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NEW H-ALPHA EMISSION STARS IN THE MILKY WAY

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ABSTRACT

Data on 455 Hα emission stars found in all parts of the Milky Way, virtually all previously unpublished, are tabulated, with newly measured coordinates usually accurate to better than 2″. A half-dozen stars appear to have been published previously with erroneous coordinates, or to have been published but omitted from the general catalog by Wackerling (1970). Included among the new stars are known OB stars of the *Luminous Stars in the Northern Milky Way* survey, from the Hamburg zones, which were originally searched for Hα emission at slightly lower spectral resolution than we have used. The stars are in general of early spectral type, and are mostly fainter than the limits of the DM catalogs. The objective-prism plates covered the entire Milky Way within about 10° of the galactic equator, at a spectral dispersion of about 1000 Å mm^{-1} at Hα.

Subject headings: stars: early-type — stars: emission-line — stars: spectral classification

I. INTRODUCTION

Some years ago the Milky Way north of declination −10° was searched by objective prism for OB stars and early-type supergiants, in a joint effort by the Hamburg and Warner and Swasey observatories. The survey was extended to the southern Milky Way by us, and our southern survey publication (Stephenson and Sanduleak 1971, hereafter called SLS, for southern luminous stars) references the six volumes of *Luminous Stars in the Northern Milky Way*, hereafter called LS, in which the northern surveys were published. In all these surveys, except for a small zone in LS II, Hα plates were examined in order to determine whether the luminous stars exhibited significant hydrogen emission, and emission if found was indicated in the LS and SLS catalogs. In the zones searched at Cleveland—LS II, IV, and VI—all parts of the Hα plates were systematically scanned for interesting objects; however, in the Hamburg zones—LS I, III, and V—the plates were merely compared against the luminous stars that were found on the blue plates. For this reason, one of us (C. B. S.) recently completed a new Hα survey, using plates taken for the purpose with our Burrell Schmidt, of the Hamburg zones. This survey, like all our Hα surveys done with Cleveland and Tololo plates, was done at slightly higher spectral resolution (in the ratio of about 4:3) than the Hamburg plates, and so detected Hα emission in some luminous stars in which it was originally missed. In addition, the aforementioned neglected zone in LS II (declination +10° to +20°) has now been searched. The present paper includes previously unpublished Hα emission stars we at Cleveland found in all of these surveys, which are known or surmised to be of spectral type F or earlier except for a half-dozen stars that are possibly (in some cases) or probably (in others) later than this.

Our concentration on spectral types F and earlier is, by design, the same as that of the general catalog of Hα emission stars by Wackerling (1970). We therefore summarize in Table 1 the post-Wackerling Cleveland papers, prior to the present one, that have reported additional such stars.

All but one of the stars reported here were found on plates taken with the Burrell Schmidt at the Nassau Astronomical Station, or (mostly south of declination −10°) with the Curtis Schmidt at Cerro Tololo Inter-American Observatory. The spectral dispersion was about 1000 Å mm^{-1} at Hα, the spectral images were 0.2 mm wide, and the photographic emulsion was Kodak 103a-F. The limiting red magnitude for recording continuum at Hα was about 13.5, achieved with an exposure of 10 minutes; exposures of 1 minute and 10

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TABLE 1
Hα EMISSION PAPERS PUBLISHED BY US AFTER THE WACKERLING CATALOG

Journal	Title	Authors
Pub. Warner & Swasey Obs., **1**, No. 1, 1971...	Luminous Stars in the Southern Milky Way	Stephenson and Sanduleak
Ap. J., **185**, 899, 1973......................	Low-Dispersion Spectra and Galactic Distribution of Various Interesting Strong-Emission-Line Objects in the Southern Milky Way	Sanduleak and Stephenson
IAU Bull. Var. Stars, No. 663, 1972.........	A New Spectrum Variable in Ophiuchus	Sanduleak

Table 2

New Hα Emission Stars

No.	R. A. (1900) h m s	Decl. ° ' ''	R. A. (1950) h m s	Decl. ° ' ''	Mag.	Spectrum	I.D. and Remarks
1	00 17 18.2	+63 55 40	00 20 03.0	+64 12 19	11.8	OB:le	Probable 4686 emission.
2	00 26 00.4	+63 52 07	00 28 50.4	+64 08 42	8:	OB⁻:le:w	
3	00 49 24.6	+60 18 03	00 52 24.2	+60 34 20	10.3, 11.1p	OBw	LS I 60°132.
4	01 17 22.6	+55 35 01	01 20 29.3	+55 50 44	11.5	OB1:ov?	
5	01 18 36.0	+60 16 48	01 21 50.0	+60 32 29	10.0, 10.4p	OBw	LS I 60°156, BD 60°232. *
6	01 25 24.5	+60 10 57	01 28 41.6	+60 26 28	10.9	OB⁻:ovw	
7	01 42 30.7	+63 33 42	01 46 03.7	+63 48 42	11.8	w	
8	01 42 38.0	+57 21 25	01 45 57.7	+57 36 25	11.2	OB1	
9	01 47 16.7	+55 12 42	01 50 34.5	+55 27 33	12.0	s	
10	01 55 25.1	+60 31 14	01 58 56.9	+60 45 48	10.9, 12.0p	OBrw	LS I 60°214.
11	02 20 38.0	+60 06 58	02 24 19.7	+60 20 33	11.5	w	
12	02 25 10.6	+62 39 45	02 29 02.0	+62 53 08	12.0	w	
13	03 07 13.5	+59 32 15	03 11 10.9	+59 43 35	9.3, 9.5p	OB(ce)	LS I 59°175. *
14	03 30 27.0	+60 11 08	03 34 34.2	+60 21 09	12.0	OBr:w	
15	03 35 37.1	+41 48 30	03 38 59.4	+41 58 14	10.6, 10.5p	OB⁻w	LS V 41°1, BD 41°737.
16	03 39 39.9	+58 45 16	03 43 44.5	+58 54 45	10.2	OB1	In cluster OCL 385.
17	03 42 59.8	+56 52 05	03 46 58.8	+57 01 22	10.2	OB1(ce:)	+56°850.
18	04 20 26.7	+46 01 53	04 24 03.5	+46 08 48	8:	OB⁻:	+45°936. *
19	04 26 09.2	+52 48 29	04 30 04.1	+52 55 00	12.0	OBr:w	
20	04 29 24.1	+36 27 35	04 32 43.5	+36 33 54	10.5, 10.0p	AO Ibw	LS V 36°1, BD 36°913.
21	04 39 16.0	+42 51 08	04 42 48.1	+42 56 47	11.7	w	
22	04 48 32.3	+35 24 17	04 51 51.3	+35 29 18	11.4, 9.8p	OB⁻:	LS V 35°5. *
23	04 59 03.7	+35 22 50	05 02 23.3	+35 27 06	10.0, 10.0p	OB	LS V 35°6, BD 35°970.
24	05 00 36.7	+35 33 10	05 03 56.6	+35 37 20	9.7, 9.8p	OB⁻s	LS V 35°8, BD 35°982.
25	05 01 20.8	+31 12 18	05 04 33.7	+31 16 25	11.5		HO Aur.
26	05 16 28.2	+35 30 41	05 19 48.8	+35 33 43	9.1	B5s	Hβ wk. *
27	05 18 38.6	+40 49 42	05 22 09.2	+40 52 34	12.0	OBrw	
28	05 27 37.3	-00 31 36	05 30 10.4	-00 29 20	11.4	G5:	*
29	05 32 25.8	+18 37 05	05 35 21.8	+18 38 59	11.4	B8w	
30	05 33 44.6	+09 46 38	05 36 29.7	+09 48 27	11.7	G	
31	05 37 51.8	+29 06 25	05 41 02.5	+29 07 55	10.9, 11.2p	OBw	LS V 29°8, BD 29°976.
32	05 41 12.2	+31 10 29	05 44 26.2	+31 11 44	12.0	w	
33	05 42 17.2	+11 12 58	05 45 04.1	+11 14 09	12.1		
34	05 44 46.2	+08 12 45	05 47 29.5	+08 13 46	13.0	s	
35	05 59 43.8	+00 54 31	06 02 18.5	+00 54 27	12.5	OB:	
36	06 04 13.8	+08 12 04	06 06 57.1	+08 11 40	11.4	B7	Hβ wk.
37	06 06 20.4	+24 48 12	06 09 24.9	+24 47 38	11.2, 11.3p	OB⁻w	LS V 24°13.
38	06 15 02.8	+22 12 49	06 18 03.6	+22 11 37	11.5	OB1w	
39	06 18 34.0	+18 35 09	06 21 30.0	+18 33 42	12.5	OB1w	Hβ wk.
40	06 18 46.2	-01 36 41	06 21 18.0	-01 38 08	10.2	B8	Hβ wk.
41	06 18 55.3	+10 24 58	06 21 41.2	+10 23 29	10.5	B7	Hβ wk. +10°1123.
42	06 21 16.9	+14 19 53	06 24 07.5	+14 18 14	12.1	OB:	
43	06 22 10.4	-10 12 00	06 24 32.1	-10 13 42	12:		*
44	06 26 20.8	+05 10 13	06 29 00.4	+05 08 12	12.1	OB:r	
45	06 27 42.7	+24 14 39	06 30 46.2	+24 12 32	10.6, 10.5p	OB⁻w	LS V 24°18, BD 24°1306.
46	06 27 56.5	+12 01 34	06 30 44.2	+11 59 26	13.0		
47	06 28 19.1	-00 00 03	06 30 52.7	-00 02 12	10.5, 10.8p	OB1	Hβ wk.
48	06 28 36.2	-00 28 32	06 31 09.3	-00 30 42	10.5	B7	Hβ wk.
49	06 28 49.3	+19 53 48	06 31 46.9	+19 51 36	12.1	B8w	Hβ wk.
50	06 29 22.3	+12 06 54	06 32 10.1	+12 04 40	12.5		
51	06 29 53.5	-02 54 49	06 32 23.8	-02 57 05	12.5	OB:s	
52	06 30 27.9	+11 39 15	06 33 15.2	+11 36 56	12.0	OB:	
53	06 30 55.0	+12 07 35	06 33 42.8	+12 05 14	12.1	OB1	Hβ wk.
54	06 31 14.5	+13 37 17	06 34 04.2	+13 34 55	12.1	OB:	
55	06 34 22.4	+11 11 53	06 37 09.1	+11 09 17	13.2		

Table 2 continued

No.	R. A. (1900)	Decl.	R. A. (1950)	Decl.	Mag.	Spectrum	I.D. and Remarks
	h m s	° ' ''	h m s	° ' ''			
56	06 38 55.3	-05 12 09	06 41 22.9	-05 15 04	13.0	OB:	
57	06 39 09.4	+00 26 33	06 41 43.5	+00 23 37	12.1	OB:	
58	06 39 20.3	+01 11 39	06 41 55.3	+01 08 42	12.5	OB:	
59	06 40 09.8	+12 51 51	06 42 58.4	+12 48 50	10.9	OB:	
60	06 41 05.1	-00 25 37	06 43 38.2	-00 28 41	12.1	OB:	
61	06 41 14.0	-01 33 09	06 43 45.8	-01 36 14	12.0	OB:	Hβ wk.
62	06 41 53.4	+00 28 55	06 44 27.6	+00 25 47	13.0	OB:	*
63	06 42 23.4	+13 06 47	06 45 12.3	+13 03 37	12	OB:	
64	06 42 57.7	+00 11 38	06 45 31.5	+00 08 26	13.0	OB:	
65	06 45 49.9	-08 31 24	06 48 13.7	-08 34 48	>13.5		
66	06 46 09.0	+14 02 16	06 48 59.0	+13 58 50	10.9		
67	06 46 41.8	+07 30 40	06 49 24.0	+07 27 12	13.0	OB:	
68	06 48 22.9	+07 51 40	06 51 05.5	+07 48 04	12.1	OB1	
69	06 50 32.3	+06 19 56	06 53 13.1	+06 16 11	10.9	B8	
70	06 51 03.8	+01 05 56	06 53 38.7	+01 02 09	12.1	B8	Hβ wk.
71	06 52 03.1	+08 07 15	06 54 46.0	+08 03 24	12.0	OB1	
72	06 52 07.9	-06 28 37	06 54 34.1	-06 32 28	12.5		
73	06 52 42.9	-13 57 29	06 55 00.4	-14 01 22	12.5	B7s	Hβ wk.
74	06 53 17.0	+03 07 13	06 55 54.2	+03 03 17	12.5		
75	06 54 19.7	-10 52 33	06 56 40.9	-10 56 33	12.5	B8:w	
76	06 55 18.8	-07 42 47	06 57 43.6	-07 46 52	12.1	OB:w	
77	06 55 54.4	-16 13 49	06 58 09.2	-16 17 56	12.5	B8w	
78	06 58 55.2	-09 24 36	07 01 18.1	-09 28 56	13.0	OB:w	
79	06 59 28.4	-19 11 26	07 01 39.6	-19 15 48	10.9	B7w	
80	06 59 33.0	-08 22 28	07 01 57.1	-08 26 50	13.5	OB^{-}:	
81	07 00 54.8	-13 15 01	07 03 13.3	-13 19 29	12.1	OB1:w	
82	07 01 08.4	-13 00 29	07 03 27.1	-13 04 58	12.2	OB:s	
83	07 02 13.7	-07 34 23	07 04 38.8	-07 38 57	12.3	OBr	SLS 169. *
84	07 02 38.5	-17 56 12	07 04 51.3	-18 00 47	13.5	OB:w	
85	07 03 12.1	-06 29 34	07 05 38.4	-06 34 12	12.5	B8	Hβ wk.
86	07 03 13.6	-12 55 11	07 05 32.5	-12 59 49	13.5	OB:s	
87	07 03 33.1	-13 06 09	07 05 51.8	-13 10 48	12.8, 11.8p	OB1w	In cluster NGC 2345.
88	07 03.7	-11 49	07 06.0	-11 54	11.7	B7	Hβ wk.
89	07 05 07.1	-21 17 00	07 07 15.8	-21 21 45	13.5	OB:	
90	07 06 11.5	-04 52 04	07 08 39.7	-04 56 55	12.1	OB1	
91	07 06 23.5	-08 27 37	07 08 47.6	-08 32 28	12.1	B7	
92	07 06 42.8	-16 40 55	07 08 57.3	-16 45 47	11.4	OB:w	
93	07 06 57.3	-15 16 46	07 09 13.5	-15 21 39	12.5, 11.5p	OB:s	
94	07 07 04.1	-14 29 53	07 09 21.2	-14 34 47	11.4	B7w	
95	07 10 07.2	-17 12 57	07 12 21.1	-17 18 03	12.0	B8	Hβ wk.
96	07 10 12.5	-11 53 10	07 12 32.7	-11 58 17	13.5	w	
97	07 10 33.7	-10 53 15	07 12 55.1	-10 58 24	10.3	B7w	Hβ wk. -10°1940.
98	07 10 41.4	-13 38 06	07 12 59.6	-13 43 15	13.5	w	
99	07 13 08.4	-11 04 56	07 15 29.6	-11 10 15	11.7	OB1	Hβ wk.
100	07 13 31.1	-20 39 17	07 15 40.8	-20 44 37	11.4	A0 II-III	Shell star?
101	07 13 46.9	-10 24 28	07 16 08.9	-10 29 50	11.4	B8w	
102	07 14 47.8	-13 55 50	07 17 05.7	-14 01 16	10.9	OB1w	
103	07 15 08.5	-17 28 15	07 17 22.2	-17 33 42	13.5	Reddish	DW CMa.
104	07 16 03.5	-19 03 42	07 18 15.3	-19 09 13	11.4	B7	Hβ wk.
105	07 16 07.1	-24 54 02	07 18 11.4	-24 59 33	13.5	A0w	Hβ wk.
106	07 16 26.8	-20 55 26	07 18 36.3	-21 00 58	11.2, 11.2p	A0 II-III	
107	07 16 47.9	-20 28 39	07 18 58.0	-20 34 13	12.1	OB1:	
108	07 16 53.4	-21 34 35	07 19 02.1	-21 40 09	13.5	OB:	
109	07 17 46.3	-07 47 26	07 20 11.3	-07 53 04	11.7	OB1	Hβ wk.
110	07 17 59.2	-17 48 08	07 20 12.6	-17 53 47	11.7	B7w	
111	07 19 33.3	-19 28 17	07 21 44.7	-19 34 02	10.9	B7	Hβ wk.
112	07 20 07.4	-15 00 12	07 22 24.2	-15 06 00	13.5	OB:	
113	07 20 09.5	-23 32 40	07 22 15.8	-23 38 28	10.9	B8	Hβ wk. -23°5391.
114	07 21 48.7	-07 59 08	07 24 13.5	-08 05 03	12.1	OB1	Hβ wk.
115	07 22 10.8	-17 55 42	07 24 24.2	-18 01 38	10.5	OB1w	-17°1974.

Table 2 continued

No.	R. A. (1900) h m s	Decl. ° ' ''	R. A. (1950) h m s	Decl. ° ' ''	Mag.	Spectrum	I.D. and Remarks
116	07 22 28.4	-19 30 33	07 24 39.9	-19 36 30	11.7	OB1w	Hβ wk.
117	07 22 54.1	-13 26 34	07 25 12.8	-13 32 33	13.5	OB⁻:	
118	07 23 23.8	-18 01 58	07 25 37.1	-18 07 59	10.9	B7	Hβ wk. -17°1986.
119	07 23 31.6	-18 10 17	07 25 44.7	-18 16 19	11.7	B8w	Hβ wk.
120	07 24 12.3	-08 20 35	07 26 36.8	-08 26 40	11.4	B8w	Hβ wk.
121	07 25 32.2	-21 37 07	07 27 41.2	-21 43 17	13.0	OB1:w	
122	07 26 00.1	-21 04 55	07 28 09.8	-21 11 07	11.7	OB1w	Hβ wk.
123	07 26 11.4	-19 22 33	07 28 23.2	-19 28 45	13.0	OB⁻:w	
124	07 26 21.6	-21 38 59	07 28 30.6	-21 45 12	12:		
125	07 26 30.1	-21 50 09	07 28 38.8	-21 56 23	13.0	A0w	Hβ wk.
126	07 27 11.8	-16 59 17	07 29 26.5	-17 05 34	9.7	B8w	Hβ wk. -16°1997.
127	07 28 08.8	-21 42 45	07 30 17.8	-21 49 05	12.5	B7w	Hβ wk.
128	07 28 27.8	-19 45 35	07 30 39.2	-19 51 57	12.1	OB:rw	
129	07 28 39.9	-26 36 23	07 30 42.5	-26 42 45	13.5	w	
130	07 28 42.6	-26 37 49	07 30 45.2	-26 44 11	>13.5		
131	07 29 51.5	-31 47 05	07 31 46.9	-31 53 32	13.5	w	
132	07 29 57.1	-25 10 26	07 32 01.7	-25 16 53	13.0	OB:w	
133	07 30 40.1	-18 50 50	07 32 52.7	-18 57 21	13.0	w	
134	07 30 54.6	-23 46 28	07 33 01.1	-23 52 59	13.0	OB:	
135	07 31 10.8	-20 25 15	07 33 21.5	-20 31 48	13.0	B7w	
136	07 31 28.0	-27 29 30	07 33 29.6	-27 36 03	13.5	w	In cluster OCL 657.
137	07 31 28.3	-26 43 36	07 33 30.9	-26 50 09	13.5	w	
138	07 31 33.6	-15 43 31	07 33 49.9	-15 50 05	13.5	OB:w	
139	07 31 38.4	-20 25 29	07 33 49.1	-20 32 03	12.5	B9w	In cluster NGC 2421
140	07 31 41.7	-20 24 18	07 33 52.4	-20 30 53	13.0	B7w	In cluster NGC 2421.
141	07 31 55.3	-20 23 13	07 34 06.1	-20 29 49	10.5	OB1w	In NGC 2421. -20°2059.
142	07 32 00.4	-20 23 51	07 34 11.2	-20 30 27	12.1	OB⁻:w	In NGC 2421.
143	07 32 49.6	-21 08 06	07 34 59.5	-21 14 45	11.7	B7w	Hβ wk.
144	07 33 08.7	-28 34 58	07 35 08.9	-28 41 38	10.9	B8	Hβ wk. -28°4610.
145	07 33 27.6	-22 22 43	07 35 36.0	-22 29 25	10.5	B7	Hβ wk.
146	07 35 32.9	-21 51 29	07 37 42.0	-21 58 19	11.4	OB1	
147	07 35 38.3	-25 16 38	07 37 43.1	-25 23 28	12.5	OB1	
148	07 35 39.4	-25 43 39	07 37 43.6	-25 50 29	>13.5	OB:	
149	07 35 56.6	-22 58 54	07 38 04.3	-23 05 46	11.7	B8	Hβ wk.
150	07 36 09.6	-17 51 56	07 38 23.6	-17 58 49	11.7		
151	07 36 46.0	-15 42 48	07 39 02.5	-15 49 43	12.1	B8w	Hβ wk.
152	07 38 46.7	-18 48 40	07 40 59.7	-18 55 43	13.0	OB:r	
153	07 40 01.4	-21 30 41	07 42 11.2	-21 37 49	10.1, 9.8p	OB1(ce:)	HD 62654, Heidelberg 69.
154	07 40 01.6	-32 02 51	07 41 57.3	-32 09 58	13.0	OB1	
155	07 40 40.0	-26 38 44	07 42 43.3	-26 45 54	13.5	w	
156	07 40 45.2	-34 18 15	07 42 37.6	-34 25 25	13.5	w	
157	07 41 41.8	-32 35 32	07 43 36.9	-32 42 46	13.0		In cluster OCL 696.
158	07 41 42.1	-32 34 48	07 43 37.2	-32 42 02	12.5	w	In cluster OCL 696.
159	07 41 43.3	-32 35 52	07 43 38.4	-32 43 06	13.5		In cluster OCL 696.
160	07 42 17.8	-28 00 57	07 44 19.4	-28 08 14	13.5	w	
161	07 43 35.8	-26 28 07	07 45 39.5	-26 35 29	12.5	B7w	Hβ wk.
162	07 44 31.3	-26 25 41	07 46 35.1	-26 33 06	>13.5		Stellar, on a blue plate.
163	07 45 06.2	-25 29 35	07 47 11.3	-25 37 03	13.5	OB1:s	
164	07 45 22.9	-26 09 20	07 47 27.1	-26 16 49	13.0	w	Close to the next star.
165	07 45 25.1	-26 07 46	07 47 29.4	-26 15 15	13.5	w	
166	07 45 45.0	-30 36 22	07 47 43.3	-30 43 52	13.5		
167	07 50 55.1	-27 04 01	07 52 58.5	-27 11 51	13.5w	OB:	
168	07 51 38.2	-27 38 12	07 53 40.9	-27 46 05	11.9	A0 I:	
169	07 55 08.9	-19 40 19	07 57 21.6	-19 48 26	12.5, 12.3p	OB1w	Hβ wk.
170	07 56 03.7	-22 32 00	07 58 13.1	-22 40 10	13.0	OB1:w	
171	07 56 41.8	-31 06 10	07 58 40.3	-31 14 22	13.0	OB⁻:w	
172	07 57 19.2	-31 07 39	07 59 17.7	-31 15 54	13.0	B8w	
173	08 00 09.1	-30 03 39	08 02 09.3	-30 12 04	13.5	Bw	
174	08 00 15.1	-29 31 29	08 02 16.0	-29 39 55	10.9, 11.2p	OB1	*
175	08 00 22.0	-24 47 28	08 02 28.9	-24 55 54	13.5	OB1w	Hβ wk.

Table 2 continued

No.	R. A. (1900)	Decl.	R. A. (1950)	Decl.	Mag.	Spectrum	I.D. and Remarks
	h m s	° ' ''	h m s	° ' ''			
176	08 01 25.2	-27 23 16	08 03 29.0	-27 31 46	10.5, 10.5p	OB1	-27°4982.
177	08 02 35.5	-28 42 57	08 04 37.7	-28 51 32	>13.5	B:	
178	08 02 40.6	-21 00 03	08 04 52.2	-21 08 38	10.5	B8w	Hβ wk.
179	08 03 03.6	-27 58 16	08 05 06.8	-28 06 52	12.5	OB1w	
180	08 03 32.0	-33 37 06	08 05 27.5	-33 45 44	13.0	B7	
181	08 03 52.5	-32 06 41	08 05 50.2	-32 15 20	13.5	w	
182	08 11 03.4	-44 48 02	08 12 41.2	-44 57 07	11.7	OB1w	
183	08 13 33.3	-42 23 51	08 15 16.0	-42 33 06	11.7	B7:w	*
184	08 13 37.5	-36 10 31	08 15 30.4	-36 19 46	12.1	B8w	
185	08 14 30.5	-25 11 09	08 16 38.0	-25 20 28	13.5	w	
186	08 18 21.5	-37 07 46	08 20 13.5	-37 17 18	13.5	OB:w	
187	08 19 52.8	-37 42 27	08 21 44.1	-37 52 05	12.1	OB1	
188	08 22 29.1	-37 17 30	08 24 21.4	-37 27 17	13.5	s	
189	08 34 58.7	-46 53 32	08 36 36.7	-47 04 02	10.5, 10.3p	OB1s	-46°4394.
190	08 37 15.8	-44 51 19	08 38 58.0	-45 01 57	13.0	A0w	
191	08 41 10.2	-46 01 13	08 42 51.0	-46 12 04	12.5	OB1w	
192	08 42 07.5	-53 55 32	08 43 31.4	-54 06 25	12.5	B7w	Hβ wk.
193	08 46 44.5	-54 29 13	08 48 08.2	-54 40 22	10.5	B8	Hβ wk. -54°2395.
194	08 46 54.8	-45 02 04	08 48 38.5	-45 13 14	11.4	B8w	
195	08 48 40.9	-48 15 57	08 50 19.0	-48 27 12	13.0	w	
196	08 48 48.2	-51 26 56	08 50 19.7	-51 38 12	11.4	B9w	
197	08 52 06.3	-47 29 05	08 53 46.7	-47 40 31	13.0	w	
198	08 54 48.9	-43 02 52	08 56 37.5	-43 14 27	13.0	B8w	Hβ wk.
199	09 05 42.6	-56 18 50	09 07 07.1	-56 30 58	8.8	OB1	-56°2625.
200	09 07 04.3	-42 04 07	09 08 56.7	-42 16 20	11.7	B7w	
201	09 13 17.6	-50 31 01	09 14 57.4	-50 43 32	11.4	OB1w	
202	09 18 45.5	-50 58 07	09 20 25.9	-51 10 53	11.7	B7w	
203	09 20 44.3	-52 34 19	09 22 22.1	-52 47 11	13.5	w	
204	09 25 21.7	-49 35 41	09 27 06.4	-49 48 46	12.5	OB:w	
205	09 25 41.9	-48 20 00	09 27 28.8	-48 33 06	10.9, 10.7p	OB1w	Heidelberg 307, -48°4742.
206	09 38 09.3	-53 10 34	09 39 51.2	-53 24 12	13.0	OB:w	
207	09 45 40.5	-53 58 47	09 47 23.4	-54 12 44	13.5	F-G?w	
208	09 46 46.1	-59 04 10	09 48 18.6	-59 18 09	10.9	B7	-58°2832.
209	09 47 21.4	-54 57 37	09 49 03.0	-55 11 38	12.1	OB1	
210	09 53 25.2	-54 37 32	09 55 09.6	-54 51 47	13.0	G?w	
211	09 59 23.9	-52 04 48	10 01 14.6	-52 19 16	13.5		
212	10 01 46.6	-51 20 35	10 03 39.2	-51 35 09	12.5	A0w	
213	10 11 15.7	-58 41 18	10 12 59.3	-58 56 11	13.0	OB1	*
214	10 13 33.4	-57 35 34	10 15 20.1	-57 50 32	13.0	OB1w	
215	10 19 44.4	-57 29 56	10 21 33.8	-57 45 05	13.2	wk	
216	10 25 41.3	-54 37 25	10 27 37.5	-54 52 45	11.7	OB1s	Hβ wk. Heidelberg 418.
217	10 30 13.5	-53 06 55	10 32 13.4	-53 22 23	10.5	B8w	Hβ wk. -52°3843.
218	10 30 55.1	-65 26 50	10 32 33.5	-65 42 19	12.5	B8w	
219	10 35 35.3	-60 19 08	10 37 27.0	-60 34 44	13.5	w	
220	10 45 47.2	-56 16 49	10 47 49.3	-56 32 40	13.0	OB:s	
221	10 49 27.1	-61 34 42	10 51 23.6	-61 50 38	11.4	B7w	
222	10 59 41.5	-60 18 43	11 01 45.0	-60 34 52	12.1	B I:w	
223	11 03 49.0	-59 28 02	11 05 55.5	-59 44 15	13.0	B6 I:w	
224	11 05 42.9	-59 34 15	11 07 50.2	-59 50 30	>13.5:		Planetary?
225	11 12 40.7	-60 20 40	11 14 50.7	-60 37 02	13.0	OB1:w	
226	11 13 56.4	-74 37 52	11 15 42.0	-74 54 15	13.5	w	
227	11 28 36.2	-66 26 23	11 30 49.5	-66 42 56	10.1	B8w	-66°1067.
228	11 31 32.7	-60 59 32	11 33 52.0	-61 16 07	10.1	OB^-:w	-60°3626. *
229	11 34 04.5	-68 45 19	11 36 19.5	-69 01 55	11.4	OB1	
230	11 44 13.1	-63 50 26	11 46 38.0	-64 07 06	12.5	B7w	Hβ wk.
231	12 07 49.0	-63 20 30	12 10 28.0	-63 37 11	10.5	B7w	Hβ wk.
232	12 12 04.2	-62 57 01	12 14 45.5	-63 13 41	13.5	OB:rw	
233	12 12 44.5	-62 27 54	12 15 26.1	-62 44 34	10.1	B7w	Hβ wk. -62°636. *
234	12 13 12.6	-62 16 17	12 15 54.4	-62 32 57	11.4	B8w	
235	12 14 58.4	-62 48 20	12 17 41.4	-63 04 59	13.0	B7w	Hβ wk.

Table 2 continued

No.	R. A. (1900) h m s	Decl. ° ' ''	R. A. (1950) h m s	Decl. ° ' ''	Mag.	Spectrum	I.D. and Remarks
236	12 29 27.1	-60 37 32	12 32 16.8	-60 54 05	11.4	B7w	Hβ wk.
237	12 37 39.5	-62 33 16	12 40 35.1	-62 49 43	12.1	OB	In cluster OCL 891.
238	12 38 32.7	-61 02 09	12 41 27.4	-61 18 36	12.1	OB:	
239	12 43 50.3	-65 11 18	12 46 52.5	-65 27 40	13.5	w	
240	12 55 42.1	-58 36 33	12 58 42.9	-58 52 44	11.4	OB1	
241	12 57 13.6	-60 37 44	13 00 17.5	-60 53 53	11.4	OB+r	
242	13 09 46.4	-62 02 35	13 12 58.8	-62 18 29	13.0	OB+r:	
243	13 18 21.9	-61 29 42	13 21 37.8	-61 45 24	12.1	B7w	Hβ wk.
244	13 18 56.1	-59 15 28	13 22 08.6	-59 31 09	13.0	OB1:s	
245	13 21 52.4	-57 28 17	13 25 03.5	-57 43 53	11.7	B7w	Hβ wk.
246	13 22 43.4	-61 31 10	13 26 01.6	-61 46 45	10.7	OB1	Hβ wk. -61°3799. *
247	13 26 48.1	-61 39 50	13 30 08.6	-61 55 18	13.0	OBw	
248	13 28 48.2	-57 07 08	13 32 01.8	-57 22 33	11.7	OB1w	Heidelberg 838.
249	13 36 40.1	-62 16 55	13 40 06.9	-62 32 06	12.5	$OB^{-}w$	
250	13 40 34.4	-58 36 34	13 43 55.5	-58 51 38	11.4	OB1	Hβ wk.
251	13 42 25.5	-61 39 41	13 45 53.8	-61 54 41	12.1	w	
252	13 43 17.2	-61 19 02	13 46 45.1	-61 34 01	13.0		
253	13 46 05.4	-58 05 16	13 49 27.9	-58 20 09	13.5	w	
254	14 03 27.2	-63 59 16	14 07 12.4	-64 13 32	11.4	OB1w	He I absorption. *
255	14 06 02.7	-66 41 10	14 09 59.0	-66 55 20	>13.5	s	
256	14 06 35.5	-57 59 09	14 10 06.2	-58 13 18	10.9	B8	Hβ wk. -57°5467.
257	14 43 36.6	-51 51 25	14 47 06.6	-52 03 57	12.1	A0:w	In cluster OCL 933.
258	14 46 33.5	-60 48 05	14 50 27.7	-61 00 28	12.1	OB:w	
259	14 47 18.9	-62 10 05	14 51 18.1	-62 22 26	11.7	B7	
260	14 53 46.9	-54 42 03	14 57 26.2	-54 54 05	12.1	B7	Hβ wk.
261	14 54 27.4	-62 47 35	14 58 31.9	-62 59 34	11.7	B9w	Hβ wk.
262	14 54 30.7	-58 55 18	14 58 21.8	-59 07 18	12.5	OB1w	Hβ wk.
263	15 14 00.0	-56 38 01	15 17 50.4	-56 48 59	13.5		Steep Balmer decrement.
264	15 42 20.6	-53 32 35	15 46 09.5	-53 41 55	12.1	OBr:	
265	15 46 34.1	-55 00 10	15 50 28.1	-55 09 14	12.1	OBr:	*
266	15 49 07.1	-64 09 12	15 53 37.9	-64 18 05	13.5	w	
267	15 49 19.0	-54 50 32	15 53 13.1	-54 59 26	12.5	OB^{-}:	
268	15 55 08.5	-53 24 19	15 58 59.7	-53 32 51	13.5	OB^{-}:w	
269	15 59 26.7	-51 25 26	16 03 13.3	-51 33 42	12.1	OB1w	Hβ wk.
270	16 02 40.1	-51 36 01	16 06 27.7	-51 44 05	10.5	B7w	Hβ wk. -51°9820.
271	16 19 58.7	-47 44 07	16 23 39.4	-47 51 03	13.0	w	
272	16 23 15.2	-46 47 25	16 26 54.1	-46 54 08	13.0	w	
273	16 24 14.0	-52 01 03	16 28 06.3	-52 07 42	13.5	w	
274	16 26 08.0	-54 14 03	16 30 07.2	-54 20 34	11.7	B7	Hβ wk.
275	16 28 26.9	-15 35 45	16 31 17.8	-15 42 09	12.7		V1003 Oph. In nebulosity.
276	16 30 35.2	-44 42 02	16 34 10.3	-44 48 16	12.5		
277	16 31 36.0	-40 04 53	16 35 02.0	-40 11 03	11.4	OB1	
278	16 32 24.3	-46 02 44	16 36 02.6	-46 08 50	12.1		
279	16 37 20.8	-47 11 41	16 41 02.3	-47 17 27	11.7	OB^{-}:w	
280	16 38 15.3	-47 47 22	16 41 58.3	-47 53 04	13.5		
281	16 39 32.8	-46 49 02	16 43 13.6	-46 54 39	11.4	OB:w	
282	16 40 19.8	-47 47 02	16 44 03.0	-47 52 36	12.5	w	
283	16 41 07.1	-40 10 23	16 44 34.1	-40 15 54	10.1	OB1	Hβ wk. -40°10731.
284	16 41 26.2	-46 11 48	16 45 05.7	-46 17 17	11.4	OB^{-}:w	
285	16 42 55.6	-45 06 45	16 46 32.8	-45 12 08	13.0	w	
286	16 43 35.3	-45 16 46	16 47 13.0	-45 22 07	13.0	w	
287	16 43 44.4	-43 52 12	16 47 19.0	-43 57 32	10.7	B7	Hβ wk. -43°11164.
288	16 43 46.5	-45 15 49	16 47 24.1	-45 21 09	13.0	w	
289	16 44 02.2	-45 13 56	16 47 39.8	-45 19 15	11.7	OB:w	
290	16 50 26.9	-45 10 16	16 54 04.9	-45 15 08	12.1	w	
291	16 50 41.2	-40 35 01	16 54 09.7	-40 39 52	13.5	w	
292	16 52 21.1	-46 07 06	16 56 01.5	-46 11 50	11.4	w	
293	16 55 44.5	-46 51 43	16 59 26.9	-46 56 13	13.5	w	
294	17 01 12.5	-24 19 03	17 04 15.4	-24 23 11	11.7	w	
295	17 02 13.3	-07 36 50	17 04 55.7	-07 40 54	12.1	w	

Table 2 continued

No.	R. A. (1900) h m s	Decl. ° ' ''	R. A. (1950) h m s	Decl. ° ' ''	Mag.	Spectrum	I.D. and Remarks
296	17 02 51.9	-22 57 51	17 05 53.1	-23 01 52	13.5	red	
297	17 03 09.7	-27 59 08	17 06 17.9	-28 03 07	>13.5	w	IT Oph?
298	17 04 15.4	-44 10 14	17 07 52.2	-44 14 08	12.1	w	
299	17 06 35.4	-39 38 37	17 10 03.1	-39 42 21	11.4	B7w	Hβ wk.
300	17 11 18.4	-38 01 51	17 14 43.3	-38 05 15	12.1	redw	
301	17 11 37.6	-38 03 14	17 15 02.5	-38 06 37	11.4	OB+:	
302	17 12 59.0	-39 25 56	17 16 26.6	-39 29 13	12.1	w	
303	17 13 17.9	-35 50 58	17 16 38.9	-35 54 14	13.5	w	
304	17 13 28.2	-35 51 31	17 16 49.3	-35 54 46	13.0	w	
305	17 16 30.8	+01 56 07	17 19 02.3	+01 53 03	13.5		
306	17 17 51.9	-41 27 45	17 21 23.7	-41 30 41	13.0	w	
307	17 20 29.4	-24 18 10	17 23 32.8	-24 20 55	13.5		
308	17 22 41.9	-29 55 38	17 25 53.6	-29 58 14	13.0	w	*
309	17 23 42.6	-25 43 56	17 26 48.1	-25 46 27	11.4	w	
310	17 25 19.4	-23 49 11	17 28 22.3	-23 51 36	10.1	B7	
311	17 26 23.5	-22 15 41	17 29 24.3	-22 18 01	11.4	w	
312	17 26 37.6	-08 10 37	17 29 20.8	-08 12 57	10.9, 11.4p	OB1	-8°4452.
313	17 30 10.7	-25 52 29	17 33 16.5	-25 54 32	12.1, 11.9p	OB:w	SLS 4273.
314	17 30 16.8	-33 41 23	17 33 34.7	-33 43 25	13.0	w	
315	17 30 31.2	-33 38 16	17 33 49.0	-33 40 17	12.5	w	
316	17 31 08.6	-18 02 39	17 34 03.9	-18 04 39	13.0	w	
317	17 34 12.2	-26 09 54	17 37 18.5	-26 11 40	12.1	w	
318	17 36 46.7	-08 40 22	17 39 30.5	-08 41 57	13.2		
319	17 38 33.5	-21 17 53	17 41 33.1	-21 19 20	13.5	w	
320	17 39 22.3	-15 33 32	17 42 14.5	-15 34 56	13.5	w	
321	17 39 56.6	-29 13 16	17 43 07.5	-29 14 37	12.1	OB⁻wk	In cluster OCL 1039.
322	17 41 42.8	-27 57 34	17 44 51.8	-27 58 47	12.1	OB1w	*
323	17 44 17.2	-30 09 53	17 47 29.6	-30 10 55	12.5	w	In a cluster.
324	17 45 01.0	-17 46 11	17 47 56.0	-17 47 10	13.5	w	
325	17 46 04.4	-30 35 38	17 49 17.5	-30 36 32	12.5	w	
326	17 46 55.9	-29 52 02	17 50 07.9	-29 52 52	>13.5	wk	
327	17 47 00.9	-28 31 04	17 50 10.8	-28 31 54	12.1	OB1:w	
328	17 47 49.6	-27 42 37	17 50 58.3	-27 43 23	11.4, 11.4p	OB1	Hβ wk.
329	17 47 52.6	-28 17 28	17 51 02.2	-28 18 14	12.5	OB1w	Hβ wk.
330	17 48 15.2	-29 25 33	17 51 26.5	-29 26 17	12.5	OB⁻w	
331	17 49 08.1	-26 55 12	17 52 15.7	-26 55 53	13.5	w	
332	17 49 10.5	-30 02 56	17 52 22.8	-30 03 36	12.1	OB1w	Hβ wk.
333	17 50 27.1	-27 45 02	17 53 35.9	-27 45 37	11.7	OB1w	
334	17 50 55.7	-27 37 48	17 54 04.3	-27 38 21	13.0	w	
335	17 50 57.9	-22 29 31	17 53 59.2	-22 30 04	11.4	OBr:	
336	17 51 34.4	-06 03 19	17 54 15.1	-06 03 50	13.2	w	
337	17 53 31.9	-27 05 53	17 56 39.7	-27 06 15	11.4	B7w	Hβ wk.
338	17 54 01.5	-23 56 29	17 57 04.8	-23 56 49	10.5	B8w	Hβ wk.
339	17 55 01.6	-27 21 36	17 58 09.8	-27 21 51	12.1	B8w	Hβ wk.
340	17 56 52.0	-17 12 48	17 59 46.3	-17 12 55	12.5	B7w	Hβ wk.
341	17 57 08.6	-27 53 46	18 00 17.6	-27 53 52	11.4		In cluster NGC 6520.
342	17 57 09.2	-27 51 21	18 00 18.2	-27 51 27	10.9	B7w	-27°12316. *
343	17 57 30.7	-20 36 54	18 00 29.5	-20 36 58	12.1	B7w	Hβ wk.
344	17 58 31.5	-30 48 46	18 01 45.0	-30 48 45	12.1	w	
345	18 03 20.9	-20 14 02	18 06 19.2	-20 13 41	11.7	B8w	
346	18 03 30.3	-23 25 57	18 06 32.9	-23 25 35	11.4	OB1	
347	18 03 40.5	-29 24 41	18 06 51.8	-29 24 18	11.7, 11.4p	OB1w	
348	18 04 24.5	-19 29 13	18 07 21.8	-19 28 47	12.1	OBr:w	
349	18 05 11.3	-27 09 16	18 08 19.2	-27 08 47	11.4	B7w	Hβ wk.
350	18 06 14.0	-21 50 20	18 09 14.4	-21 49 46	12.1	OB:	
351	18 06 59.9	-20 19 58	18 09 58.3	-20 19 21	12.2	OB:	
352	18 07 19.1	-19 25 37	18 10 16.3	-19 24 59	12.7	OB:w	
353	18 07 40.7	-19 07 30	18 10 37.5	-19 06 50	11.9	A0w	
354	18 08 34.6	-19 40 49	18 11 32.1	-19 40 05	10.9	OB1:w	
355	18 08 53.3	-28 55 33	18 12 03.8	-28 54 47	10.9	B7	Hβ wk. -28°14354. *

Table 2 continued

No.	R. A. (1900)	Decl.	R. A. (1950)	Decl.	Mag.	Spectrum	I.D. and Remarks
	h m s	° ' ''	h m s	° ' ''			
356	18 08 57.2	-09 06 11	18 11 41.5	-09 05 26	11.9		
357	18 09 10.4	-17 02 48	18 12 04.5	-17 02 02	13.0	w	
358	18 09 37.8	-19 45 53	18 12 35.4	-19 45 05	13.0	B:w	
359	18 11 14.7	-19 44 24	18 14 12.3	-19 43 28	13.0	w	
360	18 11 17.4	-28 39 12	18 14 27.5	-28 38 16	13.0	M?w	
361	18 11 27.7	-17 52 53	18 14 22.9	-17 51 57	11.4	B7w	*
362	18 12 44.6	-19 33 50	18 15 41.9	-19 32 48	12.5	w	
363	18 12 56.7	-11 54 36	18 15 44.4	-11 53 33	11.7	OB:	
364	18 13 01.2	-21 55 25	18 16 01.7	-21 54 22	13.5		
365	18 13 03.4	-20 55 03	18 16 02.5	-20 53 59	12.5	A0w	
366	18 13 07.8	-17 10 19	18 16 02.0	-17 09 15	13.0		
367	18 15 08.6	-18 38 56	18 18 04.7	-18 37 43	11.4	OB1w	
368	18 15 45.9	-16 16 07	18 18 39.0	-16 14 52	12.5	w	V1971 Sgr? *
369	18 16 59.6	-15 36 03	18 19 51.8	-15 34 43	13.2	w	
370	18 17 35.0	-19 46 08	18 20 32.6	-19 44 45	11.4	B7w	
371	18 18 57.2	-14 07 30	18 21 47.6	-14 06 01	13.5	w	
372	18 19 26.4	-17 59 44	18 22 21.6	-17 58 13	13.5	w	
373	18 19 31.3	-18 19 16	18 22 27.0	-18 17 44	12.1	B7:w	
374	18 19 38.3	-13 17 03	18 22 27.6	-13 15 31	12.5	w	
375	18 20 13.0	-13 13 00	18 23 02.3	-13 11 26	13.0	w	
376	18 20 14.6	-13 11 10	18 23 03.8	-13 09 36	12.1	OB:w	
377	18 21 11.7	-18 02 51	18 24 07.0	-18 01 12	13.0	w	
378	18 21 21.0	-14 09 45	18 24 11.4	-14 08 06	12.5	OB$^-$:w	
379	18 21 48.3	-13 58 42	18 24 38.5	-13 57 01	13.5	w	
380	18 21 48.9	-14 00 03	18 24 39.1	-13 58 22	12.5	OB1:w	
381	18 21 55.7	-15 19 33	18 24 47.5	-15 17 51	11.7	OB1w	
382	18 22 29.3	-30 19 55	18 25 41.8	-30 18 10	11.4	OB1w	
383	18 22 37.2	+03 54 48	18 25 06.3	+03 56 32	12.9		
384	18 22 50.9	-06 14 09	18 25 31.8	-06 12 23	12.7	w	
385	18 22 57.1	-17 28 01	18 25 51.6	-17 26 15	11.7	B9w	
386	18 23 03.7	-13 01 23	18 25 52.7	-12 59 36	10.9	OB1w	Hβ wk.
387	18 23 21.4	-13 00 24	18 26 10.4	-12 58 36	11.7	OB:	
388	18 24 13.1	-08 41 34	18 26 56.9	-08 39 42	10.5	OB:w	
389	18 24 16.7	-15 00 47	18 27 08.1	-14 58 55	13.5		
390	18 24 36.6	-24 05 08	18 27 39.9	-24 03 14	13.5	w	V3890 Sgr. *
391	18 24 58.4	-08 46 40	18 27 42.3	-08 44 45	13.2	w	
392	18 25 24.0	-13 33 04	18 28 13.6	-13 31 07	11.9	w	
393	18 25 57.1	+06 41 09	18 28 23.0	+06 43 07	>13.5	OB:s	
394	18 26 18.9	-07 34 36	18 29 01.4	-07 32 35	12.0	OB1:w	
395	18 26 57.7	-13 53 18	18 29 47.7	-13 51 14	13.5		
396	18 27 31.1	-07 47 30	18 30 13.8	-07 45 24	12.2	OB:w	
397	18 27 55.4	-10 39 51	18 30 41.5	-10 37 43	11.9	OBr:w	
398	18 28 17.7	-11 29 02	18 31 04.8	-11 26 53	12.1	OBr:w	
399	18 29 04.5	-07 21 08	18 31 46.7	-07 18 55	12.1	OB:w	
400	18 30 46.2	-19 57 35	18 33 43.8	-19 55 15	11.7	B7w	Hβ wk.
401	18 30 56.0	-08 20 17	18 33 39.3	-08 17 56	13.0	w	In cluster NGC 6664.
402	18 32 29.6	-14 52 22	18 35 20.8	-14 49 54	11.7	B7w	Hβ wk.
403	18 34 07.3	-15 25 25	18 36 59.1:	-15 22 50:	13:	M?	Overlap? 3 plates.
404	18 34 36.1	-06 57 39	18 37 17.8	-06 55 03	12.3	OBr:w	*
405	18 35 19.5	-28 02 36	18 38 28.2	-27 59 55	8.3	G0 Ia:w	HD 172481.
406	18 35 26.3	-05 46 23	18 38 06.6	-05 43 43	10.8	OB:w	
407	18 35 35.1	-19 42 32	18 38 32.3	-19 39 51	13.5	w	Overlap.
408	18 35 35.3	-05 40 12	18 38 15.5	-05 37 31	13.3	w	
409	18 37 16.2	-14 29 56	18 40 06.9	-14 27 08	11.7	OB1:w	
410	18 37 31.8	-02 58 53	18 40 08.9	-02 56 04	12.1	B I:w	
411	18 37 57.7	-14 30 50	18 40 48.4	-14 27 59	11.8	OB1	
412	18 38 09.1	-03 45 05	18 40 47.0	-03 42 13	13.2	OB:ovw	
413	18 38 38.0	-08 58 36	18 41 22.0	-08 55 42	12.1	OB:w	
414	18 38 51.7	-08 33 28	18 41 35.2	-08 30 33	12.1	OB$^-$:w	
415	18 39 26.5	-05 10 11	18 42 06.1	-05 07 14	13.2	w	

Table 2 continued

No.	R. A. (1900)	Decl.	R. A. (1950)	Decl.	Mag.	Spectrum	I.D. and Remarks
	h m s	° ' ''	h m s	° ' ''			
416	18 39 32.7	-08 49 17	18 42 16.5	-08 46 19	11.5	OB1:w	
417	18 39 43.7	+04 56 42	18 42 11.6	+04 59 40	11.7	*	
418	18 39 50.8	-01 15 09	18 42 25.9	-01 12 10	12.9	w	In cluster OCL 86.
419	18 41 40.7	-01 15 52	18 44 15.8	-01 12 45	12.7	w	
420	18 42 17.2	-06 37 11	18 44 58.4	-06 34 01	11.1	w	Overlap.
421	18 42 56.4	-02 12 06	18 45 32.5	-02 08 54	11.5	s	*
422	18 45 47.6	+08 14 37	18 48 11.7	+08 18 01	13.5		
423	18 47 14.5	-01 24 01	18 49 49.7	-01 20 30	12.3	B7:w	
424	18 47 15.9	+08 08 32	18 49 40.2	+08 12 02	12.1	w	
425	18 48 05.6	+08 15 35	18 50 29.7	+08 19 09	12.7	w	
426	18 48 45.4	-00 55 38	18 51 20.1	-00 52 01	11.7	OB:w	
427	18 52 46.3	+01 23 15	18 55 18.3	+01 27 09	9.3	OB:ov	
428	18 59 17.4	+16 17 27	19 01 32.2	+16 21 48	11.2	OB1es!	*
429	19 03 03.5	-10 02 58	19 05 48.5	-09 58 20	11.7	B8w	
430	19 03 37.1	+06 57 12	19 06 02.9	+07 01 52	12.1	*	
431	19 04 28.7	+15 37 17	19 06 44.4	+15 42 00	10.6	OB1ew	Probable 4686 emission.
432	19 05 52.6	-09 16 55	19 08 36.7	-09 12 05	9.3	B7w	HD 179050.
433	19 06 53.1	+04 49 01	19 09 21.3	+04 53 54	13.5	s	He I 6678 emission? *
434	19 06 57.4	+13 19 55	19 09 15.9	+13 24 48	11.2	w	
435	19 07 21.7	-04 14 27	19 10 00.0	-04 09 31	10.7, 11.5p	OB1w	-4°4721.
436	19 07 50.8	+06 40 05	19 10 16.9	+06 45 02	10.9	B7	
437	19 10 28.7	-01 28 09	19 13 03.9	-01 23 00	12.5	OB:w	
438	19 10 31.8	+17 12 20	19 12 45.7	+17 17 28	12.0	s	*
439	19 18 12.2	+07 46 53	19 20 37.2	+07 52 33	12.7	OB:w	Overlap.
440	19 19 48.6	+02 17 59	19 22 19.7	+02 23 46	12.3	OB:	V413 Aql.
441	19 31 01.6	-04 06 40	19 33 39.6	-04 00 07	12.5	OB:s	Hβ emission. *
442	19 32 12.0	-06 26 26	19 34 52.5	-06 19 48	>13.5	w	Continuum seen in blue.
443	19 46 28.8	-06 04 06	19 49 08.7	-05 56 32	13.5:		EF Aql? *
444	19 53 01.8	-14 13 02	19 55 50.2	-14 05 02	12.7	G:w	BZ Sgr.
445	19 55 28.7	+35 50 37	19 57 20.1	+35 58 44	9.3p	OB^-w	+35°3899 publ. B0.5 III.
446	20 04 20.4	+06 57 55	20 06 47.0	+07 06 37	7	B9	HD 191362.
447	20 28 11.7	+40 17 41	20 30 00.1	+40 27 48	>13	s	
448	20 31 14.6	+45 01 01	20 32 55.4	+45 11 18	10.9	B8	+44°3511. *
449	20 44 24.2	+44 25 50	20 46 08.5	+44 36 52	12.5, 12.0p	OBw	LS III 44°22.
450	21 08 00.6	+41 59 16	21 09 53.3	+42 11 32	13.1	B5	
451	21 09 36.2	+44 29 44	21 11 25.5	+44 42 04	13.0		
452	21 33 10.0	+42 54 23	21 35 06.6	+43 07 49	13.5	s	V1082 Cyg.
453	22 21 37.3	+56 12 10	22 23 29.6	+56 27 23	12.5, 11.2p	OB1w	LS III 56°53.
454	23 45 04.6	+62 08 47	23 47 30.6	+62 25 27	10.9, 12.0p	OBw	LS I 62°29. *
455	23 59 21.0	+60 41 24	00 01 55.0	+60 58 06	11.2, 11.2p	OB^-w	LS I 60°80.

Notes to Table 2

5: Spectrum B2 III by Hiltner, *Ap. J. Suppl.* (No. 24), **2**, 389, 1956.

13: +59°611, published spectral type B0.5 IV:nn. The nearby +59°612 is a previously known emission-line star. The presumption would be that the emission in No. 13 is variable, since the other, but not this one, was detected in the MWC survey.

18: BD magnitude 8.4.

22: Identified LS V 35°4: in Wackerling, due to the LS V labeling 35°4 rather than 35°5 as the BD star. Other nomenclature is as in Wackerling.

26: He I absorption lines visible in the blue at 280 Å mm^{-1}.

28: H and K filled in? Hβ emission?

43: From the position, is variable BV 1618 Mon in *IAU Var. Star Bull.* 921.

62: Listed as Hα emission by Perraud, *J. d. Obs.*, **44**, 149, but omitted by Wackerling.

83: Missed in the SLS survey because it was slightly outside the miscentered original SLS Hα plate.

174: Henize evidently published this star with erroneous declination.

183: Just northward of Henize 144.

213: No. 529 in Table 15 of Wray's thesis (Wray 1966); omitted by Wackerling.

228: In cluster NGC 3766.

233: Henize gives a position for a nearby brighter star, in which we cannot see Hα emission at lower spectral resolution than his.

246: Heidelberg 249, also No. 261 in a survey by Lyngå, *Arkiv f. Astr.* **5**, No. 10 (OB stars). Hα emission not previously reported.

254: No. 29 in a survey for OB stars by Lyngå, *Lund Medd.*, Ser. II, No. 141. Hα emission not reported previously.

265: Just northward of Henize 1110.

308: Not the nearby Henize 1411.

322: Not the nearby Henize 1482.

342: In cluster NGC 6520.
355: Strong ultraviolet continuum.
361: Near, but different from, Henize 1660.
368: The variable is listed as Mira-type. We see on our one red plate no molecular-banded spectrum in the immediate, rather crowded, vicinity. Near cluster OCL 44.
390: Comparison with the identification chart shows that this is the nova-like star discussed by Dinerstein and Hoffleit in *IAU Var. Star Bull.* No. 345; it is now named V3890 Sgr.
404: Hα emission reported by Thé in *Bosscha Contr.* No. 14; not in Wackerling.
417: Not the nearby DQ Ser.
421: Hα emission found by Thé, *Bosscha Contr.* No. 14, but omitted by Wackerling because Thé classified the spectrum as M1 ? Our red plate, somewhat more suitable for detecting weak TiO than Thé's infrared plate, does not support this type.
428: Additional very weak emission lines in the red. AS 338, not in Wackerling.
430: A carbon star—No. 2703 in the general catalog (*Pub. Warner and Swasey Obs.*, **1**, No. 4)—is about 1′ distant.
433: Our position is based on two accordant plates. Same star as published by Krumenaker, *Pub. A.S.P.*, **87**, 185, 1975, as shown by his identification chart, although he gives a position about 0°.1 in error. Unknown to Krumenaker, the star had been found and measured accurately (the Table 2 coordinates) 10 years earlier by Nassau and Stephenson.
438: Not the nearby AS 346.
441: Probably the star listed as at 19:30.0 by Bidelman and MacConnell in *A.J.*, **78**, 687, Table 3.
443: Our position does not agree very well with the published position of the variable. We do not have the identification chart for it.
448: BD magnitude 9.3.
454: In cluster OCL 270.

seconds were added, all three being on the same plate, to show brighter stars properly. The entire Milky Way within 10° of the galactic equator has now been searched on such plates at Cleveland, either by the present authors, or by Stephenson and the late J. J. Nassau, these last two having each independently searched all the LS plates, except that the LS II declination zone +20° to +40° was done on slightly lower dispersion plates taken with a third telescope, the large Hamburg Schmidt; this zone contributes one star to the present paper. The new Hα emission stars of apparently early spectral type found in this search are fully listed either by Wackerling (1970), our stars there coming almost entirely from the LS catalogs, or in the publications of Table 1, or in the present paper (Table 2). We hope eventually to publish the thousand-odd previously known Hα emission stars that we found (besides those already in the LS and SLS catalogs), for which we have obtained new information.

II. THE CATALOG

Table 2 lists our new stars. Some columns of the table need additional explanation, which follows.

Mag.—Magnitudes are based on the 5000–6000 Å spectral region, unless accompanied by the letter *p* which means photographic, i.e., blue. The blue magnitudes were calibrated for each plate and are unlikely to be in error by much more than 1/3 mag, but the visual ones carry probable errors of ±1 mag at best because each plate was not individually calibrated. All are based on eye estimates of spectral image densities.

Spectrum.—Spectral types are almost all estimated from 580 Å mm^{-1} blue-region objective-prism plates or, in the case of published LS stars, quoted from the literature; an absent type means that the star was too faint for our blue plates. The symbols, other than the most standard ones, mean the following: *w*, Hα emission weak, i.e., barely strong enough for us to detect it reliably; *s*, Hα emission strong (no symbol is used for intermediate strength); *le*, emission lines seen in the blue spectral region; OBl, an early-type star spectroscopically somewhat less luminous than OB$^-$ (in the terminology of the LS catalogs); *ce*, Balmer continuum in emission; *r*, reddened continuum; *ov*, classification complicated by a spectral overlap on the blue plate (the word overlap in the following tabular column refers to difficulty, or at least a fairly close pair of stars, on the red plates). Temperature classes for B stars merely indicate the hydrogen line strengths corresponding to normal main-sequence stars. Colons follow, and parentheses enclose, uncertainties.

I. D. and Remarks.—An asterisk signifies further remarks in the notes following the table. "Hβ wk" means that the Hβ absorption is weaker than would be expected from the other absorption lines, and that sometimes the Balmer decrement among several additional lines also suggests filling-in by line emission. Durchmusterung numbers are quoted from the LS catalogs and were derived for other stars from coordinate comparisons for stars having our visual magnitude estimate brighter than 11.0; south of declination −21° they are from the Cordoba Durchmusterung. OCL numbers for open star clusters refer to Alter, Balazs, and Vanysek (1970).

In the notes to the table, or in the remarks, Heidelberg numbers refer to a catalog of OB stars by Klare and Szeidl (1966); Henize numbers are from a list of Hα emission stars by Henize (1976).

A sizable proportion of the stars whose Hα emission we call strong ought to have been found in previous surveys if their emission intensity has been constant, and hence are probably variable.

III. SOME STARS ERRONEOUSLY REPORTED IN LS II AS SHOWING Hα EMISSION

In the LS II survey, one Hα plate was unintentionally exposed without filter, so that, besides the red spectral region, the blue was also included. On this plate, both Hα emission if any and OB stars (the latter recognized from the blue region) were marked; by error, all were published as having Hα emission. The LS II stars which were thus erroneously called Hα emission stars are, in the serial numbers of that catalog, +20°4, +20°12, +23°10, +23°43, +23°44, +24°12. Other nomenclature for these stars will be found in LS II and in Wackerling (1970).

The literature search for this paper was based on material received by our library by 1976 July 1.

We are much indebted to W. P. Bidelman for comparing all of these stars against his data file, and in consequence generating relevant additional information for about a dozen of them. This work was supported by the National Science Foundation and, in its early stages, by the Office of Naval Research.

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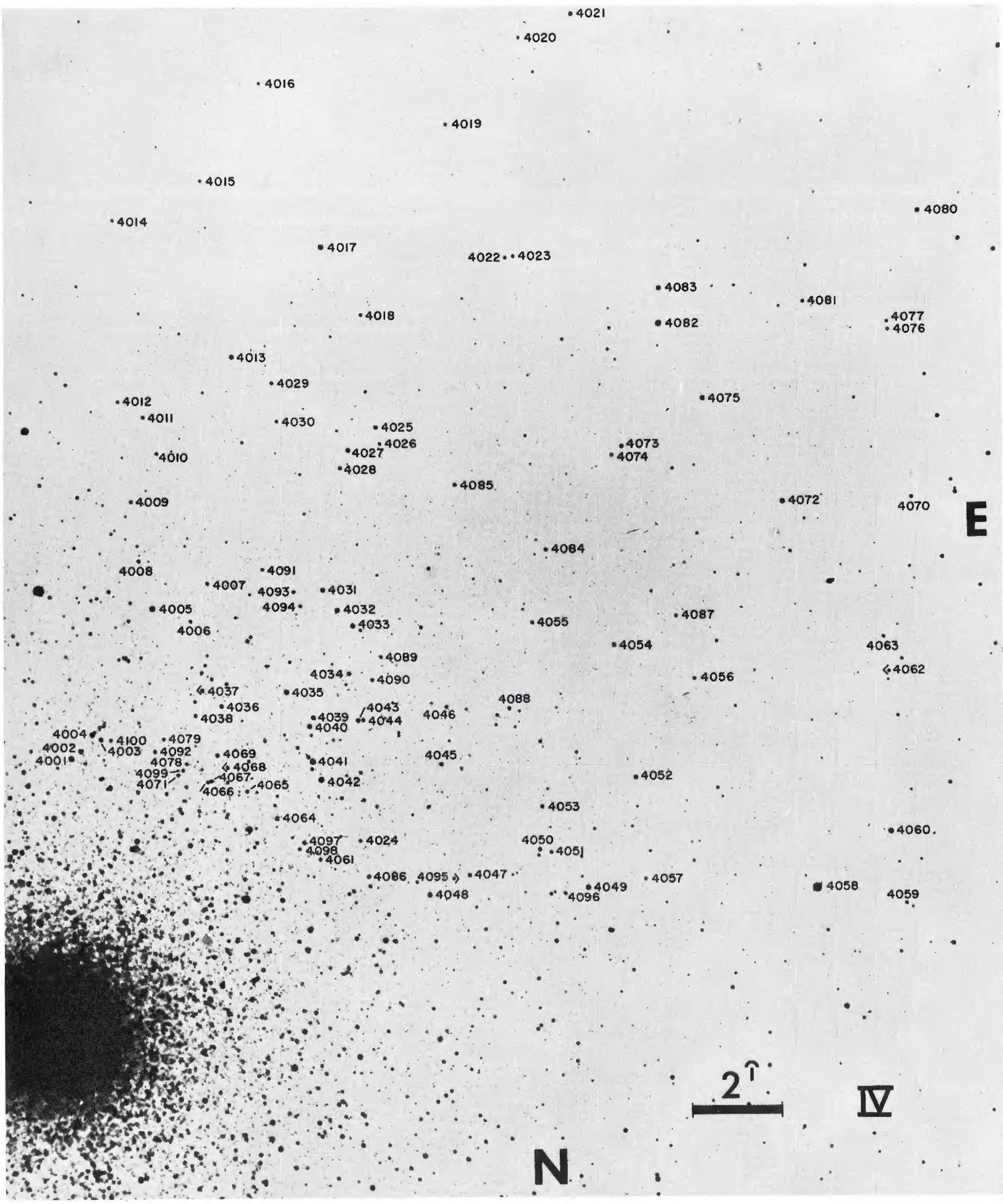

FIG. 4*d*.—Same as Fig. 4*a* but for the SE quadrant

HESSER AND HARTWICK (*see* page 364)