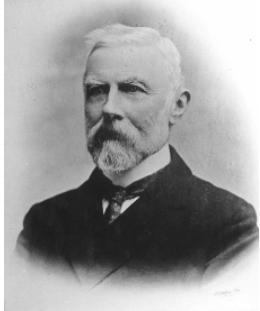


The Newbie Corner

!!glob.Cl,eB,vRi,vgeCM,st11

By Brad Hutton

Well it is the NEWBIE here again to share more of my new-found wisdom on the subject of astronomy. If you knew the title of this article was ‘Very remarkable globular cluster, extremely bright, very rich, very gradually extremely compressed towards the middle, consisting of stars of 11th magnitude and lower’ then you can move on to another article. If you did not know that this is how John Dreyer describes the wonderful globular cluster in the constellation Hercules (NGC6205, M13) then you might want to read on.



John Louis Emil Dreyer was born in Copenhagen February 13, 1852. In 1874 at the age of 22 he went to Ireland to work as the assistant to Lord Rosse at Birr where the large six-foot Leviathan, at the time the world’s largest telescope, was at his disposal. It was here he started his comprehensive survey of star clusters, nebulae and galaxies. From 1878-1882 he became an assistant at Dunsink Observatory before moving to Armagh where he became Director in 1882. Armagh Observatory had little funding with no prospect of replacing its aging instruments. Dreyer did obtain a new 10-inch refractor by Grubb. The lack of funding did not allow him to continue tradition astronomy. He instead worked on the compilation of observations made earlier, namely *The Second Armagh Catalogue of Stars* and what became his most important contribution to astronomy, *The New General Catalogue of*

Nebulae and Clusters of Stars (NGC). In this catalog, which to this day remains the standard reference used by astronomers the world over, he listed 7840 objects. The NGC was later expanded with two Index Catalogues (IC I in 1896 and IC II in 1905), adding a further 5326 objects. It is in these catalogues that Dreyer developed and used the shorthand code for logging observations of the night sky. When using these catalogues it is this shorthand that you must know in order to understand the observer’s impression of the observed object.

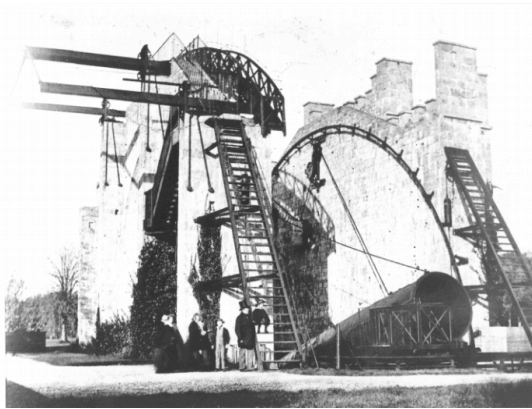


Figure 1 Leviathan Telescope



Figure 2 Grubb Telescope

NGC description Shorthand

The shorthand used to describe the objects in the NGC catalog is compact and helpful. But they can be a bit hard to understand without the code. Dreyer’s descriptions in the NGC are adaptations of the original observer’s descriptions in their own words or as nearly as possible. Dreyer also includes in his descriptions the same progressive scale of brightness, size and form used by Sir John Herschel.

Dreyer’s shorthand can be generally broken into six parts: rating the object, type of object, brightness, size, form and condensation. Based on the original observer’s notes and Dreyer converted these notes to his shorthand code. The conversions contain as much of the original observer’s description as possible, not all sections may appear in the summary shorthand code.

For those objects deemed by the observer as remarkable Dreyer began their summary description with a series of exclamation marks (!) to denote their special nature. Dreyer used a series of exclamation marks of one to three with three marks denoting the most outstanding objects in the catalogue.

All objects fall in to one of four categories; nebulae, planetary nebulae, star clusters and globular clusters. Since the category of nebulae was the largest group only those of the other three categories are identified in their description by Dreyer. For example to describe a globular cluster Dreyer inserted in the beginning of the shorthand glob.cl.

Today, we know most of the nebulae listed in the NGC catalog are not nebulae but galaxies. This knowledge was not available when the NGC was compiled by Dreyer. There are no galaxy categories in the NGC catalog. Some contemporary compilations of the NGC have included a category for galaxies in the shorthand descriptions.

NGC

No.	G. C.	J. H.	W. H.	Other Observers.	Right Ascension, 1860's.	Annual Precession, 1880.	North Polar Distance, 1860's.	Annual Precession, 1880.	Summary Description.	Notes.
1	1	...	...	d'A	h m s 0 0 4	+ 3'07	63 43	- 20'1	F, S, R, bet * 11 and * 14	
2	6246	...	...	L.d R*	0 0 6	3'07	63 60	20'1	vF, S, s of G.C. 1	
3	5080	...	...	m 1	0 0 6	3'07	82 28	20'1	F, vS, R, alm stell	
4	5081	...	...	m 2	0 0 16	3'07	82 23	20'1	eF	
5	...	...	...	St XII	0 0 37	3'08	55 25'0	20'1	vF, vS, N = * 13, 14	
6	...	...	...	Sw II	0 1 5	3'08	58 15'6	20'1	eF, vS, cE	
7	2	4014	...	...	0 1 14	3'07	120 41'2	20'1	eF, cL, mE, vgvlbM	
8	5082	...	...	O Struve	0 1 17	3'08	66 59	20'1	vF, N in n end	
9	5083	...	...	O Struve	0 1 27	3'08	67 0	20'1	F, R, * 9, 10 sf	
10	3	4015	...	...	0 1 28	3'06	124 38'9	20'1	F, cL, vLE, glbM	

IC

No.	Observer.	R.A. 1860.	Prece. 1880.	N.P.D. 1860.	Prece. 1880.	Description.
1	B. 103	h m s 0 1 15	+ 3'07	63 4	- 20'1	D*, 13 & 13, one nebs
2	J. 1	0 3 52	3'06	103 36'2	20'1	F, S, bM
3	J. 2	0 4 56	3'07	91 12'1	20'1	F, vS, iF, r
4	Pechüle (3259)	0 6 15	3'08	73 20'6	20'0	vF, vS, R
5	J. 3	0 10 27	3'06	100 19'1	20'0	F, neb * 13m
6	J. 4	0 11 46	3'07	94 3'2	20'0	F, vS, R, mbM = * 14
7	J. 506	0 11 51	3'09	80 13'8	20'0	F, vS, R, * 12'5 close
8	Sf. 89 J. 5	0 11 54	3'07	93 59'9	20'0	vF, vS, irr E, lbM
9	J. 6	0 12 37	3'05	104 54'1	20'0	vF, pL, R
10	Sw. VII.	0 12 44	3'20	31 28	20'0	F * inv in eF, vL neb

Figure 3 Page from Dreyer's NGC and IC

The shorthand normally starts with a description of the object's brightness and size. Dreyer adopted the scale used by Sir John Herschel, and the order used may be confusing to modern observers; for example, is "considerably faint" brighter or fainter than merely "faint"? Another source of confusion is that 19th century astronomers often called a faint star "small" and a bright star "large", so one must be careful to decide whether a description such as "pretty small" refers to size or brightness.

Brightness

- eF Excessively faint
- vF Very faint
- F Faint
- cF Considerably faint
- pF Pretty faint
- pB Pretty bright
- cB Considerably bright
- B Bright
- vB Very bright
- eB Extremely

Size

- eS Excessively small
- vS Very small
- S Small
- cS Considerably small
- pS Pretty small
- pL Pretty large
- cL Considerably large
- L Large
- vL Very large
- eL Excessively large

Next normally is a description of object's general shape. This lies on a scale ranging from "round" to "extremely extended", as follows:

Shape

R	Round
vIE	Very little extended
E	Elliptic or oval
cE	Considerably extended
pmE	Pretty much extended
mE	Much extended
vmE	Very much extended
eE	Extremely extended

The Shorthand Codes

Ab.....	about	n.....	north
alm.....	almost	neb.....	nebula
am.....	among	nf.....	north following
app.....	appended	np.....	north preceding
att.....	attached	nr.....	near
b.....	brighter	N.....	Nucleus, or to a Nucleus
be.....	between	p.....	pretty (before F,B,L,S)
biN.....	binuclear	p.....	preceding
bn.....	brightest towards the north side	pg.....	pretty gradually
bs.....	brightest towards the south side	pm.....	pretty much
bp.....	brightest towards the preceding side	ps.....	pretty suddenly
bf.....	brightest towards the following side	P.....	poor
B.....	bright	quad.....	quadrilateral
c.....	considerably	quar.....	quartile
dist.....	distance or distant	r.....	resolvable (mottled, not resolved)
D.....	double	rr.....	partially resolved, some stars seen
e.....	extremely, excessively	sev.....	several
ee.....	most extremely	susp.....	suspected
er.....	easily resolvable	sh.....	shaped
exc.....	excentric	stell.....	stellar
E.....	extended	S.....	small
f.....	following	sm.....	smaller
F.....	faint	triN.....	tri-nuclear
g.....	gradually	trap.....	trapezium
gr.....	group	v.....	very
i.....	irregular	vv.....	very, very
inv.....	involved, involving	var.....	variable
iF.....	irregular figure	*	a star: *10, a star of 10th magnitude
l.....	little, long	**	double star
L.....	large	***	triple star
m.....	much	!	remarkable
mm.....	mixed magnitudes	!!	very remarkable
mn.....	milky nebulosity	!!!	a magnificent or otherwise interesting object
M.....	middle, or in the middle	st 9.....	stars from the 9th magnitude downwards
		st 9 13.....	stars from the 9th to 13th magnitude

- () items questioned by Dreyer enclosed in parentheses
- " arc seconds (two "not-equals" in published catalog)
- ' arc minutes (one "not-equals" in published catalog)

So the next time you look at the NGC or IC you will know that GCL,eB,vL,vsmbM,*11 can be translated as "Globular cluster, extremely bright, very large, very suddenly much brighter towards the middle, composed of 11th magnitude stars" - a pretty good description in only 19 characters.

Similarly the galaxy NGC 2863 in Hydra is described as: cF, S, E, bet 2 st 12, 16 which means "considerably faint, small, elongated, between two stars of magnitude 12 and 16".

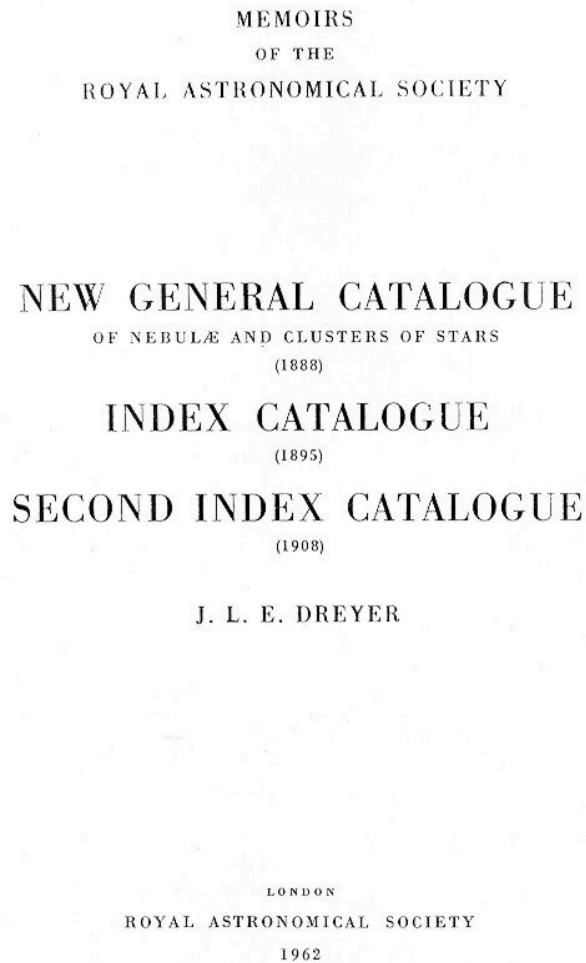


Figure 4 NGC and IC Catalog

The Creation of The NGC/IC and Revisions

Author/Observer	Catalogue	Abr.	Year	Number	Remarks
Charles Messier and Pierre Mechain	Messier Catalogue	M	1781	103	M104-109 and M110 added later
William Herschel	Herschel-Catalogue		1802	Ca.2500	
John Herschel	General Catalogue	GC	1863	5096	
John Louis Emil Dreyer	New General Catalogue	NGC	1888	7840	
John Louis Emil Dreyer	First Index Catalogue	IC I	1895	1520	Today IC
John Louis Emil Dreyer	Second Index Catalogue	IC II	1908	3866	Today IC
Karl Reinmuth	Die Herschel-Nebel		1926	Ca. 5000	Revision of GC
Jack Sulentic and William Tift	Revised New General Catalogue	RNGC	1977	7840	Revision of NGC
Roger Sinnott	NGC 2000.0		1988	13226	Revision of NGC/IC
Wolfgang Steinicke	Revised New General and Index Catalogue		2009	14001	Lates Revisions of NGC/IC
Wolfgang Steinicke	Historic NGC		2009	7840	NGC-discovers and dates
Wolfgang Steinicke	Historic IC		2009	5386	IC-discovers and dates

So may all your days be vB and all your nights be full of!!!eB,eL,st. Keep your scope pointed up and clear skies until next time

- the Newbie.