

THE IDENTIFICATION OF HDE OBJECTS WITH LARGE
MAGELLANIC CLOUD CLUSTERS AND NEBULAE

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SUMMARY : A complete listing is presented here of all entries in the Henry Draper Extension (HDE) which are clearly identifiable with star clusters and/or emission nebulae in the Large Magellanic Cloud. The list also includes many individual HDE stars whose position near or within clusters requires clarification.

INTRODUCTION

In the course of preparing 'A Visual Atlas of the Large Magellanic Cloud' the writer made a careful and thorough study of all entries in the Henry Draper Extension (Cannon, 1925-36). It is known that many of the HDE entries refer to clusters or nebulae, while other entries refer to bright stars within clusters. A number of HDE stars also lie in close proximity to clusters or nebulae, and the possibility of misidentification exists. It was therefore considered important to make correct identifications of all HDE entries lying in or near nonstellar objects and thereby avoid duplications on the Atlas charts. The resulting list may be of assistance to other observers engaged on the LMC.

DISCUSSION

In general, it can be said that the following types of objects are apparent from their HDE spectral types:

- a. Early-type stars within clusters are recorded as type B or O.
- b. Star clusters with an integrated type : A, F or G.
- c. Emission nebulae - spectral type N (for Nebular).

The data given in the HDE Catalogue is ambiguous or contradictory in some entries. In a number of cases the spectral type (usually B) refers, apparently, to an early-type star within a cluster, while the magnitude given is far too bright and obviously refers to the entire cluster. Modern spectroscopic and photometric observations have enabled the correct identification of the star, in most cases. The modern V magnitudes and spectral types for the candidate stars (usually the brightest in the clusters) are included in Table 1.

THE TABLE

Table 1 gives all the identifications which have been made, together with the type of object. The columns are as follows:

HDE No. : Number of the object in the Henry Draper Extension
 R.A. : Right ascension for epoch 1950
 Dec. : Declination for epoch 1950
 m_p : Photographic magnitude from HDE Catalogue
 Spect. : Spectral type from HDE Catalogue
 Identific. : Identified star, star cluster or nebula. The following abbreviations are employed:

C/N	=	cluster with nebulosity
GC	=	globular cluster
OC	=	open cluster
NEB	=	emission nebula
*	=	star
E	=	east
N	=	north
S	=	south
F	=	following
P	=	preceding

REFERENCES

- Cannon, A.J. : 1925-36, "The Henry Draper Extension", Annals, Harvard College Observatory, no. 100
- Hodge, P.W. and Wright, F.W. : 1967, "The Large Magellanic Cloud", Smithsonian Press, Washington, D.C.
- Morel, M. : 1983, "A Visual Atlas of the Large Magellanic Cloud", Publ. by M. Morel, Rankin Park, Newcastle, Australia

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TABLE 1 : IDENTIFICATION OF HDE OBJECTS IN AND NEAR LMC CLUSTERS

HDE No.	R.A. (1950)	DEC.	m_p	Spect.	Identification
268626	4 ^h 48 ^m 02	-69°27'19	12.4	G	NGC 1695, OC
268637	49.26	-69 11.9	12.0	G	NGC 1698, C/N
268668	54.27	-67 10.4	12.9	A5	* in NGC 1735. 12.52V.
268669	54.29	-67 10.3	12.9	A5	* in NGC 1735
268671	54.36	-67 10.3	11.0	A5	* in NGC 1735
268677	50.25	-69 50.0	11.4	F	NGC 1704, OC
268680	53.10	-68 8.2	12.9	N	NGC 1736, NEB
268688	53.27	-68 17.2	11.5	A5	SL 076, OC
268706	50.96	-70 4.2	8.8	G	NGC 1711, OC
268712	53.41	-68 44.2	11.6	F5	NGC 1732, OC
268715	56.64	-66 29.2	11.5	B	* in NGC 1763, C/N
268743	57.64	-66 32.2	11.1	B	* in NGC 1769. 11.69V; PEC.
268746	55.36	-68 17.0	8.4	A0	NGC 1755, OC
268759	55.62	-68 37.4	12.0	F2	SL 105, OC
268781	59.20	-66 23.6	11.6	F0	SL 153, OC
268782	58.12	-67 19.0	9.8	A3	NGC 1774, OC
268792	56.68	-68 53.4	12.2	G	SL 116, OC
268796	55.45	-69 45.4	10.3	B	* in SL 106
268798	57.28	-68 29.6	10.8	B	* in NGC 1770. 11.49V.
268802	56.65	-69 2.5	12.6	G	SL 117, OC
268804	57.42	-68 29.2	11.1	B	* in NGC 1770. 11.21V.
268807	56.41	-69 19.4	10.6	B	* in SL 114. NS-69°42a, 12.20V.
268820	56.74	-69 28.4	10.0	B5	* in NGC 1767, C/N
268823	59.18	-67 49.0	9.7	F8	* superimposed on NGC 1786, GC.
268830	57.26	-69 37.5	10.5	G0	NGC 1772, C/N
268832	56.35	-70 18.5	11.8	F	NGC 1766, OC
268848	4 58.16	-69 28.1	11.1	A5	NGC 1782, C/N
268850	5 2.24	-66 10.7	9.4	F	NGC 1805, OC
268894	5 3.28	-66 26.9	12.3	F	NGC 1810, OC
268913	5 2.28	-68 3.8	11.6	G	NGC 1806, GC
268917	4 59.64	-70 19.7	11.3	F	SL 158, OC
268921	5 1.35	-69 9.3	11.3	F8	NGC 1804, OC
268925	0.94	-69 40.8	11.5	F5	NGC 1801, OC
268931	3.76	-67 21.9	12.2	G	NGC 1814, NEB
268933	3.87	-67 20.0	12.2	F	NGC 1816, NEB
268939	4.27	-67 19.1	10.6	B	* in NGC 1820, OC. 11.00V, B1 I(e).
268955	3.20	-69 5.9	11.7	K5	* closely NP SL 191, OC.
268960	3.40	-69 5.7	11.5	O8	* just N of SL 191, OC. 12.13V.
268982	4.54	-69 0.0	11.6	F8	NGC 1825, OC
268991	2.97	-70 40.9	11.9	G	NGC 1815, OC
268996	4.67	-69 27.0	12.1	F5	NGC 1828, OC
269005	5.77	-68 42.1	12.6	F8	NGC 1836, OC
269014	5.49	-69 16.1	11.5	G	* in NGC 1834, a group of 3 stars.
269016	5.42	-69 28.3	9.8	F8	NGC 1835, GC
269019	6.27	-68 42.1	12.6	A	NGC 1839, C/N
269021	7.55	-67 23.2	11.8	F	NGC 1844, OC
269023	6.71	-68 25.4	11.3	F	SL 230, OC
269025	7.61	-67 31.3	12.0	G5	NGC 1846, GC
269052	5.44	-70 47.1	11.0	A5	NGC 1837, C/N
269054	7.42	-69 2.4	10.6	A7	NGC 1847, OC
269105	9.80	-69 11.3	8.7	G	NGC 1856, OC
269111	10.13	-68 56.4		N	NEB in Northern part of NGC 1858.
269142	10.91	-69 6.1	11.3	A2	SL 288, OC
269158	11.90	-68 47.1	10.8	A	NGC 1863, OC
269206	13.48	-69 10.7	11.2	F	NGC 1870, OC
269210	13.55	-69 22.7	10.6	F	NGC 1872, C/N
269211	13.00	-70 27.9	13.7	N	Henize 193A, with two 13 ^m stars within. Mag. of Northern star: 13.62V.
269215	13.95	-69 21.3	11.1	B	* in NGC 1881, C/N. 11.94V.

TABLE 1 (continued):

HDE No.	R.A. (1950)	DEC.	m _p	Spect.	Identification
269216	5h13m57s	-69°35'18"	11.0	B	* in SL 328, OC. 10.76V, B7 Iae.
269220	13.37	-70 31.7	13.0	A	NGC 1378, OC
269227	14.26	-69 35.1	11.6	O1	* in SL 328, OC. 11.70V, PEC.
269236	14.55	-69 36.0	11.2	G0	* in SL 328, OC. 11.20V, F2 Ia.
269295	18.32	-66 41.0	10.7	F2	NGC 1902, OC
269298	17.09	-69 42.9	13.4	B	* SP NGC 1898, OC
269321	18.28	-69 19.0	10.9	B	* in NGC 1910, C/N. 10.81V.
269333	18.66	-69 14.7	11.2	A1	* in NGC 1910. 11.21V, B1 Ia +WN4.
269341	18.71	-69 35.0	11.2	A3	NGC 1913, OC
269347	18.98	-69 27.5	10.5	A7	NGC 1916, OC
269357	19.32	-69 15.9	12.1	O8	* in NGC 1910, C/N. 12.10V, O9.5 I.
269367	19.49	-69 42.1	14.0	N	NGC 1918, C/N
269372	20.59	-66 49.1		N	NGC 1920, NEB
269379	19.77	-69 50.1	14.0	N	NGC 1921, NEB
269388	20.23	-69 33.0	11.5	F	* NF NGC 1922, OC. 11.51V.
269389	20.43	-68 58.0	12.6	A	* in SL 397, OC
269390	20.21	-69 34.1	16.5	N	Henize 122, SF NGC 1922.
269399	20.91	-69 35.7	11.8	B	* just S of NGC 1926, OC. 11.65V.
269404	21.65	-67 54.2	14.0	N	Possibly a v. small nebula SF a 13 th star. In Henize 44.
269405	21.03	-70 3.2	12.8	A	HS 242, OC
269407	21.74	-67 57.8	14.0	N	NGC 1929, NEB
269412	22.06	-67 57.6	11.4	B	* in SL 417 = NGC 1934. 11.95V.
269419	21.94	-70 0.3	11.6	F5	NGC 1939, OC
269430	22.84	-67 14.3	12.0	A	NGC 1940, OC
269443	23.02	-68 7.3		N	SP HD 35978. Brightest part of IC 2128, NEB.
269450	23.00	-70 12.4	12.0	G	NGC 1943, C/N
269501	25.41	-69 28.5	11.9	A5	SL 453, OC
269507	25.65	-69 18.0	11.5	K0	HS 281, OC
269511	25.71	-68 52.5	11.9	F	NGC 1953, OC
269515	26.09	-66 38.2	9.2	A5	* in NGC 1951, OC
269525	26.35	-67 32.3	11.5	B	* in NGC 1955, OC. 11.78V.
269537	26.79	-66 43.4	12.1	K0	* N of NS -66 ⁰⁹ 5
269542	26.87	-69 29.5	10.8	G0	Bright * in HS 300, OC. 9.90V, F6 Ia.
269554	27.15	-69 53.0	12.4	F	NGC 1972, OC
269555	27.17	-71 44.5	11.9	A5	SL 477, OC
269574	28.00	-69 10.6	10.0	B	* in NGC 1984, C/N
269578	28.05	-69 1.7	10.2	B	* in NGC 1983, C/N
269579	28.12	-70 0.7	10.4	G	NGC 1986, OC
269599	28.71	-69 10.7	12.2	O1	* in NGC 1994, OC. 10.18V, PEC.
269601	28.63	-67 15.7	11.8	G	SL 498, OC
269603	28.75	-66 16.7	10.4	G	NGC 1978, GC
269618	29.51	-68 47.8	14.2	O	* in NGC 2001, C/N. 15.4V, WN4.
269642	30.66	-69 46.9	11.6	G	NGC 2005, OC
269647	30.37	-66 55.2	11.2	B	* in NGC 2002, OC. 10.84V, A0 Ia.
269657	30.77	-67 19.2	8.0	B	* in NGC 2004, OC. 12.07V, B6 I.
269662	31.19	-69 5.1	10.8	B	* in SL 530, OC. 10.28V, A0 Ia.
269664	31.54	-70 43.7	8.6	B	* in SL 539, OC. 11.59V.
269676	31.92	-71 6.3	11.4	B	* preceding NGC 2018, C/N. 10.93V.
269686	31.38	-66 59.6	9.9	A	SL 538, OC
269699	32.48	-70 12.0	10.9	F5	NGC 2019, GC
269700	32.13	-68 34.7	10.4	B	* in SL 552, OC. 10.55V, B1 Iae
269716	33.30	-71 45.1	10.4	A5	NGC 2025, OC
269718	32.44	-67 33.2	9.5	B	* in NGC 2011, C/N
269723	32.54	-67 44.1	11.4	K5	* in NGC 2014, C/N. 9.91V, G2 Ia.
269725	32.55	-67 43.9	13.5	N	In NGC 2014. NEB near HDE 269723.
269730	32.52	-66 30.0		N	NEB in SE part of SL 553, OC
269736	32.89	-67 22.7	11.4	O8	* in SL 564, OC. 12.14V.
269737	33.72	-70 0.1	12.0	K0	* in SL 574, OC
269750	34.34	-71 1.2	10.2	F5	NGC 2031, OC
269772	35.32	-70 35.2	11.0	F	NGC 2038, OC

TABLE 1 (continued):

HDE No.	R.A. (1950) DEC.		m _p	Spect.	Identification
269803	5 ^h 35 ^m 17 ^s	-67°35'2"		N	NGC 2029, C/N
269812	36.83	-71 2.4	11.4	A	NGC 2051, OC
269822	36.37	-69 40.3	13.4	N	NGC 2048, C/N
269824	35.67	-67 37.2		N	NGC 2035, C/N
269838	37.19	-70 42.4	11.3	G	NGC 2056, OC
269848	35.94	-67 5.2	14.0	N	Possibly WS 37, 14.50V, WR star.
269852	36.17	-67 36.3		N	NGC 2040, C/N
269856	37.43	-70 11.5	10.5	F2	NGC 2058, OC
269872	36.52	-67 1.4	8.6	A	NGC 2041, OC
269877	38.12	-70 15.9	11.6	A5	NGC 2065, OC
269878	38.20	-70 15.1	13.4	G0	* NF NGC 2065, OC
269923	39.26	-69 31.4	10.8	B	* in NGC 2074, C/N. 10.42V.
269930	39.59	-69 31.5		N	NEB in NGC 2074. 1' N of CPD-69°471.
269937	39.96	-69 40.6	12.5	N	NGC 2077, C/N
269942	40.25	-69 46.6	13.4	N	NEB. Preceding 'wing' of NGC 2084.
269950	40.55	-69 46.6	13.4	N	NEB. Following 'wing' of NGC 2084.
269952	40.56	-69 41.6	12.6	N	NGC 2085, C/N
269953	40.62	-69 41.5	12.0	K0	* in NGC 2086, C/N. 9.93V, G0 Ia.
269956	40.60	-69 25.8	11.6	O	* in NGC 2081, C/N.
269969	42.37	-71 20.8	11.6	F5	NGC 2103, C/N
269996	41.24	-68 29.7	11.7	A	NGC 2088, OC
270018	42.75	-69 30.4	10.6	G0	In NGC 2102, OC
270020	43.79	-70 39.9	11.6	F2	NGC 2107, OC
270025	42.40	-68 28.8	11.1	A	NGC 2096, OC
270034	42.67	-68 17.8	9.4	F	NGC 2098, C/N
270057	44.33	-69 11.9	13.6	G	NGC 2108, GC
270063	43.39	-67 36.6	12.0	A3	SL 675, OC
270074	44.63	-68 33.9	12.0	F5	NGC 2109, C/N
270077	45.84	-69 47.0	12.5	G	NGC 2113, C/N
270132	46.37	-67 35.0	11.4	A7	* in SL 709, OC. 11.50V, A8 I.
270138	48.02	-69 8.8	11.7	A0	NGC 2118, OC
270145	49.35	-70 4.9	11.8	O8	* in NGC 2122, C/N. 12.24V.
270151	49.57	-70 3.4	11.8	O8	* in NGC 2122, C/N. 12.04V, B2 Ia.
270182	52.15	-71 11.5	12.7	F5	NGC 2133, GC
270190	52.61	-71 6.5	10.3	A3	NGC 2134, OC
270215	51.76	-69 22.2	11.2	F	NGC 2127, OC
270238	53.34	-69 47.5	13.0	A	SL 763, OC
270248	53.39	-69 29.5	9.6	A3	NGC 2137, OC
270295	52.49	-67 20.5	12.5	F5	NGC 2130, OC
270321	53.68	-67 26.5	12.2	G5	NGC 2135, OC
270370	57.99	-69 11.8	8.0	A0	NGC 2157, OC
270393	58.14	-68 27.9	10.8	A3	NGC 2156, OC
270395	58.32	-68 37.9	10.9	F2	NGC 2159, OC
270409	58.47	-68 17.9	12.2	F5	NGC 2160, OC
270420	5 59.21	-68 31.1	9.2	A5	NGC 2164, OC
270443	6 0.42	-68 38.1	11.4	F	NGC 2172, OC
270822	4 51.00	-65 43.0	13.1	K7	* 0'.5 S of SL 057, OC
270921	4 59.03	-66 3.6	12.0	F5	NGC 1783, GC
271001	5 6.03	-64 59.1	10.5	G	NGC 1831, OC
271116	15.38	-66 10.8	12.7	G	NGC 1882, OC
271189	21.61	-65 16.3	10.5	F0	* NF SL 410, OC
271203	22.37	-66 12.3	11.4	F	NGC 1932/33, OC
271224	22.76	-72 32.4	11.8	G	NGC 1944, OC
271255	25.97	-66 7.5		N	Henize 49, NEB
271303	28.48	-71 54.8	12.2	G	NGC 2000, OC
271389	35.56	-66 4.2	15.0	N	NEB, within NGC 2030, C/N
271628	5 51.64	-65 20.4	12.6	F	NGC 2133, OC
272034	6 11.85	-69 5.9	10.8	F5	NGC 2210, GC
272055	6 13.18	-68 15.0	10.6	A5	NGC 2214, OC

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