet. 2 distant st.; B = nr. f.
40	1886 Oct. 21	2 39 30	— 5 11 35	vF; pS; iR; forms triangle with 2 st.
41	1886 Sept. 29	2 39 35	— 16 4 4	eF; pS; R.
42	" " 29	2 40 0	— 8 40 10	eeeF; pS; lE; nearly bet. 2 distant st.
43	" " 29	2 40 10	— 15 51 3	eeF; pS; vE; surrounded by 5 or 6 st.; np. of 2.
44	" " 29	2 40 35	— 15 33 2	eeF; S; R; sf. of 2.
45	1886 Oct. 31	2 43 5	— 8 25 27	eF; pS; R.

No.	Date of discov.	α 1885.0	δ 1885.0	Descriptions and remarks
46	1886 Nov. 1	2 ^h 44 ^m 30 ^s	-12° 38' 23"	eF; vS; vE.
47	1886 Oct. 31	2 46 25	-1 45 25	eeF; S; R; p. of 619.
48	" " 8	2 46 32	+5 34 18	eF; S; lE; 2 pF st. close p.
49	" " 21	3 1 20	-9 59 15	F; pS; iR; 647 nr.; 1 st of 2.
50	" " 21	3 1 30	-10 1 57	eF; vS; R; 647 nr.; 2 nd of 2.
51	" " 21	3 5 25	+38 29 35	vF; S; lE.
52	1886 Nov. 1	3 5 30	-11 10 43	vF; pS; R; sp. of 660.
53	1886 Oct. 21	3 7 50	+40 55 5	vF; vS; R.
54	" " 21	3 29 20	-10 13 50	vF; S; R; forms triangle with 2 st. one vB.
55	" " 31	3 37 30	-6 44 35	eeF; S; R; v diff.
56	" " 22	3 40 20	-9 33 37	eF; pS; R; in vacancy.
57	1886 Nov. 1	3 46 0	-15 43 55	pF; S; R; forms equilateral triangle with 2 st.
58	1886 Sept. 25	3 46 25	+32 9 34	pF; pS; R; pB * nr. p.
59	1886 Oct. 22	3 58 40	-11 29 34	vF; vS; lE; F * nr. p.
60	" " 2	4 18 13	-1 1 10	eF; vS; R; nearly bet. 2 st.
61	" " 22	4 25 30	-6 3 5	vF; pS.
62	1886 Nov. 1	4 42 52	-6 46 20	vF; pS; R; s of no. 26 of Stephan's Cat. in A. N. no. 2661.
63	1886 Oct. 2	4 44 25	-0 58 10	pF; pS; R; pB * nr. sp.
64	" " 22	4 45 40	-4 59 45	pF; pL; lE.
65	" " 22	4 48 ³ 0	-6 31 20	pB; pS; lE.
66	" " 9	4 54 20	-15 59 45	F; pS; lE; bet. 2 F st.
67	" " 31	4 56 45	-3 30 57	eeeF; pS; R; ee diff.; s of 965.
68	" " 24	7 48 10	+4 45 20	eF; S; eE; bet. 2 st.; 2 other st. p. form trap.
69	" " 23	16 17 50	+56 56 0	eeeF; S; cE; ee diff.
70	1883 Oct. 1	16 25 52	+59 49 30	eF; eS; e diff.; in vacancy; 2 others and Comet 1884 I nr.
71	1886 Oct. 23	16 37 50	+58 50 0	pF; eS; R; stellar; 3 vF st. nr. n. point to it.
72	" " 23	16 51 30	+57 6 30	eeeF; pS; R; eee diff.
73	" " 23	16 55 45	+47 25 0	vF; pS; lE; wide D * nr. nf.
74	1884 Sept. 25	17 39 52	+60 31 4	eeF; pS; lE; v close n of the s * of 3 in a line; v diff.
75	1886 Oct. 22	17 41 34	+48 10 30	eeF; pS; lE; e diff.
76	1886 Sept. 25	17 42 40	+67 39 25	eeeF; eS; R; ee diff.; bet. 2 st.; 1 st of 6.
77	1884 July 18	17 43 0	+73 27 3	eF; pS; R; nr. terminal * of 5 forming semi-circle.
78	1886 Sept. 25	17 44 30	+67 37 55	eeeF; eS; R; eee diff.; 4 th of 6.
79	" " 25	17 44 30	+67 41 25	eeeF; eS; R; eee diff.; 5 th of 6.
80	" " 25	17 45 5	+67 40 40	eeeF; eS; R; ee diff.; 6 th of 6.
				The other two are in my Cat. no. 4. Others suspected.
81	" " 29	17 48 3	+62 15 50	eeF; S; R; bet. a * and distant triangle.
82	1886 Oct. 22	17 55 59	+45 55 0	pF; pS; lE. [Edward.
83	1886 Sept. 19	17 56 50	+56 14 40	eeF; pS; R; e diff.; in a S vacancy; 3 F st. in line point to it.
84	1886 Oct. 22	18 2 9	+46 53 0	eeF; pS; iR; 5 st. nr. sf. in a line, middle one D.
85	" " 31	18 35 40	+70 27 8	vF; pS; lE; nearly bet. 2 near st.
86	1884 Aug. 16	18 36 8	+70 25 55	pF; L; R; bet. 2 st.
87	1886 Oct. 16	18 53 25	+52 13 56	pB; vS; R; F * p close n.
88	" " 31	18 57 15	+72 38 38	eeeF; eee diff.; pB * nr. sf.; 3 vF coarse D st. in line nr. nf. point to it.
89	" " 16	19 3 58	+50 10 25	vF; S; R; vF D * close sp.
90	" " 3	19 13 10	+73 13 15	eeF; S; R; sp. of and near 2 st.
91	1886 Sept. 20	20 33 30	+64 24 44	eF; pS; iR.
92	1886 Aug. 31	21 20 40	+13 41 12	eeeF; eee diff.; close sf. of middle of 3 F st. in a curve, middle * the b.
93	1886 Oct. 2	22 1 20	+9 40 37	vF; pS; lE.
94	1886 Sept. 25	23 5 10	+13 0 30	eeeF; eS; lE; nearly bet. a B * and a v wide D *.
95	" " 25	23 6 40	+13 6 30	eF; S; R; vF * nr. s; 5 st. in a line nr. n.
96	" " 29	23 7 0	+12 13 49	pB; pS; R; D * points to it.
97	" " 29	23 8 30	+12 57 52	eeeF; pS; R; ee diff.; bet. a F nr. * and a B * f; n of 2.
98	" " 29	23 8 30	+12 48 52	eeF; pS; R; curiously placed in a ring of 6 st. np. of center; s of 2.
99	" " 25	23 11 50	+13 22 30	vF; pS; R; F * nr. sp.; 3 st. f. point to it.
100	" " 29	23 17 25	+13 20 53	vF; pS; lE.

Errata.

Cat. 3 no. 17. For: np. read: sp., and add: 582 and 589 in field.
Cat. 3 nos. 32-33-34 were previously discovered by Barnard.

Warner Observatory, Rochester, 1886 Nov. 2.

Lewis Swift.

On the Declination of 74 Cygni.

The corrections given in No. 2711 of this Journal are dependant on stars which crossed the meridian at considerable zenith distances. The present series of observations was undertaken with the special purpose of redetermining the declination of 74 Cygni.

In order that there may be no doubt as to the method of observation and the data used, a few preliminary remarks will be necessary. As this star crosses the meridian of Ann Arbor within less than three degrees of the zenith the effect, on the refraction, of sudden atmospheric changes will be near a minimum. In order to obtain (by the differential method) the best possible results, it was decided to use no zero-stars which culminated at more than ten degrees zenith distance, and during the time between the transits of the first and last zero-stars of each night, to use only such stars of the regular observing list (Struve's Double Stars) which were within the limits of this zone; thus also avoiding, in some degree, any irregular variations in the flexure terms, as for instance, a possible shifting of the objective in its cell.

The observer's position was always the same for both south and north stars viz. feet towards the south. The places of the zero-stars were taken from the *Berliner Jahrbuch* and the constants for reducing from the apparent to the

mean place were taken from the same source. The following list contains all the zero-stars used in the reductions, and for convenience they are designated by the letters *a, b, c*, etc. in the order of R.A.

α^1 Cygni seq. <i>a</i>	π Pegasi <i>g</i>
γ Cygni <i>b</i>	7 Lacertae <i>h</i>
α Cygni <i>c</i>	10 Lacertae <i>i</i>
λ Cygni <i>d</i>	θ Androm. <i>j</i>
ν Cygni <i>e</i>	ι Androm. <i>k</i>
π^2 Cygni <i>f</i>	

I also give, for each night, the probable error *r* of a single reading of the equatorial point, determined from the observed zenith distance of a single star. Four microscopes were always read, and the error of runs was made equal to zero. The bisections in the field of view are made by causing the star to run midway between two horizontal wires (seven seconds of arc apart).

As the separate results are quite accordant it was thought to be unprofitable, in view of other work, to make a longer series of observations with the same instrument. Any considerable constant error in the resulting place can, I think, be attributed to causes which are not of a personal nature.

Separate Results of the Mean Declination of 74 Cygni.

Circle East.						Circle West.					
Date	δ app.	Red.	δ 1886.0	<i>r</i>	Zero Stars	Date	δ app.	Red.	δ 1886.0	<i>r</i>	Zero Stars
1886	+39° 54'	—	+39° 54'	±	<i>a, b, c, d, e.</i>	1886	+39° 54'	—	+39° 54'	±	
Aug. 28	27.93	21.54	6.39	0.25	<i>a, b, c, d, e.</i>	Oct. 6	36.02	30.02	6.00	0.11	<i>f, g, h.</i>
» 31	29.50	22.34	7.16	0.42	<i>a, b, c, d, e.</i>	» 7	36.67	30.17	6.50	0.23	<i>c, d, e, f, g, h, i.</i>
Sept. 4	29.74	23.39	6.35	0.15	<i>f, g, i.</i>	» 8	36.92	30.31	6.61	0.36	<i>c, d, e, f, g, h, i.</i>
» 6	29.98	23.90	6.08	0.20	<i>b, c, d, e, f.</i>	» 9	36.76	30.45	6.31	0.33	<i>c, d, e, f, g, h, i.</i>
» 7	30.68	24.15	6.53	0.46	<i>a, b, d, e, f.</i>	» 10	36.76	30.59	6.17	0.28	<i>c, d, e, f, g, h, i.</i>
» 10	30.71	24.89	5.82	0.50	<i>a, b, c, d, e, f.</i>	» 11	37.04	30.73	6.31	0.12	<i>c, d, e, j, k.</i>
Oct. 12	37.50	30.86	6.64	0.50	<i>c, d, e, f, g.</i>	» 13	37.25	30.98	6.27	0.28	<i>c, d, e, f, g, h, i.</i>
Mean			6.42			Mean			6.31		

If we give the same weight to each observation we have for the

Mean Declination of 74 Cygni for 1886.0 (Obs.) $\delta = +39^\circ 54' 6.37 \pm 0.06$

According to the *Berliner Jahrbuch* $\delta = +39^\circ 54' 5.43$

The correction to the *Berliner Jahrbuch* place is therefore $+0.94$.

Ann Arbor 1886 Oct. 18.

J. M. Schaeberle, Assistant.