

ASTRONOMISCHE NACHRICHTEN.

N^o 3517.

Band 147.

13.

Catalogue No. 11 of Nebulae

discovered by *Lewis Swift*.*)

The following nebulae were discovered during the last 3 years at the Lowe Observatory, Echo Mountain, California. Much of my time however has been devoted to other work, notably to comet seeking, and, nightly entertainment of visitors. It will not escape notice that nearly all are southern nebulae beyond the reach of Sir William Herschel, and, other European observers. My low latitude $+34^{\circ}20'$, enables

me to search 9° farther south than when located at the Warner Observatory, Rochester, N. Y. I am farther south than any observatory in Europe and America north of the equator, except the one at Tacubaya, Mexico, yet I find that the southern sky has been pretty thoroughly explored by Sir John Herschel, Dunlop, and others.

No.	Date	α 1900	δ 1900	Description
1	1896 Sept. 12	$0^h 1^m 40^s$	$-4^{\circ} 19.2$	p B; p S; v E
2	1897 » 23	0 11 0	$-39 52.2$	eee F; v L; e E; close f NGC. 55; f of 2. Note
3	1895 Dec. 8	0 18 3	$+6 25.4$	eee F; unequal D * f 46^s same parallel
4	» Sept. 10	0 30 0	$-10 7.0$	eee F; p S; R; ee diff.
5	1896 » 5	0 38 30	$-4 41.9$	eee F; S; R; 10^m * close s; not 239
6	1897 Aug. 1	0 46 45	$-35 0.5$	e F; e' S; R; with 132 and 200 looks like a nebulous D Uranus. Note
7	1895 Sept. 14	0 53 22	$-12 43.2$	eee F; p S; nearly bet a 7^m * p and a 9^m * nf, near the latter
8	1897 Oct. 3	0 54 30	$-34 51.5$	p B; p S; R; 2 st nf and 2 np
9	» Sept. 4	0 55 0	$-40 53.9$	v F; v S; R
10	1895 Dec. 13	0 56 40	$-16 9.1$	p F; p S; R; 9^m * nearly in contact np
11	1897 Nov. 19	1 2 37	$-18 2.5$	v F; S; R; np of 2
12	» » 19	1 2 45	$-18 0.5$	B; C S; l E; sf of 2
13	» Sept. 29	1 5 6	$-46 31.6$	v F; S; R; no B * near, v F one f
14	» » 4	1 9 45	$-33 11.6$	eee F; S; ee E; a ray; no * near
15	» Oct. 30	1 11 24	$-31 11.4$	eee F; v E, 350° ; 5 st sf have distant companions
16	1896 » 6	1 12 45	$-17 38.3$	e F; p S; R; no * near; 8^m * in field nf
17	1895 Dec. 18	1 14 20	$-17 22.5$	v F; p S; l E; wide D * near nf; f of 2
18	» » 18	1 14 40	$-17 37.4$	eee F; v S; R; p 7^m * nf 47^s ; p of 2
19	1897 Nov. 26	1 19 45	$+8 12.9$	e F; p S; R; 10^m * att p; * with distant companion sf, another np
20	1896 Oct. 12	1 20 30	$+16 4.7$	eee F; p S; l E; bet 2 st in meridian; wide D * nf; ee diff.
21	1897 Sept. 4	1 23 35	$-36 17.0$	eee F; p S; R; v diff.
22	» » 4	1 33 10	$-34 29.7$	v F; S; R; e F * near nf
23	» Oct. 30	1 35 29	$-29 26.3$	eee F; e S; R; B * in margin of field p
24	1896 » 8	1 43 10	$-27 26.7$	p B; e-e S; almost stellar; in vacancy
25	1897 Nov. 17	1 44 23	$-33 16.3$	eee F; p S; R; 2 F st p point to it
26	1895 Dec. 8	1 46 45	$-10 20.0$	eee F; v S; GC. 418 p
27	1897 Sept. 6	1 46 45	$-30 26.3$	p B; e S; l E; like D neb. *. See note
28	1897 Nov. 26	1 50 45	$+5 11.2$	p F; p S; R; 9^m * near np
29	» Sept. 29	1 53 4	$-33 31.5$	p B; v S; R; B M; 10^m * v close sp
30	» Nov. 17	1 53 5	$-32 29.7$	e F; p S; R; Cordoba 681 sp
31	» Sept. 6	1 53 45	$-33 46.7$	eee F; p S; R; 7^m * in field nf, another susp.
32	1896 Dec. 18	1 55 5	$-11 36.4$	eee F; p S; bet the 2 southern of 4 st of trapezium
33	» Oct. 18	1 56 8	$-25 34.7$	eee F; p S; R; 3 9^m st sf near form equilateral triangle; ee diff.
34	» » 8	2 2 55	$-25 57.5$	v F; D * of = mag in nebulosity. Curious object. Note
35	1897 Dec. 29	2 5 30	$-33 29.7$	v F; v S; e E, nearly 0° ; F * p

*) Fortsetzung zu Nr. 3094, Bd. 129. Die in Nr. 3474 publicirten Nebel sind der Vollständigkeit wegen hier wiederholt. K7.

Three crossed out here given in 3474.

No.	Date	α 1900	δ 1900	Description
36	1897 Dec. 25	2 ^h 11 ^m 10 ^s	-31° 39'.3	pF; pS; R; distant D * nf
37	1896 Oct. 12	2 11 20	-12 24.9	eeeF; eeE; a ray bet 2 st p and f; 8 ^m * near nf
38	1897 Dec. 22	2 25 45	-34 42.0	eeeF; S; R; D * nearly p; np of 2
39	» » 22	2 26 0	-34 41.7	eF; eS; R; F * near n; D * np; sf of 2
40	» » 22	2 26 15	-36 28.9	pB; pS; vE
41	1896 Oct. 12	2 27 50	-37 11.7	vF; S; R; wide D * near p
42	1897 Sept. 6	2 34 3	-27 52.4	pB; CS; R; 8 ^m * near p
43	» Dec. 22	2 37 0	-28 37.0	eeeF; S; R; 3 fine D st nf, each about 7"
44	» » 22	2 40 35	-28 22.6	eeeF; S; R; D * np
45	» Sept. 5	2 44 30	-31 42.5	vF; pS; R; 1 st of 3
46	» » 5	2 44 32	-31 36.5	pF; pS; R; 2 nd of 3
47	» » 5	2 45 4	-31 36.5	pF; pS; lE; 3 rd of 3
48	» Nov. 25	2 47 10	-33 46.8	eeeF; vS; lE; 7 ^m * in field sf; eee diff.
49	» Oct. 19	2 49 5	-34 36.9	eF; S; R
50	» Sept. 29	2 59 28	-39 52.6	eF; pS; R; FD * sf point to it
51	1896 » 16	3 0 20	-27 52.6	eeeF; vS; R; F * near sf
52	» Oct. 8	3 5 8	-25 42.5	eeeF; pS; 2 st in meridian close p
53	1897 Dec. 22	3 7 30	-25 42.0	eeeF; S; R; 2 F st near sp point to it
54	» Nov. 25	3 21 25	-33 14.9	eeeF; pS; lE; 7 or 8 pB st n like letter V
55	» Oct. 3	3 26 20	-44 27.0	pB; S; R
56	» Sept. 7	3 31 0	-34 46.9	pB; S; eeeE; a hair line 90°. See note
57	» Nov. 17	3 32 30	-44 19.2	eeeF; vS; eeE; a ray, 90°; B * f
58	» Dec. 26	3 35 40	-27 11.2	eF; eS; lE; * close nf
59	1896 Oct. 8	3 36 45	-22 55.6	vF; pS; R; not 1426
60	» » 5	3 37 1	-18 32.3	eeeF; S; R; in vacancy
61	1897 » 14	3 39 10	-40 12.3	eF; pL; R; 2 st near f; wide D * np
62	» Nov. 19	3 43 0	-34 2.0	eF; L; CE; 7 ^{1/2} ^m in contact; ee diff.
63	» Oct. 3	3 50 20	-36 17.1	pB; S; R; * near nf; D * sp
64	» Dec. 26	3 50 40	-28 26.3	eF; S; R; F * in contact nf
65	1896 Oct. 5	3 51 1	-28 30.4	eF; vS; eeeF; * v close nf
66	1897 Nov. 19	4 6 30	-39 58.0	eeeF; pS; R; 9 ^m * f; e diff.
67	» Dec. 23	4 8 30	-32 49.8	vF; vS; R; resolv. susp.; 1531-2 in field
68	» Sept. 29	4 8 45	-33 7.8	eF; vS; R; 10 ^m * close s
69	1895 Dec. 10	4 10 32	-33 22.4	eeeF; eS; B * f; 1532 p; 3 in field with D neb.; ee diff.
70	1897 Sept. 29	4 16 30	-31 41.7	eeeF; pL; R
71	1895 Dec. 9	4 23 3	-42 23.3	eF; pL; R; 3 st like belt of Orion point to it; p of 2
72	1896 Oct. 5	4 41 2	-34 10.7	vF; pS; R; 3 st near sp nearly point to it
73	1897 Dec. 26	4 52 0	-28 41.6	eeeF; pL; components of D * 24 ^s f point to it
74	» Nov. 30	5 2 30	-20 37.3	eeeF; pS; bet 2 st; close to eeeF D *; eee diff.
75	» Dec. 26	5 15 10	-25 11.5	eeeF; S; R; 7 ^m * 15 ^s p nearly obliterates it; eee diff.
76	» Nov. 19	5 15 35	-37 13.0	pB; eS; R; 3 st in line nf
77	» » 26	5 20 25	-27 4.6	eeeF; vS; R; eee diff.
78	» Dec. 1	5 27 5	-23 8.3	eeeF; pS; R; 7 ^m * near sf
79	1896 Oct. 13	5 27 30	-23 14.7	eF; pL; R; 8 ^m * near nf
80	» » 16	5 27 40	-17 20.1	pB; vS; R; bet 2 st p and f
81	1898 Febr. 22	5 29 20	-36 28.5	eeeF; eeS; eeeE; ee diff. See note
82	1895 Dec. 9	5 29 35	-26 30.7	eF; pS; eE; almost a ray; 1963 p
83	1897 » 1	5 30 0	-23 36.5	eeeF; S; R; 7 ^m * close p; sf of 1980
84	1898 Febr. 14	5 30 8	-23 24.3	eF; vS; R; 8 ^m * f 10 ^s ; in field with 1979
85	1897 Oct. 7	5 42 30	-18 43.2	eeeF; pS; eE, 45°; Δ sf
86	» Nov. 3	5 44 0	-30 31.9	eeeF; pS; R; F * np; several B st sf; 3 st curved
87	1898 Jan. 31	5 47 40	-38 22.8	eeeF; S; eE; semi circle of 3 st s; v diff.
88	1897 Oct. 7	5 48 30	-17 53.2	vF; pL; R; v wide D * near p
89	» Dec. 1	5 53 0	-23 11.5	pB; pS; R; in vacancy; several B st f
90	» » 1	5 56 45	-23 41.5	pB; L; R; bet * nf and a wide D * np
91	» » 1	6 1 5	-27 51.8	vF; pS; lE; * in contact nf; north end like a brush. Note

No.	Date	α 1900	δ 1900	Description
92	1895 Mar. 23	8 ^h 5 ^m 35 ^s	+ 5° 22.8	eeeF; vS; lE; v close f 12 ^m *; fine D * nf nearly point to it
93	1897 Dec. 28	9 18 10	-32 2.9	pF; CS; vE; 10 ^m * close sp
94	1898 Jan. 22	9 23 0	-42 24.5	pB; S; R; 7 ^m * nf; D * p
95	» Febr. 20	9 31 5	-11 56.5	pB; pL; R; 2 st near f
96	» » 19	9 39 40	-31 18.6	eF; S; R; vF * close nf; pB * near sp
97	1897 Dec. 30	9 45 0	-32 23.1	pB; pS, eeE; spindle; 7 ^m * np; not 3038; np of 2
98	1898 Febr. 12	9 45 5	-32 27.7	eeeF; pS; vE; between below * and 8 ^m * p; nf of 2
99	» » 12	9 45 30	-32 27.8	eeeF; eeeS; R; D * close sf; sp of 2
100	1897 Dec. 30	9 45 35	-32 25.1	eeF; eS; 3 F st close f; sf of 2
101	» » 30	9 52 32	-31 48.0	vF; S; R; 7 ^{1/2} ^m * nf; 2 or 3 F st near
102	» » 28	9 54 5	-26 42.6	eeeF; eeS; R; eF; D * s; 3078 in field; ee diff.
103	1898 April 11	9 54 50	-22 21.9	eeF; eS; eF * in contact
104	» Febr. 15	9 55 25	-29 10.5	eeeF; pS; CE; trapezium n and nf; D * np
105	» » 14	9 59 25	-27 4.8	eeF; L; CE; no B * near; no Δ as per 3113
106	1897 Dec. 28	10 11 20	-33 3.3	eeF; pS; iR; in center of trapezium
107	» » 30	10 16 38	-33 46.3	vF; CS; R; 9 ^m * p close f
108	» » 30	10 24 30	-35 3.3	eeeF; eeS; R; eF * in contact; sp of 3267
109	1898 Jan. 1	10 26 3	-28 12.5	pF; vS; R; trapezium near sp
110	» » 1	10 27 10	-29 52.6	eeeF; pL; R; D * near sf; * with distant companion f and p
111	» Febr. 15	10 27 30	-23 32.3	eeeF; eS; eE; 8 ^m * close p; ee diff.
112	» » 15	10 31 30	-23 34.2	eF; pS; R; bet 2 D st sp and nf
113	» » 22	10 32 35	-10 35.9	CB; eS; R; almost stellar
114	» » 14	10 33 25	-26 32.3	pB; pS; D * near p
115	1897 Dec. 30	10 35 12	-35 31.6	eeeF; eeS; R; eF * in contact; sf of 2. Note
116	» » 29	10 36 0	-35 5.4	eeeF; eS; R; eeFD * nr s
117	1898 Jan. 14	10 58 30	-15 41.7	eeF; eeS; looks like a D *. Note
118	» April 11	11 2 20	-19 1.1	CB; pS; R; n of 2
119	» » 11	11 2 25	-19 1.8	eeeF; vS; R; s of 2
120	» » 10	11 5 0	-23 12.0	eF; L; R; sev st in L semi circle n, in finder field with β Crateris
121	» Jan. 1	11 17 0	-28 27.5	pB; pS; R; 10 ^m * close nf; 7 ^m * f
122	» Febr. 12	11 26 50	-29 52.7	vB; pS; R; sf of 3717
123	» » 22	11 44 0	-11 45.3	eF; CL; iR; Δ n, another f
124	» » 20	11 45 25	-19 2.0	B; S; eE; a ray
125	1897 May 4	11 47 23	-3 10.2	eF; pS; R; B * f 55 ^s ; np of 2
126	1898 » 12	11 48 5	-22 34.0	pB; pS; R; not 3955
127	1895 Mar. 23	11 48 33	-3 25.2	vF; pS; R; 2 B st n and np; s of 2
128	» » 23	11 48 48	-4 34.3	eeeF; vS; lE; ray; in vacancy; 4 F st in line s; 1 B and 3 F st n
129	1897 May 23	11 49 23	-2 10.0	vF; vS; R; vF * near nf
130	» Dec. 29	11 49 35	-37 21.1	eF; vS; 7 ^m * sp
131	» » 30	12 0 30	-27 22.7	vF; L; CE; 8 ^m * near f; np of 2
132	1898 April 11	12 0 30	-25 57.2	CB; S; R; triple star sp
133	» Jan. 1	12 0 35	-27 24.4	eeeF; pL; iR; 3 8 ^m st f; sf of 2
134	» April 11	12 2 55	-29 47.4	eeeF; CS; R; D * sf; v diff.
135	» Jan. 31	12 3 25	-31 2.2	pB; vF * close sf; vE 45°
136	» » 1	12 14 28	-25 37.3	pB; S; R; bet 4 st sf and 8 ^m * np
137	» » 30	12 18 45	-39 14.0	pF; vS; R; close p 4373. Note
138	» » 1	12 20 0	-25 30.3	eF; vS; R; bet 7 ^m * f and 8 ^m * np; v diff.
139	» » 30	12 22 5	-38 48.8	pB; pL; R; 7 ^m * with distant companion near p
140	» Febr. 15	12 35 15	-36 13.3	pF; pS; 2 or 3 vF st in contact
141	1897 May 23	12 43 2	+54 59.8	eeF; S; CE; 4732 in field
142	1898 Febr. 23	12 44 20	-3 51.4	eeF; L; eE; 7 ^m * nr sf
143	» Jan. 1	12 45 0	-25 22.3	eeeF; S; E; 8 ^m * nf
144	» » 31	12 46 0	-27 17.6	B; S; lE
145	» April 21	12 53 0	-22 21.9	eeeF; eeeS; 3 vF st n; 7 ^m * s, another np
146	» Mar. 28	12 54 54	-34 48.9	eeF; pS; lE
147	» Jan. 31	12 55 0	-31 43.8	eeF; pS; R; 10 ^m * nr nf

No.	Date	α 1900	δ 1900	Description
148	1898 Febr. 27	13 ^h 1 ^m 25 ^s	-23° 22' 1	eeF; eS; R; 1 st of 3
149	» » 27	13 2 0	-23 29.1	eeF; eS; R; 11 ^m * near p; 2 nd of 3
150	» » 27	13 2 30	-23 17.1	eeF; eS; R; 8 ^m * 37 ^s f: 3 rd of 3
151	1897 May 23	13 4 27	+53 23.8	vF; pL; R
152	» Dec. 31	13 11 10	-31 33.8	pB; pS; R; 9 ^m * near sf; np of 2
153	» » 31	13 12 5	-31 7.8	eeeF; pL; R; 9 ^m * near sp; sf of 2
154	1898 Mar. 28	13 14 0	-27 54.1	eeeF; eS; R; 5078 near nf
155	1897 Dec. 31	13 18 25	-29 47.6	eeF; pS; R; trapezium near sf
156	» May 22	13 18 23	+ 6 45.3	eeeF; pS; eE; in vacancy; v diff.
157	1898 » 23	13 27 0	-23 42.0	eF; pS; R; vF * near n and brighter one nf
158	1897 Dec. 30	13 31 0	-33 35.0	pF; pS; R
159	» » 30	13 31 10	-33 33.9	eeeF; eeS; like D * one nebulous. Note
160	» June 25	13 47 20	+14 46.9	eeeF; pL; R; eee diff; 3 rd of 4; others in Index Cat.
161	» April 20	13 47 38	- 0 38.0	vL; eF; CE n and s; Munich 9619 nf 121 ^s ; in field with 5334; F * close to each end of major axis
162	» Dec. 30	13 51 30	-39 31.5	8 ^m * in center of eeeF nebulosity. Note
163	1898 April 21	13 51 40	-24 44.1	eeeF; eeeS; like a D * n one a nebula. Note
164	» May 19	13 52 20	-34 2.8	several eF st in eeF neb; 2 8 ^m st n
165	» Jan. 30	13 59 40	-38 43.7	eeF; pS; R; bet 2 st near center of trap.
166	» April 21	14 1 50	-26 32.0	eeeF; pS; R; forms part of trapezium; not 5495
167	» Febr. 22	14 6 50	-30 3.5	F; pS; R; 7 F st around it
168	1896 Sept. 16	14 14 22	- 3 59.8	vF; S; R; * with distant companion near n; p of 2
169	» » 16	14 14 40	- 3 58.8	eeF; S; R; f of 2
170	1898 May 19	14 22 0	-37 8.2	eeF; vS; R; F * near f
171	1897 Mar. 28	14 25 0	-43 4.5	pF; pS; R
172	1898 Febr. 22	14 28 20	-27 7.3	pB; eS; R; like D * one nebulous. Note
173	1896 Sept. 16	14 35 10	+ 3 48.5	eF; S; lE
174	» » 16	14 35 10	+ 3 54.5	eeF; S; R; close D with 5718
175	1898 June 2	14 46 16	+27 59.3	eeF; S; lE; pB * p; ee diff; another susp.
176	» » 2	14 49 37	+16 47.5	vF; pS; R; only 1 * near, 10 ^m * nf
177	1897 » 21	15 14 59	+ 2 8.9	vF; pS; vE; B * partly obscures it
178	1895 May 26	15 15 10	-23 19.8	eeeF; vL; not 5898 or 5903; v diff; bet 2 wide D st. Note
179	1897 June 3	15 19 52	+13 50.2	eF; pS; vF * close np
180	1898 May 24	15 27 30	-50 18.9	pB; pS; lE
181	1897 June 21	15 30 0	+ 5 2.0	eF; pS; R; near one of 6 or 8 st in a curve
182	1896 Sept. 16	15 53 0	+12 23.0	eeF; pS; R; in center of trapezium
183	1897 July 22	16 18 45	+12 59.3	eeeF; lE; F * near f; 2 B st s nearly point to it; eee diff.
184	» » 6	19 22 0	-36 24.1	B; eS; lE
185	» » 6	19 49 10	-37 37.2	eeeF; pS; 3 st s like belt of Orion point to it; eee diff.
186	» » 6	19 53 30	-38 50.5	eeeF; S; lE; precedes the below 37 ^s ; e diff; p of 2
187	» » 6	19 54 0	-38 50.5	eeF; pS; R; 8 ^m * f 20 ^s ; f of 2
188	» » 8	19 59 0	-48 42.4	eeeF; pS; R; F * near n; ee diff; p of 2
189	» » 8	20 0 0	-48 35.8	B; vS; CE; f of 2
190	» » 22	20 2 16	-45 55.8	vF; pS; R
191	» Sept. 23	20 10 59	-41 53.4	vF; CS; R; no bright * near
192	» July 22	20 19 10	-31 11.6	eF; pS; lE; wide D * near s
193	» » 25	20 20 50	-36 20.9	pB; vS; eE
194	» Aug. 29	20 22 0	-36 22.3	eeS; eE in meridian; curious object
195	» Sept. 16	20 24 25	-36 39.2	vF; CS; R; several pB st sf
196	» Aug. 29	20 24 30	-33 50.9	pF; pS; lE
197	» » 29	20 36 50	-30 11.5	vF; pS; R; 2 F st near nf point to it; 1 st of 3
198	» » 29	20 37 5	-30 11.5	eeF; eS; eE; near p * of sev curved; 2 nd of 3
199	» » 29	20 37 30	-30 1.5	eeeF; pS; vE; eee diff; 3 rd of 3
200	» June 9	20 38 39	-30 16.5	eF; pS; vE; eeF * and vF * near sf, point to it; sp of 2
201	» » 9	20 38 45	-30 6.5	eeF; pS; vE; 8 ^m * 31' n; v diff; nf of 2
202	» Sept. 17	20 40 25	-38 50.6	eeF; pS; R

No.	Date	α 1900	δ 1900	Description
203	1897 Aug. 12	20 ^h 58 ^m 49 ^s	+11° 25' 3"	eeeF; vS; p 8 ^m * 13 ^s same parallel; wide D * near n; ee diff.
204	» Sept. 15	21 1 31	-30 26.5	eeF; pS; R; F * near f 90°
205	1896 » 12	21 25 40	+11 20.3	eeF; vS; F * near f; not 7068
206	1897 July 9	21 26 5	-37 9.0	eF; pS; R; e wide D * f 30°
207	» Sept. 17	21 41 0	-35 22.0	vF; vS; R
208	» » 17	21 42 0	-35 27.0	vF; pL; R; sp of 2; not 7130 or 7135
209	» » 17	21 43 30	-35 22.2	eeF; pL; R; 3 B st form a Δ ; nf of 2
210	» » 17	21 49 46	-49 31.9	eeF; pS; R; in line with 2 9 ^m st; 7 ^m * sf
211	» Aug. 31	22 3 5	-28 21.2	eeF; vS; vE; Δ with 2 F st
212	1896 » 8	22 15 19	-14 54.1	vF; eE; a ray; p of 2
213	» » 8	22 16 30	-19 25.3	eeeF; vS; R; f below * 15 ^s 1s; f of 2
214	» June 8	22 16 45	-19 23.3	eF; S; near n of f * of 7 in line p and f; p of 2
215	» Aug. 8	22 26 54	-14 38.1	pB; pS; R; B * near s; f of 2
216	1897 July 7	22 35 0	-38 33.8	vF; pS; R
217	» Aug. 8	22 36 0	-45 19.2	pF; pL; R; f * near sf
218	1896 Sept. 11	22 49 10	-20 55.3	eeeF; pL; R; f 9 ^m * 22 ^s ; ee diff.
219	» June 10	22 51 5	-37 8.8	vF; S; eeE; a ray; sp of below st; sp of 2
220	» » 16	22 51 10	-37 3.8	B; CL; R; bet 2 st p and f; nf of 2
221	1897 Sept. 23	22 51 30	-43 59.4	pB; S; R; mbM
222	1896 » 10	22 52 0	-36 27.7	vF; pS; R; np of 2
223	» Aug. 12	22 52 5	-36 37.7	vF; pS; vE; sf of 2
224	» » 12	22 53 40	-38 17.8	vF; CL; 1E; 2 wide D st near p
225	» Sept. 10	23 5 30	-33 5.2	a few eeeF st in neb
226	1897 Oct. 22	23 10 29	-43 8.4	pB; pS; R; 8 ^m * p
227	» Aug. 8	23 13 50	-42 49.8	eeF; S; CE; f of 7599
228	» » 8	23 16 18	-43 3.3	eeeF; pL; R; 10 ^m * near sp
229	1896 Sept. 13	23 21 0	-19 36.0	eF; vS; R; F * close nf
230	1897 Aug. 8	23 23 8	-42 2.0	pB; pS; R; 9 ^m * close s
231	1896 Sept. 14	23 24 10	-29 25.9	eeeF; S; vE; 8 ^m * p
232	1897 Oct. 3	23 27 45	-45 35.7	vF; S; R; bet 2 st; 8 ^m * sf, 7 ^m * sp
233	» Nov. 19	23 29 0	-36 39.0	eeeF; vL; bet 2 st; D * p 45 ^s ; pentagon p
234	» Oct. 19	23 33 58	-23 4.5	eF; pS; 7 ^{1/2} ^m * 19 ^s sf = AWe. 18042
235	» Sept. 23	23 39 25	-43 29.2	eF; eS; R
236	1896 » 14	23 41 40	-28 32.9	eeeF; eS; R; 9 ^m * near f; 1 st of 5
237	» » 14	23 42 0	-28 42.3	eF; S; R; 6 ^m * f; 2 nd of 5
238	» » 14	23 42 5	-28 42.9	eeF; S; R; 3 rd of 5
239	» » 14	23 42 20	-28 43.9	eF; pS; E; 4 th of 5
240	1897 » 25	23 42 40	-37 36.9	eeF; CS; R; in vacancy
241	1896 » 14	23 45 0	-28 54.9	eeF; pS; bet 2 B st; 5 th of 5
242	» » 15	23 51 0	-29 37.9	vF; pS; R; 8 ^m * near sf
243	1897 » 25	23 52 25	-37 34.9	pB; CS; eE; 1 * near sf

Notes.

No. 2. This with its associated companion is a remarkable nebula. I am undecided as to whether it is all one, or consisting of two, the preceding half very very bright, very large exceedingly elongated as Sir John Herschel describes it, and the following half exceedingly exceedingly faint, very large, exceedingly elongated, partly overlapping the other. If single it is curved, if double are inclined to each other. I am inclined to think they are two distinct nebulae, one reason being that the brighter ends sharply, which would be improbable if the brighter merged into the fainter. The brighter was discovered by Dunlop, but he could not have seen the fainter. As Sir John Herschel does not mark it with a sign as being a remarkable object, lends plausibility to the idea that it was not seen even by him.

Nos. 6 and 27. These are very singular nebulae, and are new experiences to me. They resemble a pretty bright double star, each component being an exceedingly small nebulous disk, like an imaginary double nebulous Uranus, distant about 5" or 6".

No. 34. This appears like a nebulous double star, but I think it is simply a double star in a nebula. There is a vast difference between a nebulous star, and a star in a nebula.

Nos. 56 and 81. These in one respect are the most interesting nebulae I have ever seen, especially No. 56, which is a nebulous hair-line of one uniform size from end to end. No. 81 at first view seemed identical with it, but

on a closer view the center seemed to have a very slight bulging in the middle.

No. 91. This is also a singular object, one side extending like a brush. I have never seen but one like it, which I think is in Monoceros.

Nos. 115, 137, 159, 163, 172. These appear at first glance like double stars 6" or 8" apart, like Nos. 6 and 27, but while each component of the latter are nebulous only one of the former is a nebula.

No. 162. This is a perfect specimen of a nebulous star, and the only one I have ever found, and a beautiful one it is.

No. 178. This is very large, and one of my faintest.

Echo Mountain, Cal., 1898 June.

Have seen it twice, and failed once. The field is a curiosity, the following half having many stars the preceding half not even one.

NGC. 1344 = H. I 257 is identical with 2539 which must be struck out.

NGC. 6550 = H. III 555. 6550 must be struck out.

To the above list of 243 nebulae I must add the discovery of four comets by me, and one by my son Edward, the latter and one of the former being of short period. They do not include those discovered at the Warner Observatory, Rochester, N. Y. Five of the above Catalogue were published in Monthly Notices, and are incorporated in Dreyer's Index Catalogue.

Lewis Swift.

Beobachtung der Mondfinsterniss 1898 Juli 3.

Zur Zeit der Mondfinsterniss, 1898 Juli 3, war hier sehr gutes Wetter, so dass von 9^h 30^m bis 11^h 22^m M. Z. Königstuhl mit dem 6zölligen Voigtländer 37 sehr gut gelungene photographische Aufnahmen genommen werden konnten. Der Schattenrand war ziemlich verwaschen, — allerdings habe ich ihn früher verwaschener gesehen. Die Färbung des verfinsterten Theiles der Mondscheibe war besonders zur Zeit der grössten Phase ein prächtiges Dunkelroth, während der Schattenrand, wohl durch Contrastwirkung, blaugrau erschien. Die Rothfärbung war am leuchtendsten

kurze Zeit vor dem Maximum und zwar etwas westlich vom nördlichsten Punkte des Mondes am Rande. Der Punkt grösster Intensität zog sich mehr gegen Osten am Rande entlang, während der Schatten abzog. Von einer Fortsetzung des Schattenrandes ausserhalb des Mondrandes konnte nichts gesehen werden. Der Himmel war aber auch völlig rein.

Die Mitte der verwaschenen Zone des Schattenrandes passirte das Centrum des Kraters Tycho um 9^h 24^m 35^s. Sie verliess den Mond um 11^h 23^m 34^s M. Z. Königstuhl.

Gr. Astrophysikalisches Observatorium Königstuhl, 1898 Juli 6.

M. Wolf.

Ephemeride des Planeten (219) Thusnelda.

Aus den im Berliner Jahrbuche für 1900 gegebenen Elementen habe ich folgende Ephemeride für 12^h M. Z. Berlin berechnet.

1898	α app.	δ app.	$\log r$	$\log A$	1898	α app.	δ app.	$\log r$	$\log A$
Sept. 7	0 ^h 28 ^m 23 ^s	+ 12° 51'	0.2652	9.9491	Sept. 29	0 ^h 16 ^m 30 ^s	+ 8° 1'		
9	27 38	12 30			Oct. 1	15 18	7 31	0.2704	9.9375
11	26 46	12 8	0.2659	9.9431	3	14 8	7 0		
13	25 49	11 45			5	13 1	6 30	0.2715	9.9418
15	24 48	11 20	0.2667	9.9385	7	11 57	6 0		
17	23 43	10 54			9	10 56	5 30	0.2727	9.9479
19	22 34	10 27	0.2675	9.9356	11	10 0	5 1		
21	21 23	9 59			13	9 8	4 32	0.2739	9.9556
23	20 11	9 30	0.2684	9.9344	15	8 24	4 4		
25	18 57	9 1			17	7 42	3 38	0.2752	9.9649
♂ 27	17 43	8 31	0.2694	9.9350	19	7 8	3 12		
29	0 16 30	+ 8 1			21	0 6 42	+ 2 47	0.2765	9.9756

Gr. 9^m8. — Für $\Delta\alpha = \pm 1^m$ ergibt sich die Variation $\Delta\delta = \pm 3'.1$.

Die Elemente im Jahrbuche osculiren für 1889 Jan. 21.0. Die Vernachlässigung der Störungen seit dieser Zeit wird eine gewisse Unsicherheit der vorstehenden Ephemeride herbeiführen; insbesondere wird der Planet auch etwas ausserhalb der Bahnebene zu suchen sein.

Kiel 1898 Aug. 30.

Dr. A. Stichtenoth.