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**Cozens, Glendyn John (2008) *An analysis of the first three catalogues of southern star clusters and nebulae.* PhD thesis, James Cook University.**

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## APPENDIX A – THE ORIGINAL LACAILLE CATALOGUE

This is a copy of the original Lacaille catalogue, as it was published in French, in *Mémoires de l'Académie de la même année*, 1755, page 194.

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### *SUR LES ÉTOILES NÉBULEUSES DU CIEL AUSTRAL.*

Par M. l'Abbé DE LA CAILLE.

LES Étoiles qu'on appelle nébuleuses offrent aux yeux des Observateurs un spectacle si varié, que leur description exacte & détaillée pourroit occuper long-temps un Astronome, & donner lieu aux Philosophes de faire un grand nombre de réflexions curieuses. Quelque singulières que soient les nébuleuses que nous pouvons voir en Europe, celles qui sont dans le voisinage du Pole austral ne leur cèdent en rien, ni pour le nombre, ni pour la figure. Je vais en ébaucher ici l'histoire & la liste: cet essai pourra guider ceux qui auront la commodité & le loisir de les considérer avec de longs télescopes. J'aurois fort souhaité de donner quelque chose de plus détaillé & de plus instructif sur cet article; mais outre que les lunettes ordinaires de 15 à 18 pieds de foyer, telles que je les avois au cap de Bonne-espérance, ne sont pas des instrumens suffisans ni assez commodes pour ces sortes de recherches, ceux qui voudront se donner la peine d'examiner à quoi je me suis occupé pendant mon séjour dans ce pays-là, verront bien que je n'ai pas eu assez de temps pour faire ces sortes d'observations.

Je remarque d'abord qu'on peut distinguer dans le ciel trois sortes de nébuleuses; la première n'est autre chose qu'un espace blancheâtre mal terminé, plus ou moins lumineux, & d'une figure souvent fort irrégulière: ces taches ressemblent assez ordinairement à des noyaux de comètes foibles & sans queue.

La seconde espèce de nébuleuses est celle des Étoiles qui ne sont nébuleuses qu'en apparence & à la vûe simple, mais qu'on voit à la lunette comme un amas d'Étoiles distinctes, quoique fort proches les unes des autres.

La troisième espèce est celle des Étoiles qui sont réellement accompagnées ou entourées de taches blanches ou de nébuleuses de la première espèce.

J'ai trouvé un grand nombre de nébuleuses de ces trois sortes dans la partie australe du ciel, mais je ne puis me flatter de les avoir remarquées toutes, sur-tout celles de la première & de la troisième espèce. parce qu'on ne les aperçoit guère que hors des temps des crépuscules & dans les absences de la Lune : cependant j'ai lieu de croire que la liste que j'en donne ici est passablement complète à l'égard des plus remarquables de ces trois espèces.

En examinant plusieurs fois avec une lunette de 14 pieds les endroits de la voie lactée où sa blancheur est plus remarquable, & en les comparant aux deux nuages qu'on appelle communément les *nuées de Magellan*, & que les Hollandois & les Danois appellent les *nuées du Cap*, on voit évidemment que ces parties blanches du ciel se ressemblent si parfaitement, qu'on peut croire, sans trop donner aux conjectures, qu'elles sont de même nature, ou, si l'on veut, que ces nuages ne sont que des portions détachées de la voie lactée, laquelle n'est elle-même composée que de parties souvent interrompues. Il n'est pas certain que la blancheur de ces parties soit causée, comme on le croit communément, par des amas de petites Étoiles plus serrées que dans les autres parties du ciel ; car avec quelque attention que j'aie considéré les extrémités les mieux terminées, soit de la voie lactée, soit des nuages, je n'y ai rien aperçu avec la lunette de 14 pieds qu'une blancheur dans le fond du ciel, sans y voir plus d'Étoiles qu'ailleurs où le fond étoit obscur.

Je ne hasarderai peut-être pas beaucoup d'avancer que les nébuleuses de la première espèce ne sont autre chose que comme de petites portions de la voie lactée, répandues en différens endroits du ciel, & que les nébuleuses de la troisième espèce ne sont que des Étoiles qui se trouvent, par rapport à nous, dans la ligne droite, suivant laquelle nous regardons ces taches lumineuses.

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La liste que je vais donner ici est un extrait du Catalogue des Étoiles australes que j'ai remis à l'Académie : je n'ai pu distinguer les différentes nébuleuses dans ce catalogue que par des notes abrégées, qui sont expliquées dans le discours que j'y ai joint; mais pour satisfaire la curiosité de ceux qui trouveroient ces notes trop vagues, je vais donner ici une courte description de chaque nébuleuse en particulier.

*LISTE des Nébuleuses de la première espèce, ou des nébulosités qui ne sont accompagnées d'aucune étoile visible à la lunette de deux pieds.*

ASCENSION droite pour le 1. <sup>er</sup> Janvier 1752.			Déclinaison australe.			
H.	M.	S.	D.	M.	S.	
0.	22.	54	73.	26.	50	Elle ressemble au noyau d'une petite Comète assez claire.
5.	40.	1	69.	17.	20	Elle ressemble à la précédente, mais elle est plus foible.
7.	42.	8	38.	0.	0	Grande nébulosité de 15 à 20 minutes de diamètre.
12.	43.	36	69.	28.	0	Elle ressemble à une petite comète foible.
13.	12.	9	46.	10.	45	Nébuleuse du Centaure; elle paroît, à la vûe simple, comme une Étoile de la troisième grandeur vûe au travers d'une brume légère, & à la lunette, comme une grosse comète mal terminée.
13.	23.	16	28.	35.	30	Petite nébulosité informe.
13.	29.	34	61.	40.	10	Petite tache confuse.
16.	8.	30	40.	3.	10	Elle ressemble à une assez grosse comète sans queue.
16.	8.	33	25.	54.	55	Elle ressemble à un petit noyau d'une comète foible.
16.	38.	36	39.	2.	0	Foible tache ovale & alongée.
18.	13.	41	33.	37.	5	Elle ressemble à un petit noyau de comète.
18.	21.	19	24.	5.	0	Elle ressemble à la précédente.
18.	58.	10	71.	55.	45	Elle ressemble à la précédente.
19.	24.	20	31.	29.	0	Elle ressemble à un noyau obscur d'une grosse comète.



Il se pourroit faire que quelqu'une de ces nébuleuses eût été réellement une comète foible; le temps ne m'a pas permis de m'en assurer en les recherchant dans le ciel, pour voir si elles étoient toutes encore à la même place.

*LISTE des Étoiles nébuleuses par amas.*

ASCENSION droite pour le 1. <sup>er</sup> Janvier 1752.			Déclinaison australe.			
H.	M.	S.	D.	M.	S.	
3.	54.	57	45.	9.	40	Tas ferré d'environ douze petites Étoiles de la 8. <sup>e</sup> grandeur.
7.	17.	0	33.	40.	0	Tas de huit Étoiles de la $\frac{6}{7}$ grandeur, qui forment, à la vûe simple, une nébulosité dans le ciel.
7.	54.	45	60.	9.	40	Groupe de dix à douze étoiles fort ferrées.
8.	2.	0	36.	30.	0	On voit à la vûe deux groupes voisins d'étoiles confuses; mais à la lunette, ce sont de petites étoiles distinctes en très-grand nombre & fort voisines.
8.	31.	46	52.	14.	5	Petit tas d'étoiles.
8.	37.	46	41.	22.	25	Tas de sept ou huit étoiles peu ferrées.
10.	11.	45	50.	29.	0	Tas de quatre ou cinq étoiles très-petites & très-ferrées.
10.	26.	32	56.	56.	5	Petit tas de quatre petites étoiles en losange.
10.	34.	15	63.	6.	16	Étoile $\theta$ du navire, de la troisième grandeur au moins, entourée d'un grand nombre d'étoiles de la 6, 7 & 8. <sup>e</sup> grandeur, ce qui la fait ressembler aux Pléiades.
10.	56.	8	57.	19.	30	Amas prodigieux de petites étoiles fort ferrées, remplissant la figure d'un demi-cercle de 20 à 25 minutes de diamètre.
11.	12.	0	56.	58.	30	Sept ou huit petites étoiles ferrées en ligne droite.
12.	39.	13	59.	0.	30	Cinq ou six petites étoiles entre deux de la sixième grandeur.
16.	36.	55	41.	23.	10	Tas de sept ou huit petites étoiles ferrées.
17.	37.	12	34.	39.	55	Groupe de quinze ou vingt étoiles fort voisines sous une figure carrée.

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*LISTE des Étoiles accompagnées de nébulosité.*

ASCENSION droite pour le 1. <sup>er</sup> Janvier 1752.			Déclinaison australe.			
H.	M.	S.	D.	M.	S.	
4.	56.	56	49.	51.	30	Petite étoile entourée d'une nébulosité.
8.	3.	30	48.	31.	0	Cinq petites étoiles sous la figure d'un T, entourées de nébulosité.
8.	34.	20	47.	13.	10	Étoile de la 6. <sup>e</sup> grandeur jointe à une autre plus australe par une trace nébuleuse.
9.	20.	22	55.	55.	30	Petite étoile entourée de nébulosité.
10.	34.	30	58.	49.	10	Deux petites étoiles entourées de nébulosité.
10.	34.	45	58.	12.	25	Gros groupe d'un grand nombre de petites étoiles peu ferrées, & remplissant l'espace d'une espèce de demi-cercle de 15 à 20 minutes de diamètre, avec une légère nébulosité répandue dans cet espace.
11.	24.	49	60.	15.	0	Trois petites étoiles voisines, enveloppées de nébulosité.
14.	17.	43	55.	27.	50	Deux petites étoiles dans une nébulosité.
15.	3.	16	58.	14.	30	<i>Idem.</i>
15.	42.	56	59.	46.	50	Trois petites étoiles en ligne droite, entourées de nébulosité.
17.	20.	38	53.	31.	30	Petite étoile enveloppée dans une nébulosité.
17.	24.	0	32.	2.	45	Amas singulier de petites étoiles disposées en trois bandes parallèles, formant un losange de 20 à 25 minutes de diamètre, & rempli de nébulosité.
17.	48.	41	24.	20.	15	Trois étoiles enfermées dans une trainée nébuleuse parallèle à l'Équateur.
21.	12.	53	57.	57.	15	Deux petites étoiles entourées de nébulosité.

Je n'ai remarqué aucune Étoile au dessus de la sixième grandeur qui fût entourée ou accompagnée de nébulosité.

## APPENDIX B – THE LACAILLE CATALOGUE in English with Images

The original Lacaille catalogue, *Sur les étoiles nébuleuses du Ciel Austral* or *On the Nebulous Stars of the Southern Sky* was written in French (Appendix A). This Appendix contains all 42 entries with the Lacaille descriptions in English, and images showing the position Lacaille assigned to the object.

Lacaille divided his catalogue into three sections with 14 objects in each. The sections are numbered using section number (in Roman numerals).object number (Arabic numeral). They are entitled:

- I. Nebulae without Stars
- II. Nebulous Star Clusters
- III. Stars accompanied by Nebulosity

The images were assembled by combining *Guide 8* data with *RealSky* images. Each image has the same scale and is one degree high. A Lacaille number and position is marked on the image using a different format, for example, number 101 represents I.1 and 314 represents III.14.

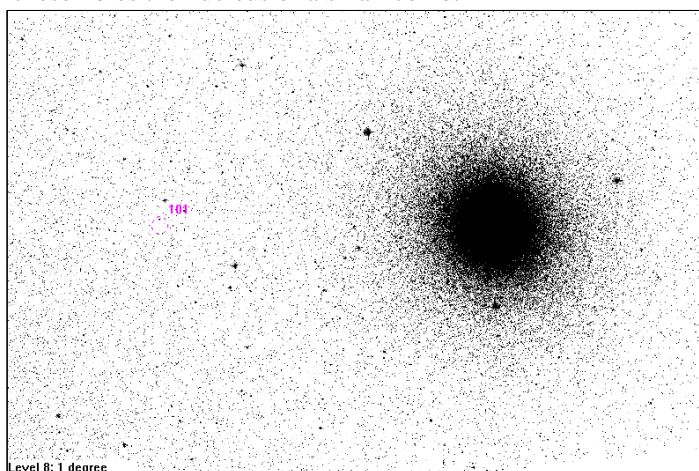
Each image is preceded by its caption, with the information given in the following order:

1. Right ascension and Declination are given for January 1, 1752, in h:m:s and d:m:s respectively
2. Lacaille number and modern identification(s) in brackets
3. The description as written by Lacaille and translated by Hartmut Frommert.<sup>424</sup>
4. Author's comments in square brackets below the image.

### SECTION I – Nebulae without stars visible with a telescope of 2 feet [focal length and 0.5-inch aperture]

00:22:54, -73:26:50 (Lac I.1, NGC 104, 47 Tucanae)

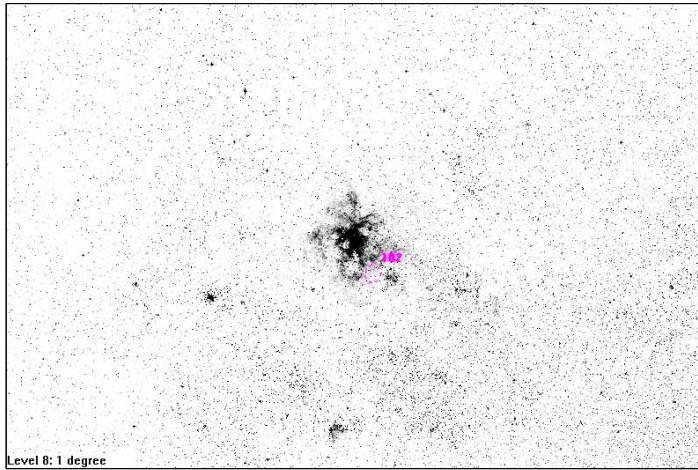
It resembles the nucleus of a small comet



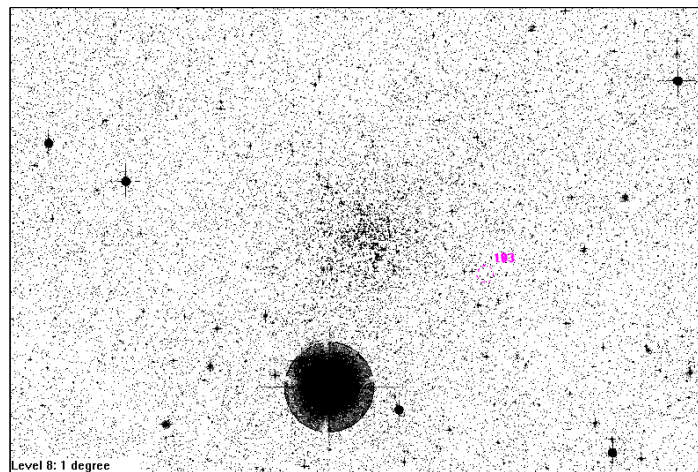
[There is a 10 min error in the Right Ascension.]

<sup>424</sup> Students for the Exploration and Development of Space (SEDS), *Nicholas Louis de la Caille's Original Catalog*, 2000, <<http://www.seds.org/messier/xtra/history/lac-cat.html>>, accessed 15 January, 2006.

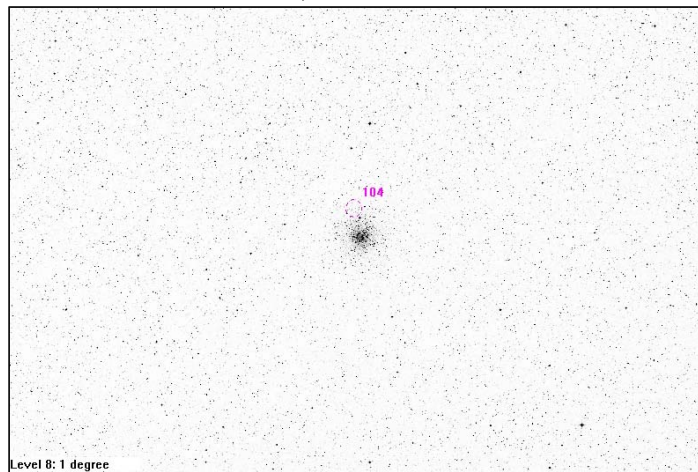
05:40:01, -69:17:20 (Lac I.2, NGC 2070, 30 Doradus, the Tarantula Nebula)  
It resembles the preceding, but it is fainter



07:42:08, -38:00:00 (Lac I.3, NGC 2477)  
Great nebula 15 x 20' in diameter

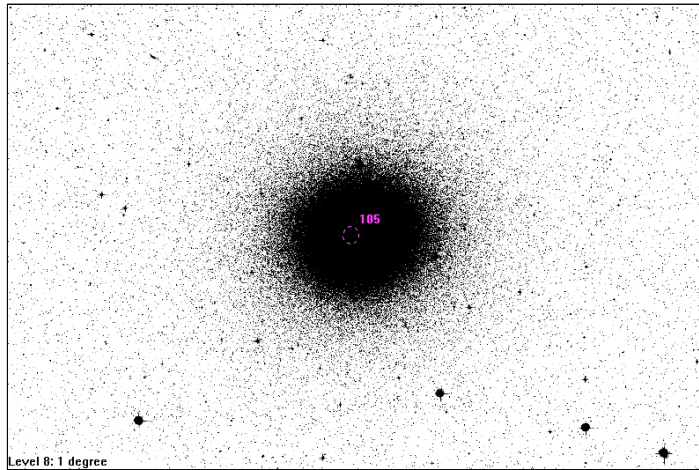


12:43:36, -69:28:00 (Lac I.4, NGC 4833)  
It resembles a small comet, faint

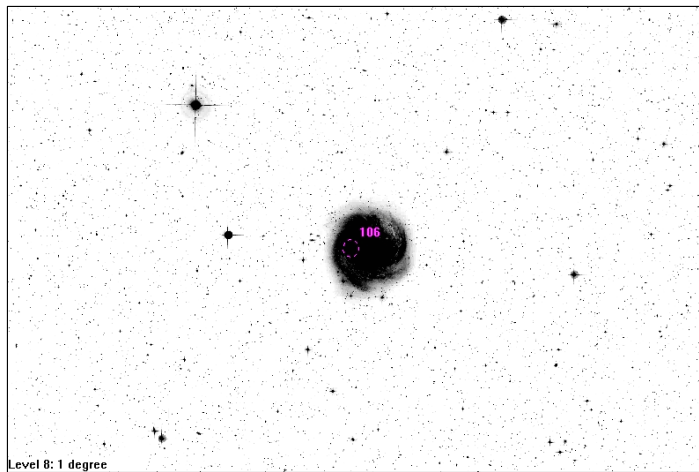




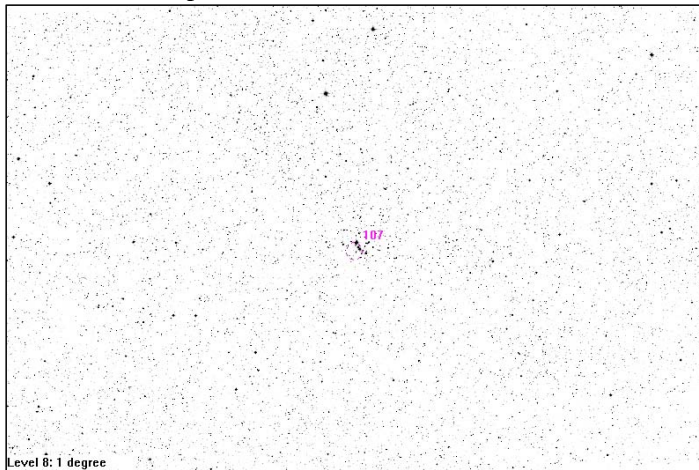
13:12:09, -46:10:45 (Lac I.5, NGC 5139, Omega Centauri)  
Nebula in Centaurus; with the naked eye it looks like a star of 3rd magnitude viewed through a light mist, and through the telescope like a big comet badly bounded



13:23:16, -28:35:30 (Lac I.6, M83)  
Small nebula, shapeless

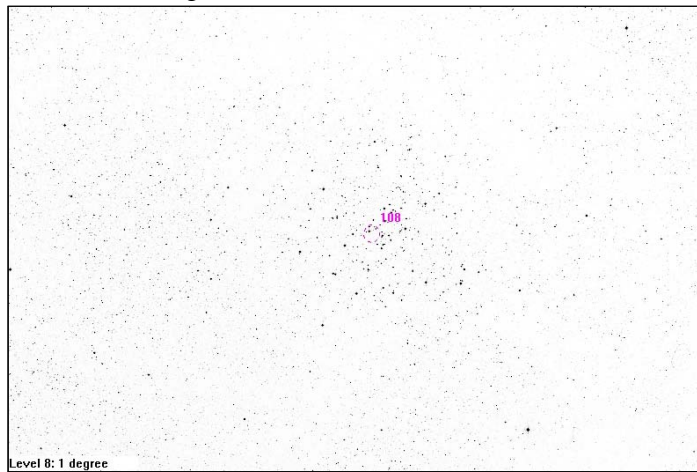


13:29:34, -61:40:10 (Lac I.7, NGC 5281)  
Faint confused spot



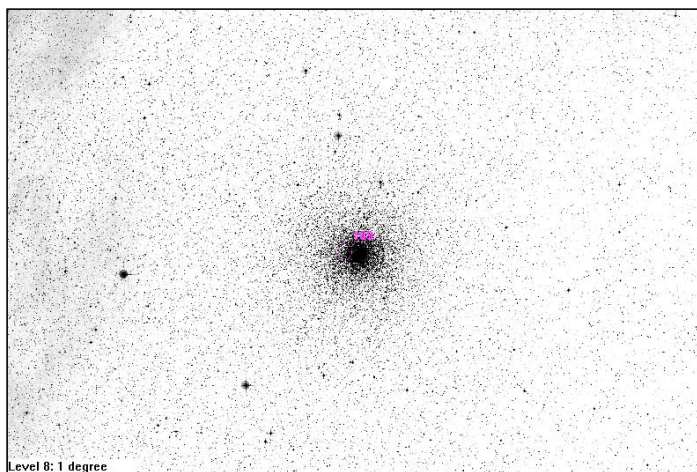
16:08:30, -40:03:10 (Lac I.8, NGC 6124)

It resembles a big comet without tail



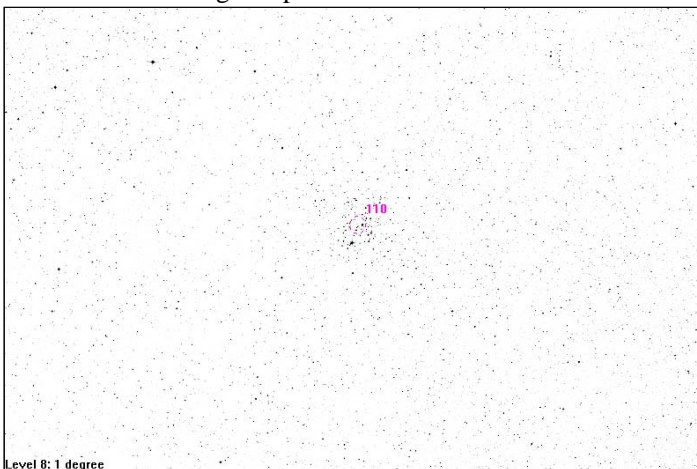
16:08:33, -25:54:55 (Lac I.9, M4)

It resembles a small nucleus of a faint comet



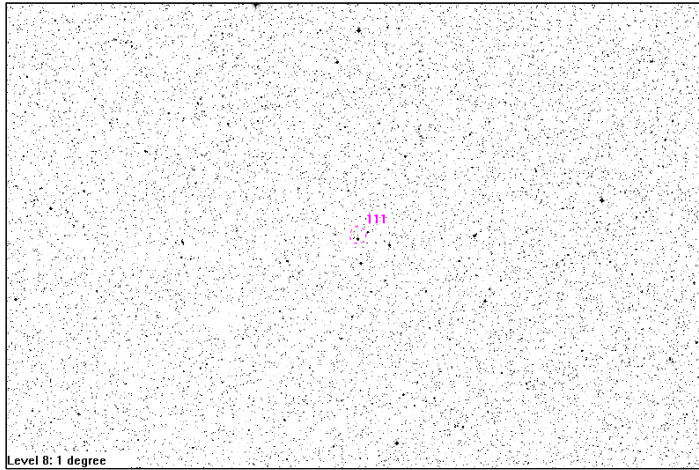
16:38:36, -39:02:00 (Lac I.10, NGC 6242)

Faint oval and elongated patch



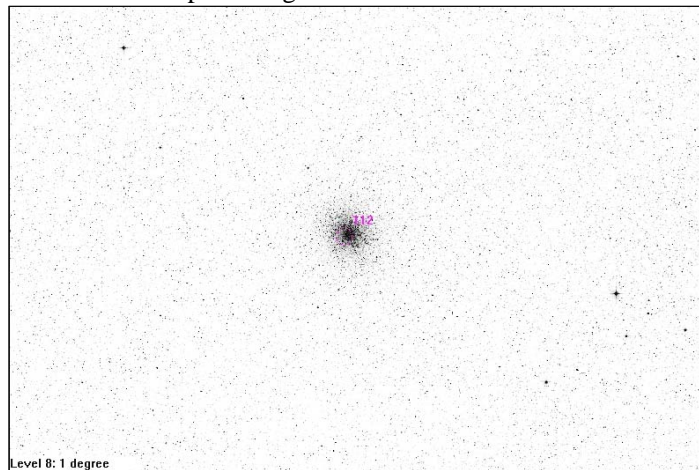


18:13:41, -33:37:05 (Lac I.11, NGC 6634)  
It resembles a small nucleus of a comet

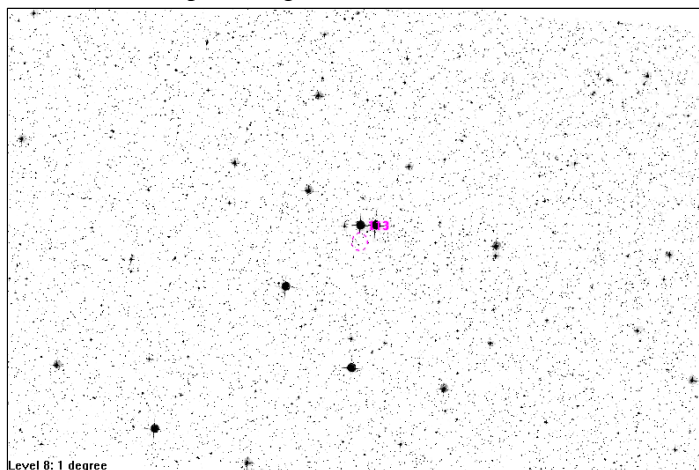


[This is not M69, as Messier believed.]

18:21:19, -24:05:00 (Lac I.12, M22)  
It resembles the preceding

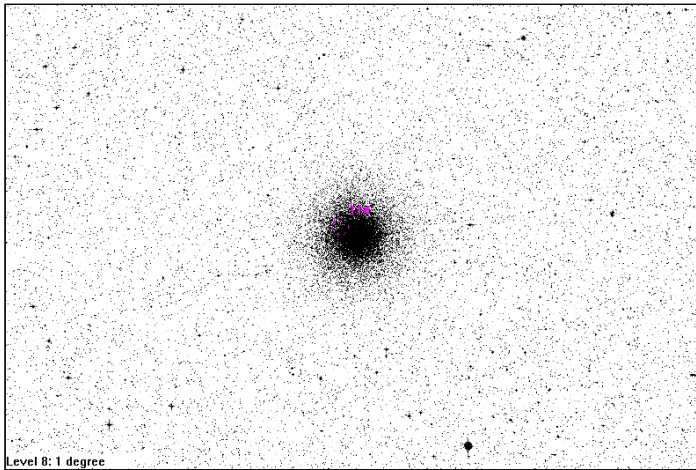


18:58:10, -71:55:45 (Lac I.13, NGC 6777; 2 stars 8th to 9th magnitude)  
It resembles the preceding



19:24:20, -31:29:00 (Lac I.14, M55)

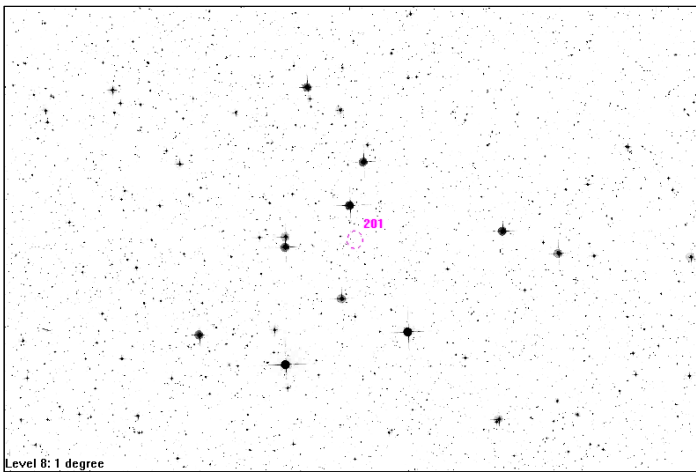
It resembles an obscure nucleus of a big comet



## SECTION II – Nebulous Star Clusters

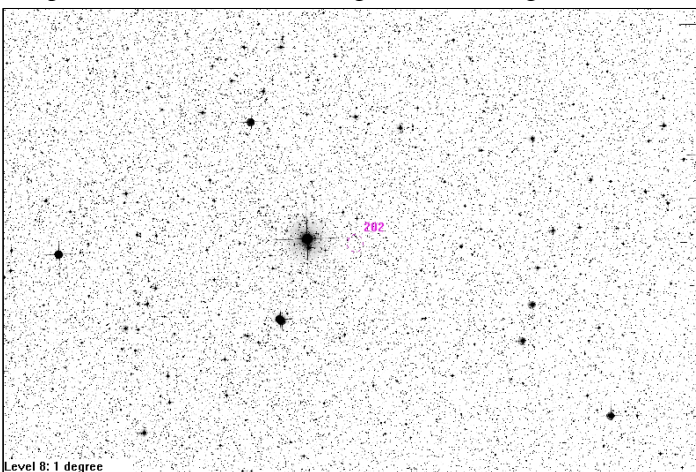
03:54:57, -45:09:40 (Lac II.1, asterism)

Compressed heap of about 12 faint stars of the 8th magnitude

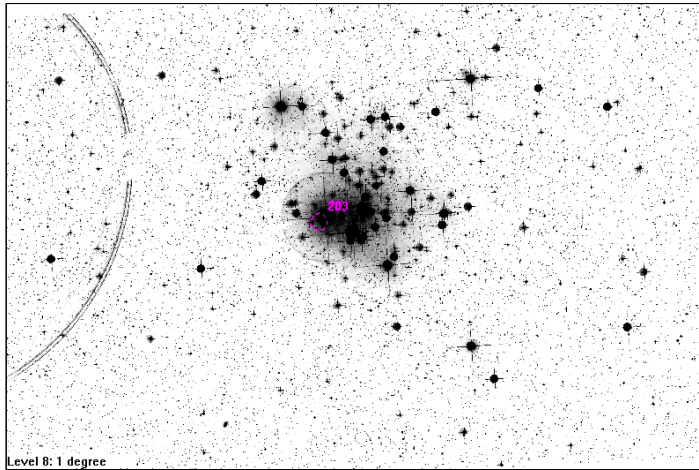


07:17:00, -33:40:00 (Lac II.2, perhaps open cluster Collinder 140)

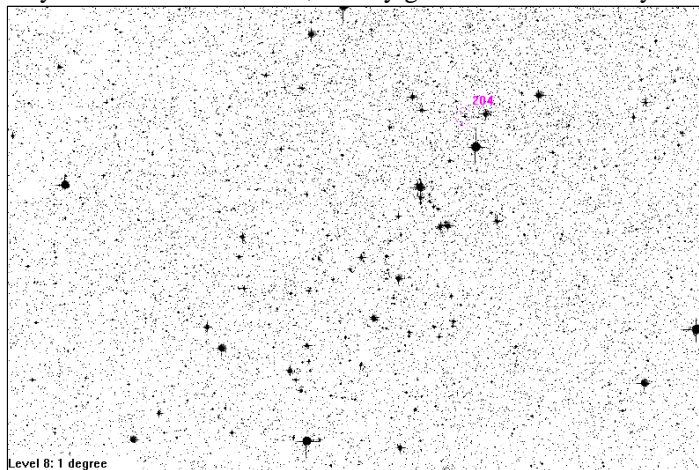
Heap of 8 stars of 6th to 7th magnitude, forming to the naked eye a nebula in the sky



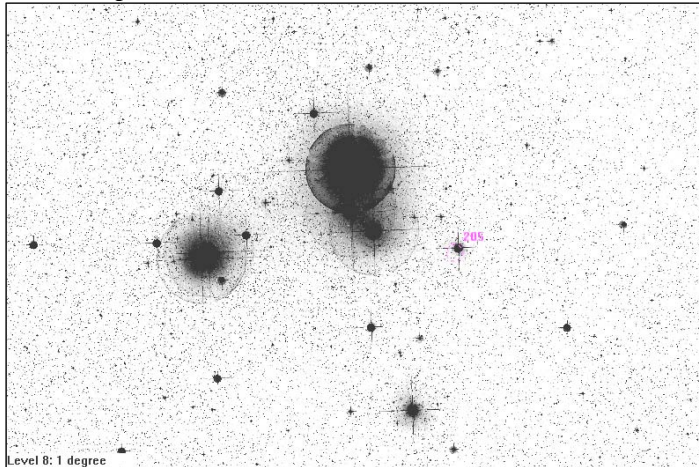
07:54:45, -60:09:40 (Lac II.3, NGC 2516)  
Group of 10 to 12 stars, very compressed



08:02:00, -36:30:00 (Lac II.4, NGC 2546)  
One sees with the naked eye two neighbouring confused groups of stars; but with the telescope they are small distinct stars, in very great number and very close together

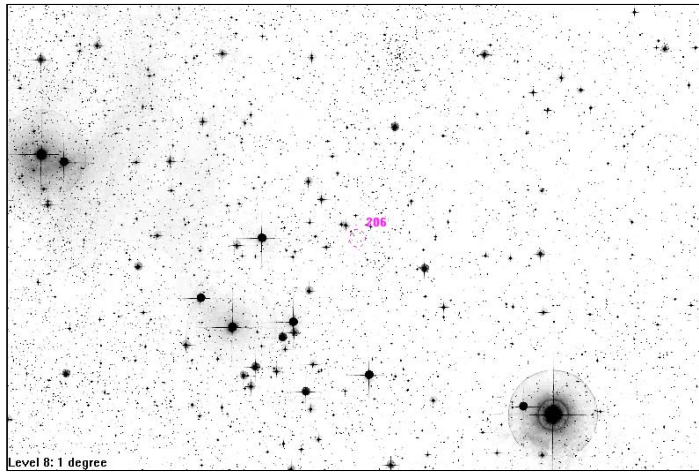


08:31:46, -52:14:05 (Lac II.5, IC 2391, o Velorum)  
Small heap of stars

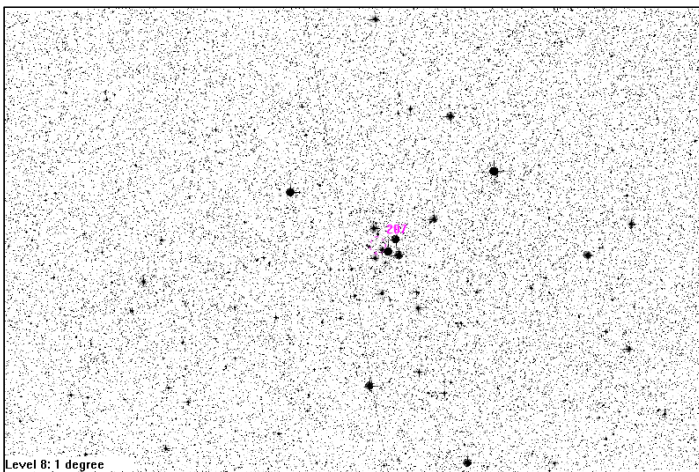




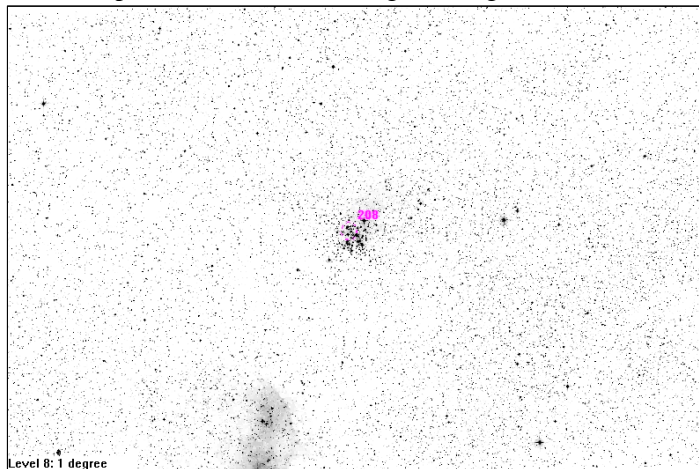
08:37:46, -41:22:25 (Lac II.6, probably open cluster Trumpler 10)  
Heap of seven or eight stars, little compressed



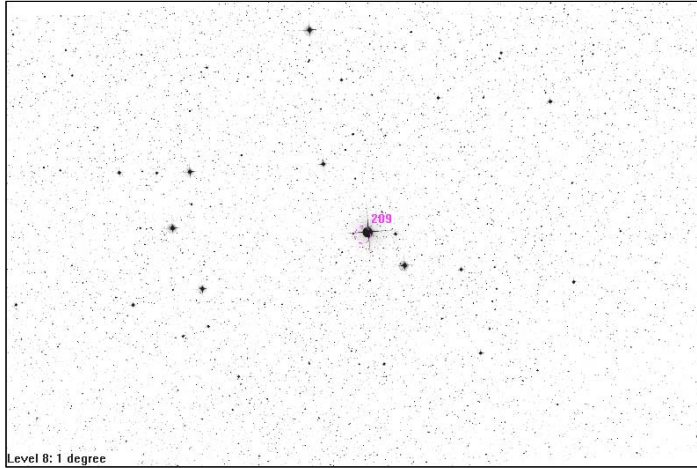
10:11:45, -50:29:00 (Lac II.7, NGC 3228)  
Heap of four or five stars, very small and very compressed



10:26:32, -56:56:05 (Lac II.8, NGC 3293)  
Small heap of 4 small stars forming a lozenge

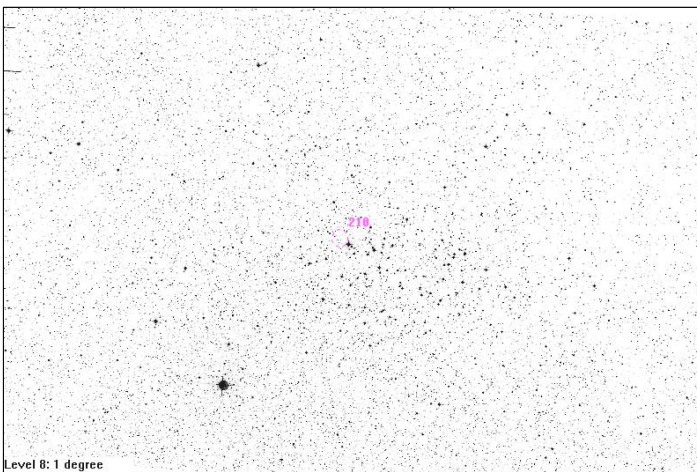


The star Theta Navis, of the third magnitude or less, surrounded by a large number of stars of sixth, seventh and eighth magnitude, which resemble the Pleiades



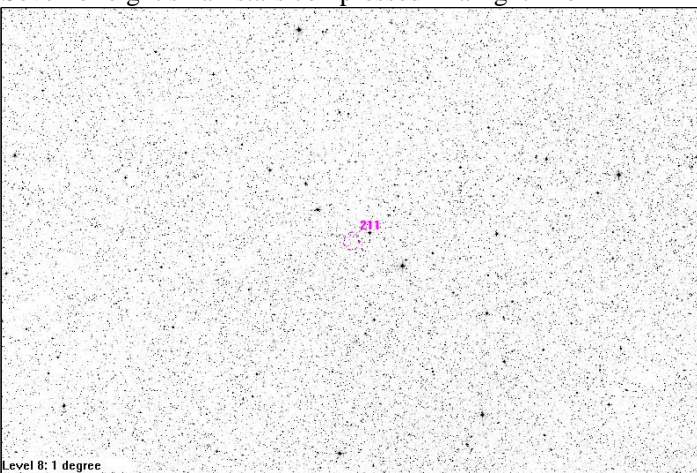
10:56:08, -57:19:30 (Lac II.10, NGC 3532)

Prodigal cluster of small stars, very compressed, filling the figure of a semi-circle 20 to 25 arc min in diameter



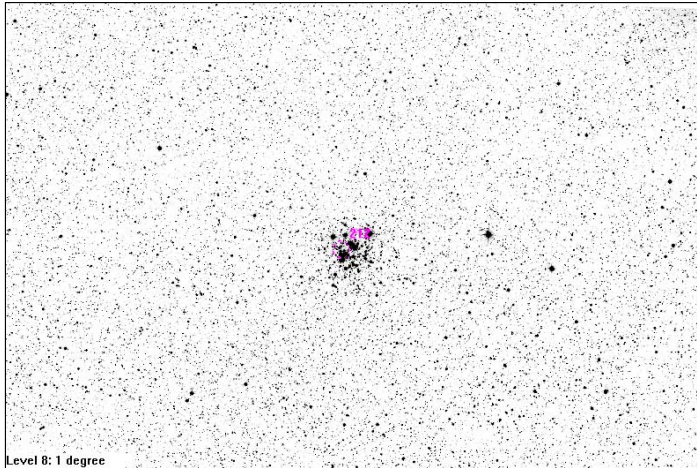
11:12:00, -56:58:30 (Lac II.11, asterism)

Seven or eight small stars compressed in a right line

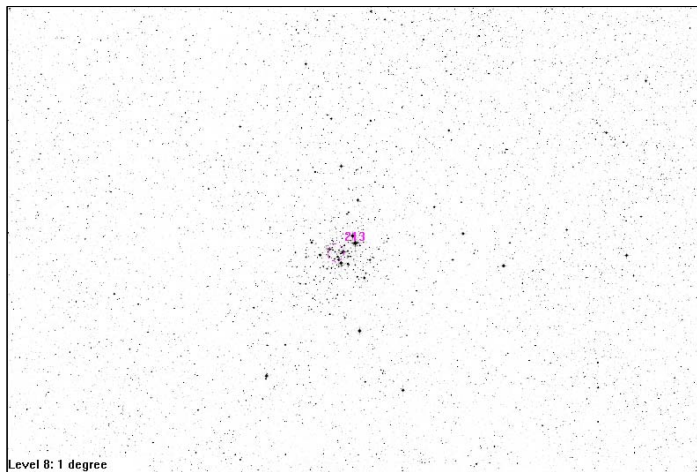




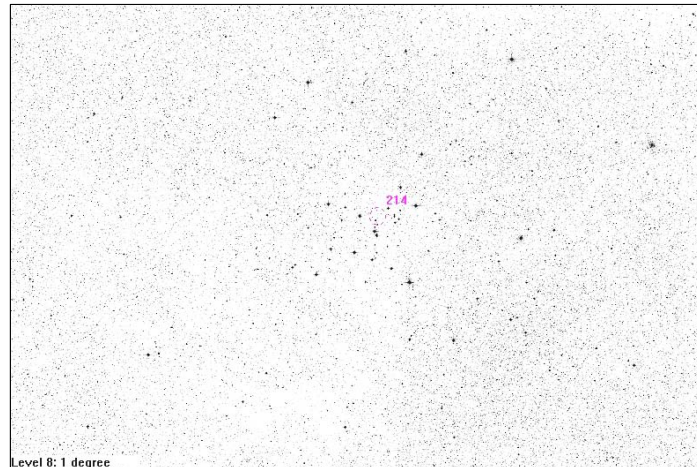
12:39:13, -59:00:30 (Lac II.12, NGC 4755, Kappa Crucis)  
Five or six small stars between two of sixth magnitude



16:36:55, -41:23:10 (Lac II.13, NGC 6231)  
Compressed heap of seven or eight small stars



17:37:12, -34:39:55 (Lac II.14, M7)  
Group of 15 or 20 stars very close together, in the figure of a square

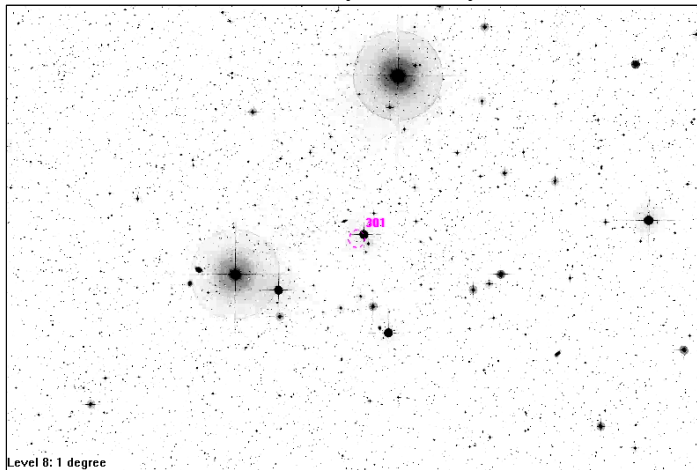




### SECTION III – Stars Accompanied by Nebulosity

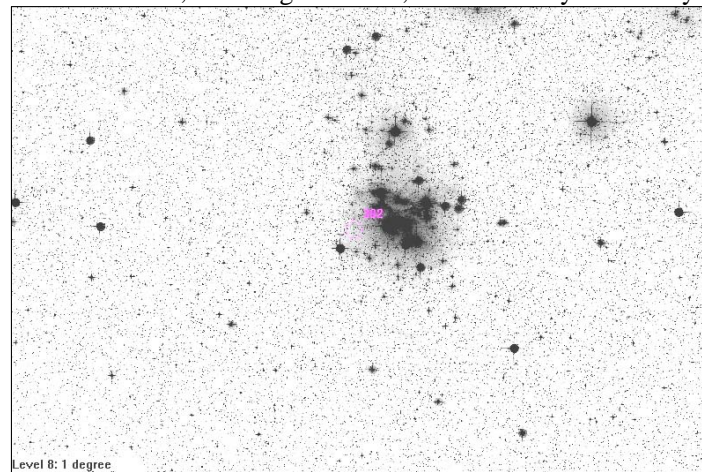
04:56:56, -49:51:30 (Lac III.1, star)

Small [faint] star surrounded by nebulosity



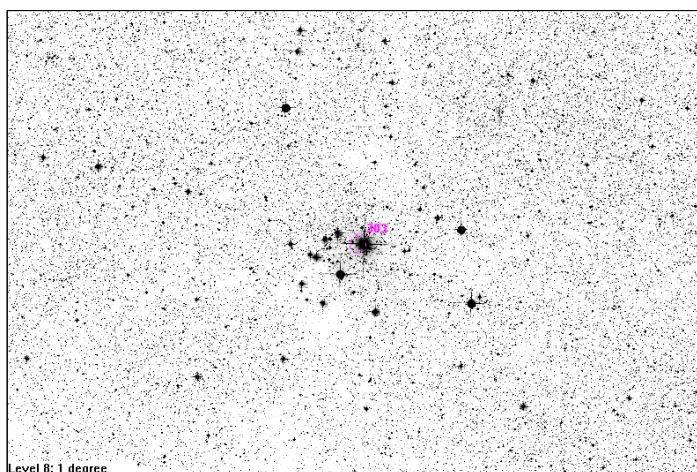
08:03:30, -48:31:00 (Lac III.2, NGC 2547)

Five small stars, in the figure of a T, surrounded by nebulosity



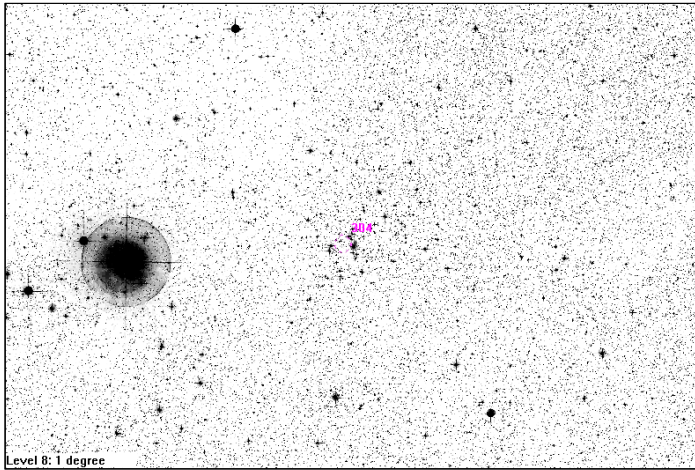
08:34:20, -47:13:10 (Lac III.3; probably open cluster van den Bergh-Hagen (vdB-Ha) 47)

Star of 6th magnitude, connected to another more southern one by a nebulous trace



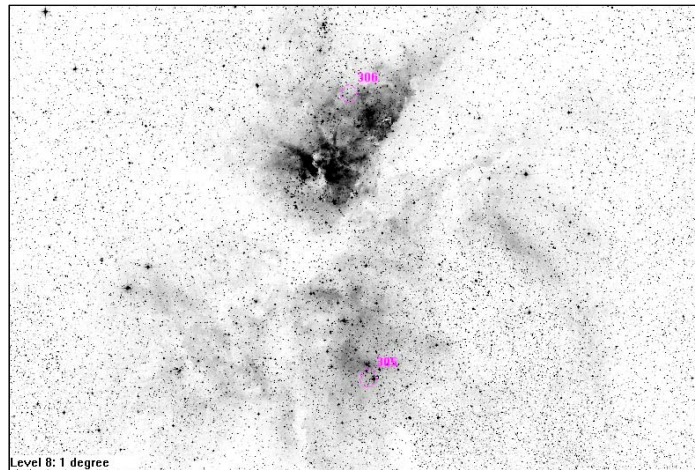
09:20:22, -55:55:30 (Lac III.4, IC 2488)

Faint star surrounded by nebulosity



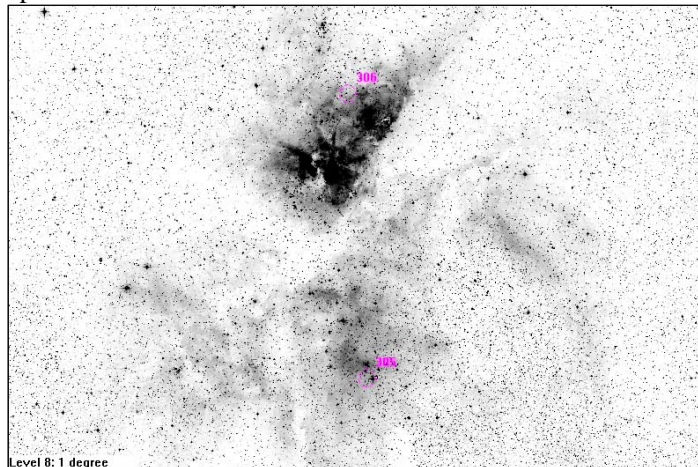
10:34:30, -58:49:10 (Lac III.5, southern part of nebula NGC 3372)

Two small stars surrounded by nebulosity

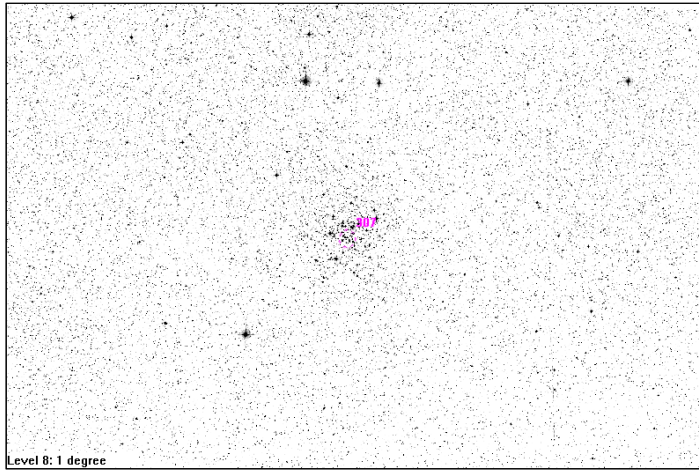


10:34:45, -58:12:25 (Lac III.6, NGC 3372, Eta Carinae Nebula)

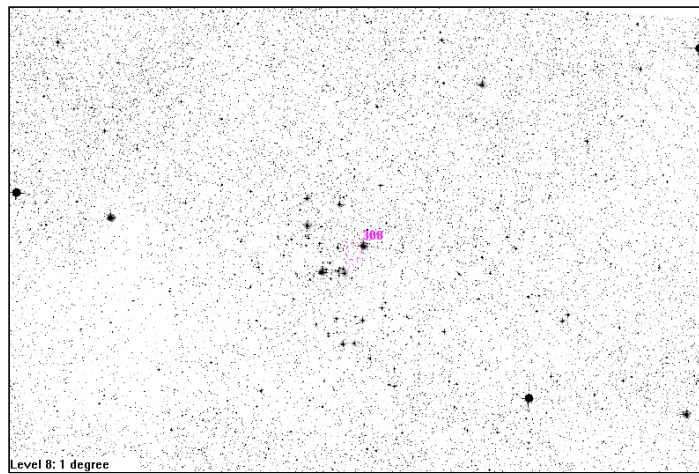
Large group of a great number of small stars, little compressed, and filling out the space of a kind of a semi-circle of 15 to 20 minutes in diameter; with a slight nebulosity widespread in space



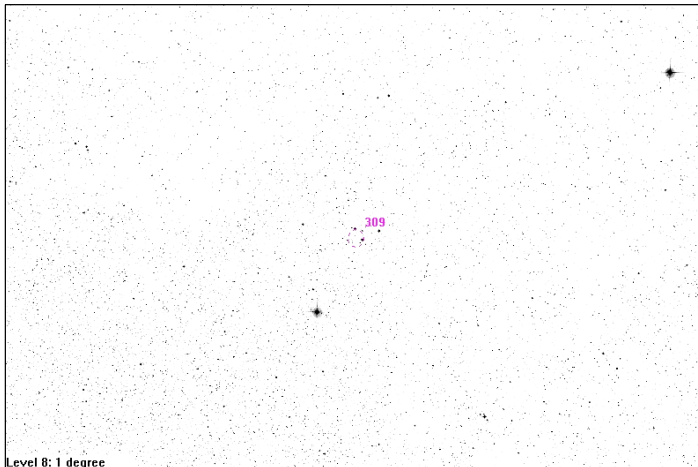
11:24:49, -60:15:00 (Lac III.7, NGC 3766)  
Three small neighbouring stars, surrounded by nebulosity



14:17:43, -55:27:50 (Lac III.8, NGC 5662)  
Two small stars in nebulosity

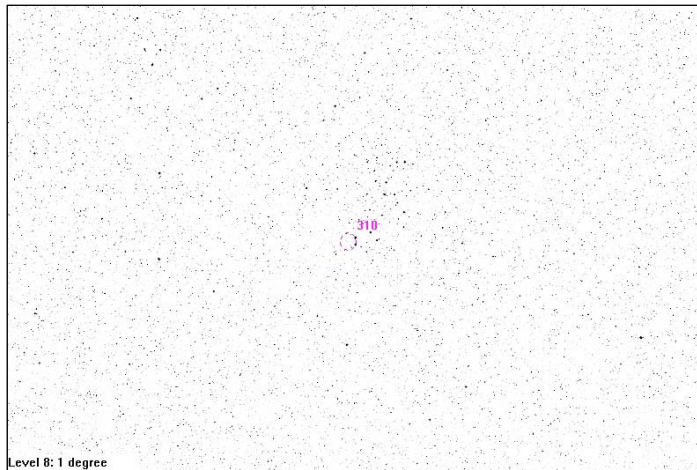


15:03:16, -58:14:30 (Lac III.9, asterism of 3 stars)  
Two small stars in nebulosity

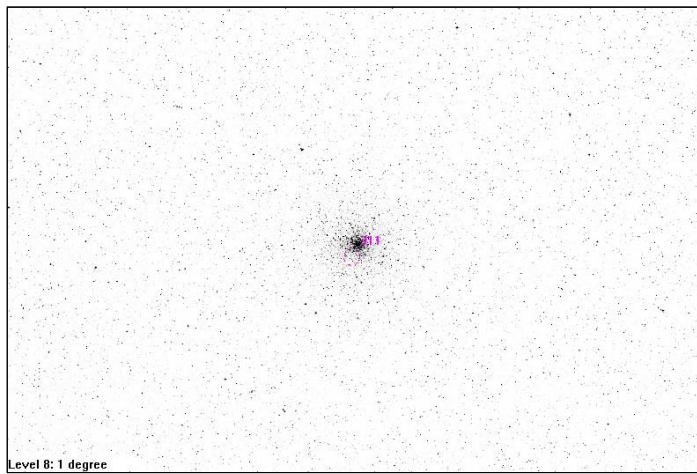




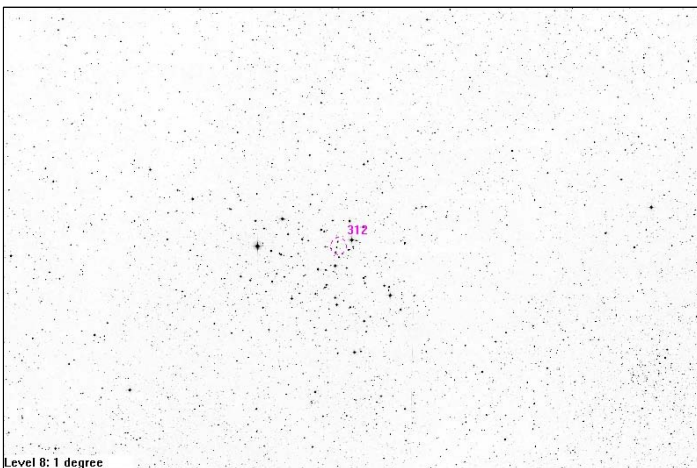
15:42:56, -59:46:50 (Lac III.10, NGC 6025)  
Three small stars in a right line, surrounded by nebulosity



17:20:38, -53:31:30 (Lac III.11, NGC 6397)  
Small star enveloped in nebulosity

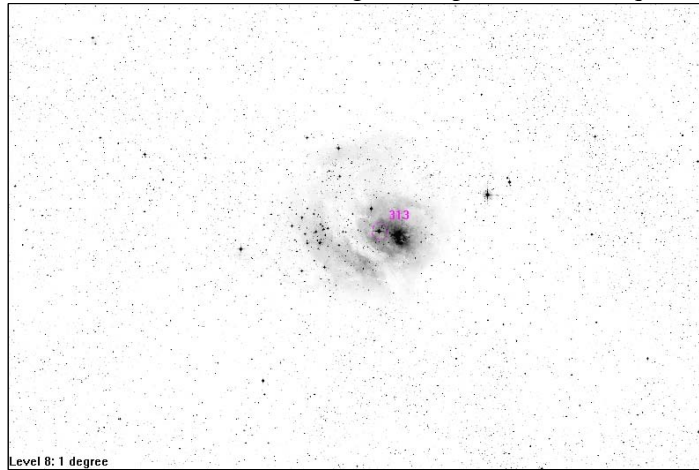


17:24:00, -32:02:45 (Lac III.12, M6)  
Peculiar cluster of small stars, disposed in three parallel bands, forming a lozenge of 20 to 25  
diameter and joined to nebulosity



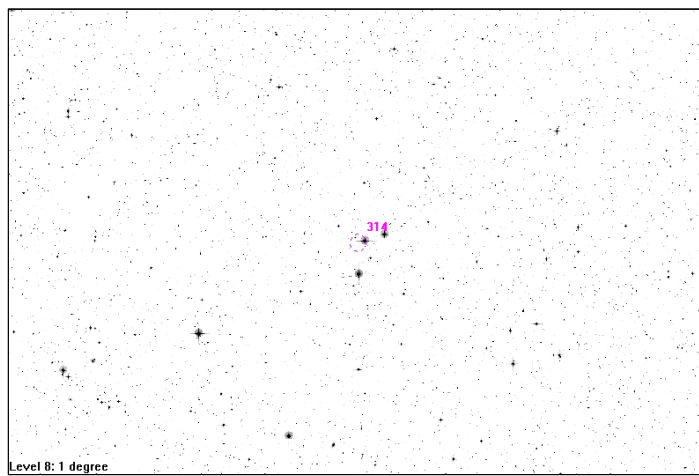
17:48:41, -24:20:15 (Lac III.13, M8)

Three stars enclosed in a trailing nebula parallel to the Equator



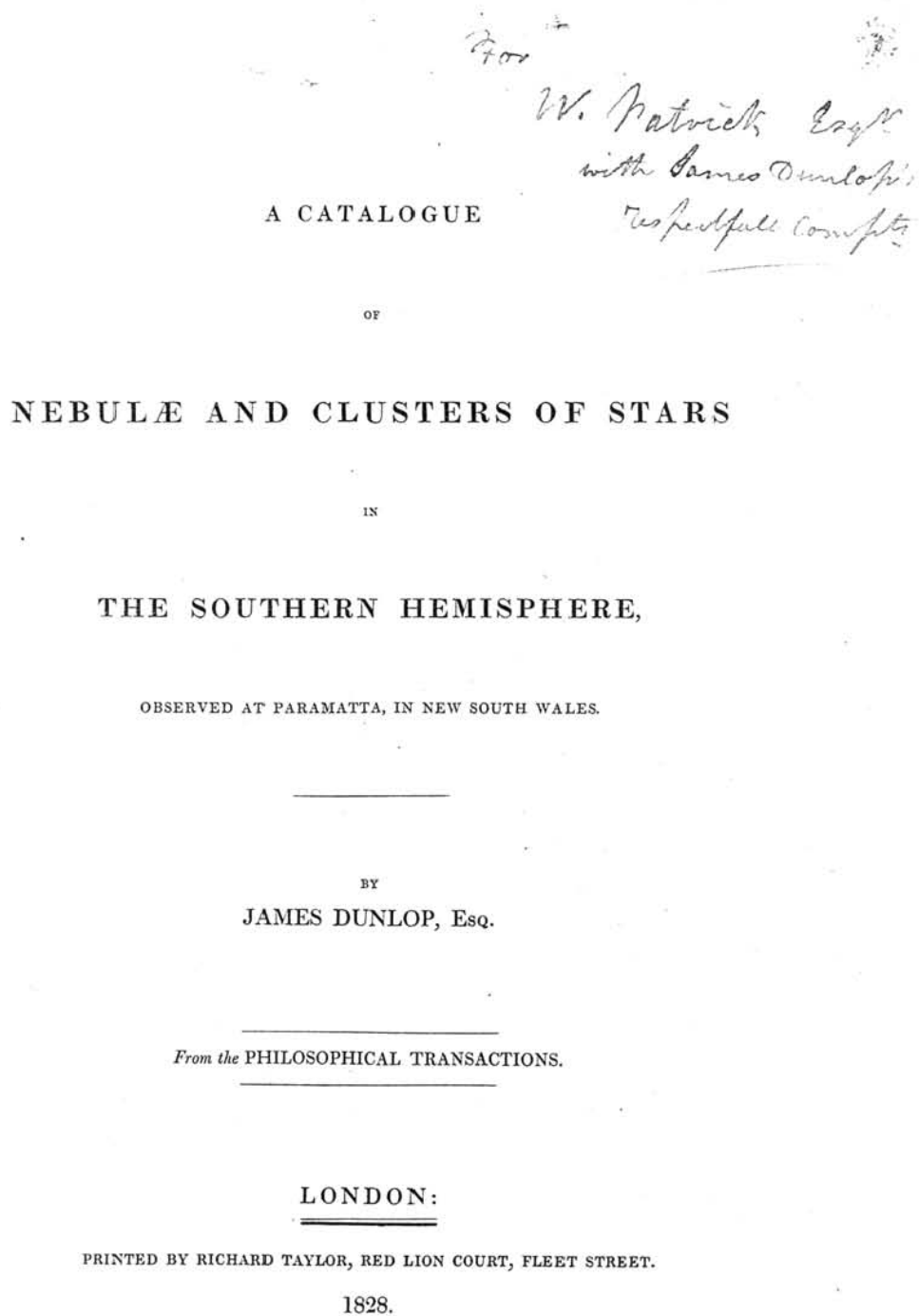
21:12:53, -57:57:15 (Lac III.14, asterism of 3 stars)

Two small stars surrounded by nebulosity



## APPENDIX C – THE ORIGINAL DUNLOP CATALOGUE

The following 44 pages contain the original Dunlop catalogue, as published in 1828 in the *Philosophical Transactions of the Royal Society of London*, vol. 118, with accompanying notes and diagrams. The handwritten notation was done by Dunlop.



W. Patrick Esq.  
with James Dunlop's  
respectful compliments

A CATALOGUE

OF

NEBULÆ AND CLUSTERS OF STARS

IN

THE SOUTHERN HEMISPHERE,

OBSERVED AT PARAMATTA, IN NEW SOUTH WALES.

BY

JAMES DUNLOP, Esq.

From the PHILOSOPHICAL TRANSACTIONS.

LONDON:

PRINTED BY RICHARD TAYLOR, RED LION COURT, FLEET STREET.

1828.



VIII. *A catalogue of nebulae and clusters of stars in the southern hemisphere, observed at Paramatta in New South Wales, by JAMES DUNLOP, Esq. In a letter addressed to Sir THOMAS MAKDOUGALL BRISBANE, Bart. K.C.B. late Governor of New South Wales. Presented to the Royal Society by JOHN FREDERICK WILLIAM HERSCHEL, Esq. Vice President.*

Read December 20, 1827.

THE following nebulae and clusters of stars in the southern hemisphere were observed by me at my house in Paramatta, situated about  $6''$  of a degree south and about  $1^{\text{s}}.78$  of time east of the Brisbane Observatory. The observations were made in the open air, with an excellent 9-foot reflecting telescope, the clear aperture of the large mirror being nine inches. This telescope was occasionally fitted up as a meridian telescope, with a strong iron axis firmly attached to the lower side of the tube nearly opposite the cell of the large mirror, and the ends of the axis rested in brass Y's, which were screwed to blocks of wood let into the ground about 18 inches, and projecting about 4 inches above the ground; one end of the axis carried a brass semicircle divided into half degrees and read off by a vernier to minutes. The position and index error of the instrument were ascertained by the passage of known stars. The eye end of the telescope was raised or lowered by a cord over a pulley attached to a strong wooden post let into the ground about two feet: with this apparatus I have observed a sweep of eight or ten degrees in breadth with very little deviation of the instrument from the plane of the meridian, and the tremor was very little even with a considerable magnifying power. I made drawings or representations of a great number of the nebulae and clusters at the time of observation, several of which are annexed to this paper; and also very correct drawings of the Nebulae major and minor, together with a representation of the milky nebulousity surrounding the star  $\eta$  Robur Caroli. The places of the

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small stars in the Nebulæ major and minor, and also those accompanying the  $\gamma$  Robur Caroli, I ascertained by the mural circle in the year 1825, at which time I was preparing to commence a general survey of the southern hemisphere. These stars being laid down upon the chart, enabled me to delineate the nebulosity very accurately.

The nebulæ are arranged in the order of their south polar distances to the nearest minute for 1827, and in zones for each degree in the order of their right ascension. The column on the right hand shows the number of times the object has been observed.

The reductions and arrangement have been principally made since my return to Europe; and I trust this catalogue of the nebulæ will be found an acceptable addition to that knowledge which the Brisbane observatory has been the means of putting the world in possession of, respecting that important and hitherto but little known portion of the heavens.

No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
1	4	13	0	12 14	A very small faint round nebula, about 12'' diameter, with a very minute star south following dist. 1' .....	1
2	0	33	6	15 41	A faint nebula, about 1½' long, irregular figure, rather branched. This is involved in the margin of the Nebula minor .....	1
3	0	41	8	15 59	A small round nebula, about 12'' diameter .....	1
4	0	42	19	15 56	A faint round nebula, about 30'' diameter .....	1
5	0	47	12	15 46	A small faint nebula, about 10'' or 12'' diameter .....	1
6	0	47	39	15 36	A faint nebula, about 20'' diameter .....	1
7	1	9	32	15 46	A faint round nebula, 35'' diameter, with a small star near the south margin, but not involved .....	1
8	1	10	23	15 48	A small oval nebula, about 10'' diameter .....	1
9	1	12	37	15 44	A faint nebula, about 1½' diameter, of an irregular round figure .....	2
10	1	13	43	15 51	An elliptical nebula, about 1' long and 40'' broad, with three minute stars in it .....	1

No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
11	1	15	57	15 55	A very small round nebula, with a bright point in the centre, which I suspect to be a star .....	1
12	1	16	30	15 52	A small round nebula, about 8" diameter .....	1
13	1	16	38	15 49	A small round nebula, with a bright point in the centre. This is the following of a group of nebulae .....	1
14	1	17	0	15 43	A small star in a faint nebula, about 10" or 12" diameter .....	1
15	1	19	53	15 50	A group of very minute stars, in a faint ill-defined rather extended nebula .....	1
16	1	22	35	15 43	A very faint nebula of a round figure, about 2' diameter, with a small star in the north margin .....	1
17	1	26	18	15 32	A faint round nebula, about 2' diameter, a very little brighter in the middle, with some minute stars in it .....	1
18	0	16	28	16 59	(47 Toucan, Bode.) This is a beautiful large round nebula, about 8' diameter, very gradually condensed to the centre. This beautiful globe of light is easily resolvable into stars of a dusky colour. The compression to the centre is very great, and the stars are considerably scattered south preceding and north following.—Figure 1. is a good representation .....	8
19	0	39	9	16 2	A small faint elliptical nebula.—This is the preceding in a line of small faint nebulae .....	1
20	0	39	53	16 8	A faint nebula, 25" or 30" diameter. Round figure .....	1
21	0	40	16	16 0	A small round faint nebula .....	1
22	0	42	49	16 12	A small faint round nebula.—Rather ill defined .....	1
23	0	50	22	16 38	A small, but very bright nebula, exceedingly condensed. This is the brightest nebula in the small cloud. I think I perceive two bright nuclei in this body .....	8
24	0	52	20	16 33	A small faint nebula .....	1
25	0	53	25	16 54	A pretty large pretty bright nebula, about 2½' diameter, irregular round figure, resolvable, very slight condensation, not well defined at the edges .....	7
26	0	54	17	16 38	A small double nebula; the following is very faint .....	2
27	0	54	37	16 25	A faint elliptical nebula, 2½' long, and nearly 2' broad .....	2
28	0	55	23	16 58	A faint ill-defined small nebula .....	1
29	0	57	0	16 33	A small round nebula, 10" diameter, bright at the centre .....	1
30	0	57	42	16 35	A small round nebula, about 8" diameter .....	1
31	0	58	12	16 53	A pretty large unequally bright nebula, about 5' diameter, round figure, resolvable into stars of mixt magnitudes .....	5
32	0	59	0	16 42	A small faint nebula .....	1
33	0	59	3	16 31	A small faint ill-defined nebula .....	1
34	0	59	40	16 58	A faint elliptical nebula .....	1
35	1	0	42	16 55	A very small faint nebula, with a small star in the south margin .....	2

No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
36	1	0	43	16 18	A faint ill-defined nebula, about $1\frac{1}{2}'$ diameter . . . . .	1
37	1	2	30	16 57	A small faint nebula, about $20''$ diameter, round . . . . .	1
38	1	3	40	16 5	A very small oval nebula, a little brighter in the centre; a star of the 8th magnitude south . . . . .	2
39	1	3	50	16 15	A rather faint nebula, about $2'$ long, extended in the direction of the meridian, easily resolvable . . . . .	2
40	1	4	10	16 31	A small round nebula, with a star in the north side . . . . .	1
41	1	4	28	16 26	A small faint nebula; many small nebulae in this place . . . . .	1
42	1	5	0	16 35	A round well-defined nebula, about $30''$ diameter . . . . .	1
43	1	5	19	16 45	A small round nebula, $8''$ diameter, bright at the centre . . . . .	1
44	1	6	22	16 22	A faint nebula, about $40''$ diameter, round figure . . . . .	1
45	1	7	50	16 20	A small faint nebula . . . . .	1
46	1	20	0	16 35	A very small faint round nebula . . . . .	1
47	1	25	11	16 23	A very small round nebula, about $8''$ diameter, with a bright point in the centre . . . . .	1
48	1	26	28	16 9	A faint ill-defined small nebula . . . . .	1
49	2	28	25	16 1	A small faint nebula, about $12''$ diameter, with a bright point in the centre . . . . .	1
50	0	49	30	17 5	A small faint round nebula . . . . .	1
51	0	50	37	17 3	A small round nebula . . . . .	1
52	0	51	0	17 0	A small faint ill-defined nebula. This is the following of a line of small nebulae . . . . .	1
53	0	54	30	17 12	A small faint nebula . . . . .	1
54	0	57	46	17 25	A small round pretty well-defined nebula, $15''$ or $20''$ diameter . . . . .	1
55	0	58	28	17 29	A small faint ill-defined nebula . . . . .	1
56	1	3	15	17 2	A small faint nebula . . . . .	1
57	1	6	0	17 7	A small faint nebula, about $15''$ diameter . . . . .	1
58	1	7	49	17 9	An extremely faint ill-defined nebula . . . . .	1
59	1	8	36	17 39	A very small faint nebula, about $10''$ diameter . . . . .	1
60	1	12	32	17 32	A round well-defined nebula, gradually brighter to the centre, about $25''$ diameter . . . . .	1
61	17	0	9	17 8	A rather large faint nebula, of an irregular figure, easily resolvable into very small stars, rich . . . . .	2
62	0	57	32	18 15	A beautiful bright round nebula, about $4'$ diameter, exceedingly condensed. This is a good representation of the 2nd of the <i>Connaissance des Tems</i> in figure, colour, and distance; it is but a very little easier resolved, rather a brighter white, and perhaps more compact and globular. This is a beautiful globe of white light; resolvable: the stars are very little scattered.—Figure 3. . . . .	11

No.	R h m s	S.P.D. ° ' "	Description of the Nebulæ and Stars.	No. of Obs.
63	1 7 24	18 49	A small round faint nebula, about 12'' diameter .....	1
64	2 20 35	18 20	A very small faint nebula, about 10'' diameter, with a minute bright point in the centre.....	1
65	4 34 37	18 20	An extremely faint nebula, about 15'' diameter .....	1
66	6 3 52	18 3	An extremely faint round nebula, 30'' or 40'' diameter.....	1
67	12 11 4	18 24	A star of the 6th magnitude, with a beautiful well-defined milky ray proceeding from it south following; the ray is conical, and the star appears in the point of the cone, and the broad or south following extremity is circular, or rounded off. The ray is about 7' in length, and nearly 2' in breadth at the broadest part, near the southern extremity. With the sweeping power this appears like a star with a very faint milky ray south following, the ray gradually spreading in breadth from the star, and rounded off at the broader end. But with a higher power it is not a star with a ray, but a very faint nebula, and the star is not involved or connected with it: I should call it a very faint nebula of a long oval shape, the smaller end towards the star; this is easily resolvable into extremely minute points or stars, but I cannot discover the slightest indications of attraction or condensation towards any part of it. I certainly had not the least suspicion of this object being resolvable when I discovered it with the sweeping power, nor even when I examined it a second time; it is a beautiful object, of a uniform faint light. Figure 2.....	3
68	16 5 14	18 13	A pretty large rather faint round nebula, about 3½' or 4' diameter, a little brighter in the middle. There is a very small nebula on the north preceding side joining the margin of the large nebula .....	3
69	19 7 —	18 12	(43 Pavonis, Bode's Catalogue.) I cannot find the nebula answering to this place: perhaps there may be a mistake in the right ascension. .	
70	4 4 15	19 57	A small faint nebula, about 25'' long, with a minute star in the southern extremity; a double nebula follows .....	2
71	4 6 35	19 55	A double nebula, about 35'' diameter; there are two small stars in the preceding of the two .....	2
72	4 52 25	19 44	A faint nebula, about 20'' diameter .....	2
73	4 52 42	19 49	A pretty bright round nebula, bright at the centre .....	3
74	4 53 8	19 53	A small faint nebula .....	1
75	4 53 30	19 51	A small round well-defined nebula .....	1
76	4 54 0	19 41	A pretty bright small round nebula .....	2
77	4 57 35	19 37	A small nebula, with a small star in the south side of it.....	2
78	4 57 50	19 53	A small faint nebula, about 15'' diameter, with a minute star slightly involved in the south side.....	1
79	4 59 25	19 55	A small faint nebula, about 12'' diameter .....	2
80	5 0 8	19 57	A small round nebula, about 10'' or 12'' diameter, well defined .....	2

No.	R	S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h m s	° ' "		
81	5 1 10	19 59	A faint nebula, 35" diameter, a small star preceding .....	2
82	5 2 10	19 51	A small faint nebula, preceding three stars in form of a triangle .....	1
83	5 10 48	19 40	A pretty large extremely faint nebula, about 5' long, and 2' broad, extended north preceding, and south following, resolvable into stars of mixt magnitudes .....	2
84	5 11 33	19 49	A pretty well-defined small nebula, about 15" diameter, with a small star rather preceding the centre .....	2
85	5 16 13	19 48	A very small round nebula, with a bright point exactly in the centre, forming a triangle, with very small stars on the north side .....	2
86	5 17 10	19 42	An extremely small nebula, 8" diameter, bright at the centre .....	2
87	5 21 22	19 49	An extremely faint ray of nebula, about 3' or 4' long, and 1' broad; position south preceding, and north following .....	2
88	5 21 38	19 59	A small faint nebula, 25" or 30" diameter, with two small stars near the south side of it .....	1
89	5 23 40	19 58	A pretty well-defined round nebula, about 20" diameter .....	2
90	5 25 0	19 45	A small round faint nebula, north of a small star .....	2
91	5 26 23	19 35	A small round nebula, 12" or 15" diameter .....	1
92	5 28 37	19 52	Two very faint round nebulae; distant 1 diameter, or 30" .....	1
93	5 28 55	19 58	A very faint nebula, about 30" diameter .....	1
94	5 29 29	19 47	An extremely faint small nebula .....	1
95	5 30 33	19 53	A faint nebula, 30" diameter: a small star north of the centre .....	2
96	5 31 38	19 50	A faint round nebula, about 1½ diameter, slightly bright to the centre .....	2
97	5 33 5	19 47	A round faint nebula, about 15" diameter .....	2
98	5 33 22	19 44	A pretty well-defined round nebula, about 30" diameter .....	2
99	5 36 30	19 35	A pretty well-defined nebula, 20" diameter .....	2
100	5 35 12	19 58	A small round nebula, about 2' north of a small star .....	1
101	5 37 5	19 33	A very small ill-defined nebula .....	1
102	5 38 10	19 47	A faint ill-defined nebula, perhaps 3' diameter .....	1
103	5 40 35	19 42	A round well-defined nebula, 30" diameter, bright at the centre. The preceding of three nebulae forming a triangle .....	2
104	5 40 38	19 32	A very small faint nebula, 8" or 10" diameter .....	1
105	5 41 3	19 36	A round well-defined nebula, 25" diameter .....	2
106	5 51 10	19 55	A faint elliptical nebula, about 2' diameter; slightly condensed to the centre .....	2
107	5 52 20	19 46	A very pretty double nebula, with a star in the preceding side of the largest, and a very small star in the south margin of the smallest nebula .....	2
108	5 52 32	19 43	A small round faint nebula .....	1



No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
109	5	52	50	19 40	A small faint nebula .....	1
110	4	53	5	20 3	A small faint nebula .....	2
111	4	53	50	20 11	A small round nebula. The preceding of three nebulae in the form of a triangle .....	2
112	4	54	2	20 16	A very pretty small double nebula; very nearly equal; distance about 12" or 15" .....	2
113	4	54	17	20 5	A small faint nebula, 12" or 15" diameter .....	1
114	4	54	18	20 36	A small round nebula, about 20" diameter, bright at the centre .....	2
115	4	59	51	20 6	A small round faint nebula, about 10" diameter .....	1
116	5	6	50	20 8	A small round pretty well-defined nebula, bright at the centre .....	1
117	5	11	30	20 1	A very small nebula, with a small star near the north margin .....	1
118	5	11	45	20 41	A pretty well-defined small nebula, with a small star south of it .....	1
119	5	12	25	20 54	A small round pretty well-defined nebula .....	1
120	5	13	22	20 51	A small round nebula, about 30" diameter .....	1
121	5	14	5	20 15	A small round nebula .....	1
122	5	14	17	20 13	A small nebula, about 20" diameter, with three smaller nebulae following, and three pretty bright small stars on the north side .....	1
123	5	16	3	20 40	A faint ill-defined nebula, 2' diameter .....	1
124	5	17	15	20 7	A very small round nebula, about 12" diameter .....	2
125	5	18	21	20 19	A small rather well-defined round nebula .....	1
126	5	18	25	20 1	A very small round nebula, 6" or 8" diameter .....	1
127	5	18	42	20 24	A faint extended nebula, ill defined .....	2
128	5	19	25	20 0	A small faint nebula, 1' north of a pretty bright star .....	1
129	5	19	44	20 37	A pretty large and very ill-defined nebula, of an irregular round figure, with several small stars in it .....	2
130	5	22	3	20 49	A small round nebula .....	2
131	5	22	15	20 20	A very faint ill-defined small nebula .....	1
132	5	22	45	20 56	A small faint confused nebula, rather long .....	1
133	5	25	57	20 16	A small faint nebula .....	1
134	5	27	9	20 21	A small faint nebula .....	1
135	5	27	36	20 25	A small faint round nebula .....	1
136	5	29	24	20 55	A faint confused pretty large nebula. There are a multitude of small nebulae in this place .....	2
137	5	33	40	20 56	A very small faint nebula, about 10" diameter .....	1
138	5	34	5	20 4	A small round faint nebula .....	1
139	5	35	38	20 53	A small faint round nebula .....	1
140	5	36	13	20 56	A small faint round nebula .....	1

No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
141	5	37	41	20 0	A faint extended nebula, about 4' long, very faint towards the extremities, brightest and broadest in the middle. This is in the south following side of a faint cluster of very minute stars . . . . .	1
142	5	39	30	20 45	(30 Doradus, Bode) is a pretty large ill-defined nebula, of an irregular branched figure, with a pretty bright small star in the south side of the centre, which gives it the appearance of a nucleus. This is resolvable into very minute stars.—Figure 4. is a very good representation of the nebula resolved. (N.B. The 30 Doradus is surrounded by a number of nebulae of considerable magnitudes, nine or ten in number, with the 30 Doradus in the centre. Figure 5.) . . . .	8
143	5	39	44	20 57	A pretty large faint ill-defined nebula, elongated in the direction of the meridian . . . . .	1
144	5	40	30	20 51	A very small round nebula, bright in the centre . . . . .	1
145	5	40	55	20 13	This is the centre of a large cluster of extremely minute stars, with many very small nebulae in it . . . . .	1
146	5	41	12	20 25	A small faint nebula . . . . .	1
147	5	41	53	20 41	A pretty bright round or rather oval nebula, 30" diameter . . . . .	1
148	5	42	25	20 53	A small faint nebula, 25" diameter . . . . .	1
149	5	42	25	20 11	A faint round nebula, about 1' diameter . . . . .	1
150	5	43	0	20 6	A well-defined round nebula, small. This precedes a group of nebulae . . . . .	2
151	5	43	8	20 45	A faint ill-defined small nebula . . . . .	1
152	5	43	50	20 1	A cluster of six or seven small nebulae, forming a square figure 5' or 6' diameter, with several minute stars mixt. This is a very pretty group of nebulae.—Figure 5. . . . .	3
153	5	44	10	20 50	A faint small round nebula, 15" diameter . . . . .	1
154	5	44	28	20 42	A pretty bright round or rather elliptical nebula, 25" diameter . . . . .	1
155	5	46	20	20 5	A very faint elliptical nebula, about 50" diameter, slightly bright to the centre . . . . .	1
156	5	48	50	20 4	A very faint ill-defined nebula, 15" or 20" diameter . . . . .	1
157	5	50	10	20 54	A small round nebula, 8" or 10" diameter. This is the preceding of three nebulae forming a triangle . . . . .	1
158	5	50	46	20 51	A small round well-defined nebula . . . . .	1
159	5	51	20	20 55	A small round faint nebula . . . . .	1
160	5	52	54	20 26	A small round pretty well-defined nebula . . . . .	2
161	5	58	12	20 42	A small faint nebula, 15" diameter; a small star near the north preceding edge . . . . .	1
162	5	58	33	20 37	A very faint small nebula . . . . .	1
163	12	47	40	20 15	A very small round or rather elliptical nebula, 12" diameter . . . . .	2
164	12	49	0	20 6	(12 Muscae, Bode.) This is a pretty bright round nebula, about 4' diameter, moderately condensed to the centre. This, with the sweeping power, has the appearance of a globe of nebulous matter with very	

No.	R	S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
			small stars in the north following margin. But with a power sufficient to resolve it, the globular appearance vanishes in a very considerable degree; and the brightest and most condensed part is to the preceding side of the centre, with the stars considerably scattered on the north following side. Resolvable into stars of mixt small magnitudes. A small nebula precedes this.....	5
165	<sup>h</sup> 4 <sup>m</sup> 8 <sup>s</sup> 34	21 27	An exceedingly faint ill-defined nebula, with several exceedingly minute stars in it.....	1
166	4 10 0	21 15	A well-defined small elliptical nebula, 12'' long and 8'' broad.....	1
167	4 54 25	21 32	A pretty bright round well-defined nebula, 15'' diameter.....	2
168	4 57 3	21 28	A pretty large faint nebula, irregular figure, and irregularly bright in parts.....	1
169	4 57 40	21 18	A pretty bright pretty large nebula, of an irregular round figure, 5' diameter; a little brighter in the middle.....	2
170	5 8 35	21 8	A pretty large faint nebula, irregular figure.....	1
171	5 10 0	21 56	A very faint round nebula, 25'' diameter.....	1
172	5 11 27	21 2	A pretty bright round nebula, 40'' diameter. This is preceding and brightest of three nebulae in a line.....	2
173	5 14 40	21 7	A small faint nebula, 12'' diameter.....	1
174	5 16 18	21 41	A very faint ill-defined nebula, with two small stars in it.....	1
175	5 22 7	21 50	A pretty large rather faint nebula, about 5' diameter, irregular figure, partly resolvable into stars of mixt magnitudes. The nebulous matter has several seats of attraction, or rather it is a cluster of small nebulae with strong nebulosity common to all.....	2
176	5 23 40	21 45	A small faint nebula.....	1
177	5 27 50	21 1	A small round nebula, 8'' or 10'' diameter.....	1
178	5 32 7	21 10	A small faint nebula, with a ray proceeding from it, about 6' or 7' long; a small star is involved in the preceding extremity of the ray.....	1
179	5 34 37	21 47	A small faint nebula, about 8'' diameter.....	1
180	5 36 27	21 48	Three very small nebulae, forming an obtuse triangle.....	1
181	5 36 50	21 4	A small faint nebula, 10'' or 12'' diameter.....	1
182	5 38 2	21 46	A group of very small stars of mixt magnitudes, with several small faint nebulae, in strong nebulosity, common to all.....	1
183	5 38 20	21 5	A faint ill-defined nebula, 20'' diameter.....	1
184	5 41 13	21 0	A very small round nebula, about 8'' diameter.....	1
185	5 45 37	21 40	A small faint round nebula, preceding a minute double star of the 12th magnitude. Another similar small nebula follows, about 20'' in R, and 2' south in a line with the double star.....	1
186	5 49 12	21 48	A very small faint nebula.....	1

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No.	R h m s	S.P.D. °	Description of the Nebulæ and Stars.	No. of Obs.
187	5 50 4	21 46	Two very small faint nebulae following a small star .....	1
188	5 51 7	21 29	A curved line of five or six faint small nebulae, with small stars mixt. This is rich in small stars and nebulae .....	1
189	5 52 49	21 46	A very faint round nebula, 30'' diameter. Exceedingly faint.....	1
190	5 54 17	21 48	Two very small faint nebulae .....	1
191	5 54 29	21 45	A pretty bright round nebula, 40'' diameter.....	1
192	5 56 37	21 28	A minute cluster of very small stars in strong nebulosity .....	1
193	5 59 0	21 19	A pretty bright round well-defined nebula, 12'' diameter .....	1
194	5 59 37	21 26	A pretty large faint ill-defined nebula .....	1
195	6 0 5	21 51	A small pretty bright round nebula, 10'' or 12'' diameter .....	1
196	6 0 14	21 31	A small round pretty well-defined nebula, 25'' diameter, with a small star north following .....	1
197	6 2 7	21 33	A small faint round nebula .....	1
198	6 6 27	21 42	A pretty strong ray of nebula following a small star; but the small star is not involved. The ray is about 2' long and 50'' broad, with a bright point or nucleus near the preceding extremity.—Figure 6..	2
199	6 8 2	21 52	A faint confused nebula, with two or three bright points in it, which I suspect to be stars .....	1
200	6 11 34	21 34	A faint nebula, following a pretty bright star .....	1
201	6 13 30	21 46	A round well-defined small nebula, 20'' diameter, bright at the centre	3
202	6 17 47	21 37	A small faint nebula, about 15'' diameter .....	1
203	6 21 17	21 53	A small round nebula, 20'' diameter, slightly; a little brighter towards the centre .....	1
204	12 3 11	21 0	A very faint nebula, about 40'' diameter, with a pretty bright star south following .....	1
205	3 2 19	22 41	A very faint small nebula, north following, a pretty bright small star; a very minute star is between the bright star and the nebula.....	1
206	3 15 50	22 50	A faint ill-defined nebula, rather extended in the direction of the me- ridian, with several exceedingly minute stars in it .....	1
207	3 18 20	22 25	A faint ill-defined nebula, probably 2' diameter, of a round figure; a very minute star involved in it.....	1
208	4 33 7	22 45	A very faint small nebula.....	1
209	5 6 30	22 14	A very faint round nebula, 45'' diameter, preceding a bright star in the same parallel.....	1
210	5 14 43	22 25	A small round nebula, rather faint. This is the preceding in a line of nebulae and small stars, with a star of the 7th magnitude at the north extremity.—Figure 7. ....	3
211	5 26 42	22 21	A small faint elliptical nebula, about 20'' diameter. This is the pre- ceding in a curved line of six or seven small nebulae, of unequal magnitudes .....	4

No.	R			S.P.D.		Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s	°	'		
212	5	27	30	22	41	A small faint ill-defined nebula .....	2
213	5	28	46	22	28	A faint elliptical nebula, about 30" diameter. This is the following in a curved line of nebula .....	3
214	5	29	48	22	57	A round small nebula, 12" or 15" diameter .....	2
215	5	30	3	22	34	A round well-defined nebula, about 20" diameter, bright at the centre .....	3
216	5	31	12	22	40	A small faint nebula, about 40" diameter .....	3
217	5	32	50	22	6	A rather well-defined nebula, 40" or 50" diameter .....	3
218	5	34	22	22	14	A pretty bright round nebula, 30" diameter, with a minute star slightly involved in the margin .....	2
219	5	35	40	22	21	A pretty bright round nebula, about 1¼' diameter, bright towards the centre .....	2
220	5	36	17	22	24	A round faint nebula, about 40" diameter .....	1
221	5	46	0	22	50	A faint extended nebula, with a few small stars in it .....	2
222	5	58	37	22	3	A small round nebula preceding a small star .....	1
223	6	0	9	22	5	A pretty bright and well-defined small round nebula .....	1
224	12	26	0	22	32	An exceedingly faint nebula, extended in the direction of the meridian, about 4' or 5' in length, with a line or group of very small stars in it .....	2
225	17	12	50	22	59	A pretty large rather bright round nebula, 3' or 4' in diameter, very moderately condensed to the centre, resolvable into extremely minute stars; the stars are more scattered on the south side .....	3
226	4	39	30	23	14	An extremely small round nebula, pretty well defined; a small star preceding in the same parallel .....	1
227	4	51	7	23	42	A small faint nebula, 12" diameter .....	2
228	4	52	40	23	37	A very faint round nebula, 12" or 15" diameter .....	1
229	4	53	6	23	41	A small round pretty well-defined nebula, 12" diameter. This is the following of a triangle of very small nebulae .....	1
230	4	56	0	23	8	A very faint rather elliptical nebula, about 2' diameter. This is the preceding and largest of three nebulae forming a triangle .....	2
231	4	56	16	23	0	A faint round nebula, 1' diameter .....	2
232	4	56	47	23	6	A faint round nebula, about 1½' diameter .....	2
233	5	1	40	23	33	A small round well-defined nebula, 10" or 12" diameter .....	1
234	5	3	33	23	12	A round well-defined nebula, about 30" diameter .....	1
235	5	3	36	23	25	A small round pretty well-defined nebula .....	1
236	5	4	33	23	21	A small nebula, 20" diameter, with a very bright point in the centre ..	2
237	5	25	7	23	30	A rather large faint nebula, 3' or 4' diameter, of an irregular round figure; no central attraction .....	1
238	5	27	30	23	31	A faint round nebula, about 50" diameter .....	1
239	5	32	46	23	23	A pretty large faint nebula, about 2' diameter, round figure. A number of very small stars on the north side, very faint at the margin .....	1

No.	R h m s	S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
240	5 35 3	23 49	A faint round nebula, 25" or 30" diameter . . . . .	1
241	5 36 0	23 0	A large cluster of small stars of mixt magnitudes in strong nebula; irregular extended figure . . . . .	1
242	5 37 12	23 39	A very faint nebula, 1' diameter; round figure . . . . .	1
243	6 9 56	23 34	A very small round well-defined nebula, 10' diameter . . . . .	1
244	13 5 0	23 50	A very faint nebula extended north preceding and south following, about 3' in length, with a minute line of five extremely small stars involved in the nebula, and two minute stars near the north extremity, but not involved . . . . .	2
245	4 12 6	24 54	A very small faint nebula, 10" diameter, about 14' south of a pretty bright small star . . . . .	1
246	5 4 38	24 51	A pretty well-defined round faint nebula, 25" diameter; a little brighter at the centre . . . . .	2
247	5 11 35	24 25	A pretty bright round nebula, 40" diameter . . . . .	1
248	5 14 30	24 19	A pretty bright round well-defined nebula, about 30" diameter, gradually bright to the centre . . . . .	3
249	6 40 5	24 34	A very small faint ill-defined nebula . . . . .	1
250	11 43 9	24 20	A very faint small round nebula, about 10" diameter, with a bright point exactly in the centre. Magnifying power 170 . . . . .	2
251	13 8 0	24 24	An extremely faint small nebula, about 15" diameter, pretty well defined. A very small star is north preceding, and a very minute south preceding; both very near the nebula, but not involved in it . . . . .	2
252	13 20 11	24 44	A very faint nebula, about 25" diameter. It is very near a star of the 8th magnitude, and near the north following extremity of a crescent of very small stars . . . . .	2
253	14 35 —	24 10	(3 Circini, Bode) is a line of stars of the 8-9th magnitudes, oblique to the equator, about 1° in length joining a circular line of small stars at the north extremity, with a bright star of the 7th magnitude in the south following extremity.—Figure 8. . . . .	3
254	22 26 14	24 57	A very small nebula, 10" diameter, with a very minute star in the preceding side of it . . . . .	1
255	22 36 4	24 1	A small faint elliptical nebula in the parallel of the equator, about 25" long, and 12" or 15" broad. . . . .	1
256	4 46 30	25 39	A small round nebula bright at the centre, 10' diameter . . . . .	1
257	9 54 10	25 13	A very small and very faint nebula, about 8" or 10" diameter; very feeble at the margin . . . . .	1
258	10 32 —	25 46	A cluster of extremely small stars, resembling a faint nebula, about 6' diameter; round figure. . . . .	1
259	15 3 8	25 5	A small faint round nebula, 25" or 30" diameter, sensibly brighter in the middle. A star of the 9th magnitude, 4' or 5' south. . . . .	1
260	15 7 17	25 46	An extremely faint ill-defined nebula, 1½' or 2' diameter, irregular round figure, a very little brighter towards the middle. . . . .	2



No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
261	18	49	25	25 35	A very minute double nebula, the distance between them about 15'' of a degree; the largest or following of the two is not more than 10'' diameter; each of them has a small bright point or nucleus . . . . .	2
262	18	51	30	25 53	A pretty large very faint nebula, about 5' or 6' diameter, slightly bright towards the centre; a minute star is north of the nebula, and two stars of the 7th magnitude preceding . . . . .	3
263	21	19	0	25 23	A small faint round nebula, 20'' diameter, a little brighter in the middle, following a group of pretty bright stars . . . . .	1
264	4	15	13	26 30	A faint round nebula, about 40'' diameter, slightly bright to the centre; this is north preceding $\theta$ Rhomboidis . . . . .	2
265	9	5	48	26 1	A very bright round nebula, about 3' or 4' diameter, very gradually bright to the centre. This has a fine globular appearance . . . . .	1
266	11	40	9	26 8	A very small nebula, very bright immediately at the centre; the bright point is nearly equal in brightness to one of the minute stars north of the nebula. I do not think the bright point is a star, but a very highly condensed nucleus, surrounded by a faint chevelure, not more than 10'' diameter. Another very minute nebula precedes this . . .	2
267	11	39	35	26 11	An extremely small round nebula, not more than 5'' diameter, equally and uniformly bright, with a small well-defined planetary disc, with no bright point or condensation to the centre. This is not a small star; the appearance is very different from any of the small stars near it, and it is also very unlike the general appearance of small nebulae: both of these objects are very singular . . . . .	2
268	15	36	8	26 7	A very faint nebula, about 1' diameter, with a very minute star preceding, and another following; both are involved . . . . .	1
269	16	43	0	26 39	A small round faint nebula, about 15'' diameter, with a minute star near the south side, and four small stars following. The nebula is in the point of a cone formed by the four small stars and itself . . .	2
270	23	41	16	26 59	A faint ray of nebula, about 25'' or 30'' long, with a small star in the centre of it.—Figure 9. . . . .	1
271	11	11	36	27 28	A rather bright nebula, about 2½' or 3' long and 1' broad, in the form of a crescent, the convex side preceding; no condensation of the nebulous matter towards any point. This is easily resolvable into many stars of some considerable magnitude, arranged in pretty regular lines, with the nebula remaining, which is also resolvable into extremely minute stars. This is probably two clusters in the same line.—Figure 10. . . . .	7
272	12	31	—	27 55	A group of five stars of the 8th or 9th magnitude, with a great number of extremely small stars resembling faint nebulae, 3' or 4' diameter.	1
273	13	34	48	27 57	(201 Centauri, Bode.) This is a curved line of small stars, about 1½' long, with a star of the 7th magnitude in the north extremity; a group of extremely minute stars on the preceding side of the crescent, and a multitude of very minute stars extended preceding and following.—Figure 11. . . . .	7
274	14	19	8	27 39	An exceedingly small very faint round nebula, about 8'' diameter, north	

No.	R	S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
			rather following a star of the 12th magnitude, with a smaller star on the other side .....	1
275	<sup>h</sup> 14 <sup>m</sup> 18 <sup>s</sup> 10	<sup>°</sup> 27 <sup>'</sup> 13	A very small round well-defined nebula, about 15" diameter, with a bright point in the centre .....	1
276	15 14 0	27 50	A very small nebula, with a very minute star involved in the north side of it: the star is not central; another small star is distant about 4' from the nebula.....	1
277	15 28 9	27 51	A faint extended nebula, about 4' long and 2' broad, with a group of seven or eight extremely small stars in it.....	1
278	16 19 7	27 18	A pretty well-defined small nebula, extended in the parallel of the equator, rather a little south preceding, and north following, about 1½' long, and 25" broad, with a star of the 11th or 12th magnitude in the centre. The nebula is nearly equally bright, and the star is in the centre.—Figure 12. ....	2
279	17 26 0	27 35	A pretty large faint nebula, round figure, about 3' diameter; very faint at the margin.....	1
280	19 14 21	27 24	An extremely faint ill-defined nebula, of an irregular figure, rather elongated following: there are two minute stars involved in the preceding side of it.....	1
281	11 10 16	28 20	A cluster of very small stars, a little elongated preceding and following, about 10' diameter; the stars are congregated towards the centre, a pretty bright star south, and a double star south following this ....	4
282	13 42 —	28 57	A group of ten or twelve stars about the 10th magnitude, with a multitude of very small stars, forming an irregular branched figure, 8' or 10' long and 6' broad.....	1
283	14 47 0	28 59	A group of small stars forming a semicircle, with a line of minute stars joining the extremities .....	2
284	15 52 8	28 4	A group of twelve or fourteen stars, round figure, 2' diameter .....	1
285	15 59 4	28 40	A very faint small round nebula, about 8" or 10" diameter; a little brighter in the centre .....	1
286	16 31 12	28 29	An exceedingly faint very small round nebula, about 12" diameter, with a minute bright point in the centre. This is south of a star of the 7-8th magnitude, and a nebula follows in the field .....	1
287	16 35 3	28 32	A faint elliptical nebula, about 25" diameter, not bright at the centre, and nearly uniform in its light .....	1
288	21 20 12	28 28	A pretty bright small elliptical nebula, about 20" long; the brightest part is near the south following extremity. This precedes a small star.....	1
289	11 29 20	29 16	A pretty large cluster of stars of mixt magnitudes, about 10' diameter. The greater number of the stars are of a pale white colour. There is a red star near the preceding side; another of the same size and colour near the following side; another small red star near the centre; and a yellow star near the south following extremity, all in the cluster .....	5

No.	R			S. P. D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
290	11	36	11	29 46	A very faint nebula, round figure, about 1½' diameter, with two or three very small stars involved in it. There are many similar small stars scattered in the field with a power of 170; the nebulosity is extremely faint. This precedes the 49 Centauri, Bode, which is a star of the 4th or 5th magnitude, and not of the 6th as given in Bode's catalogue	2
291	11	56	9	29 45	A cluster of small stars of mixt magnitudes, irregular figure, about 6' long and 4' broad	3
292	12	15	0	29 2	A pretty cluster of extremely small stars, resembling a pretty large faint nebula, about 6' or 7' diameter: the compression is very gradual to the centre; a pretty bright star is in the following side of the cluster, round figure	4
293	15	49	5	29 3	A very faint small nebula, about 10'' diameter, with a small star near the south margin, but not involved	1
294	17	42	18	29 4	A very small round nebula, with a small star at the north edge, not involved	1
295	18	54	3	29 45	A pretty large and very bright nebula, 5' or 6' diameter, irregular round figure, easily resolved into a cluster of small stars, exceedingly compressed at the centre. The bright part at the centre is occasioned by a group of stars of some considerable magnitude when compared with those of the nebula. I am inclined to think that this may be two clusters in the same line; the bright part is a little south of the centre of the large nebula	5
296	4	42	11	30 40	A faint ill-defined nebula, with a small bright point in the preceding side, which I suspect to be a star; there are several similar small stars in the field	1
297	9	56	0	30 50	A beautiful cluster of stars, arranged in curvilinear lines intersecting each other, about 40' diameter, extended south preceding, and north following	1
298	10	47	9	30 10	A very faint nebula, of an oblong rectangular figure, extended in the direction of the meridian	1
299	11	22	36	30 14	An extremely faint ray of nebula, about 2' in length, with a very small star at the following extremity; three pretty bright small stars distant about 1', and a star of the 7th magnitude south preceding	1
300	12	19	50	30 51	A triangular group of very small stars, about 3' long, resembling faint nebulae. A star of the 9th magnitude near the north following extremity	4
301	12	44	—	30 35	( $\chi$ Crucis, Bode) is five stars of the 7th magnitude, forming a triangular figure, and a star of the 9th magnitude between the second and third, with a multitude of very small stars on the south side.—Figure 13. is a very correct representation	6
302	14	16	40	30 3	A cluster of small stars of mixt magnitudes, considerably congregated towards the centre, 4' or 5' diameter	2
303	15	21	23	30 32	A very small faint nebula, 10'' or 12'' diameter, a little brighter in the middle. A small star precedes this, and a star of the 7th magnitude following	1

No.	R			S.P.D.		Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s	°	'		
304	15	49	—	30	0	(λ Circini, Bode) Lacaille describes this as three small stars in a line with nebula. No particular nebula exists in this place. A group of about twenty stars of mixt magnitudes, forming an irregular figure, about 5' or 6' long, answer to the place of the λ. This is in the milky way; and there is no nebula in the group of stars except what is common in the neighbourhood . . . . .	5
305	17	29	30	30	27	A very small round nebula, with a minute bright point near the following side. The bright point is not in the centre of the nebula, a pretty bright small star following distance 1' of arc . . . . .	1
306	4	9	8	31	38	A small round pretty well defined nebula, 10'' or 12'' diameter, slightly bright to the centre, a bright star in the field south following . . . . .	1
307	4	49	12	31	37	An extremely faint round nebula, 30'' or 40'' diameter . . . . .	1
308	10	15	48	31	10	A very small round nebula, about 25'' diameter, bright at the centre, nearly in a line between two very small stars. A star of the 6-7th magnitude is south following . . . . .	1
309	10	38	—	31	13	(η Roboris Caroli, Bode) is a bright star of the 3rd magnitude, surrounded by a multitude of small stars, and pretty strong nebulosity; very similar in its nature to that in Orion, but not so bright. Figure 14. is a very correct representation of it; the circle A B is about 1° and 37' diameter, with the star η in the centre. I can count twelve or fourteen extremely minute stars surrounding η in the space of about 1'; several of them appear close to the disk: there is a pretty bright small star about the 10th magnitude north following the η, and distant about 1'. The nebulosity is pretty strongly marked; that on the south side is very unequal in brightness, and the different portions of the nebulosity are completely detached, as represented in the figure. There is much nebulosity in this place, and very much extensive nebulosity throughout the Robur Caroli, which is also very rich in small stars . . . . .	13
310	10	47	0	31	42	A faint nebula, about 1½' or 2' diameter, with a small bright star near the preceding side; this is resolvable into exceedingly minute stars . . . . .	2
311	12	50	30	31	15	A very faint pretty large nebula, about 6' or 8' diameter, round figure, resolvable into very minute stars. Several stars of some considerable magnitude appear scattered among the minute stars of the nebula, but they are only the continuation of a branch of small stars which run over the place where the nebula is; the stars in the nebula are very gradually, but not much, compressed to the centre. . . . .	4
312	13	16	7	31	38	A pretty large faint nebula, about 5' diameter, irregular branched figure, resolvable, with considerable compression of the stars towards the central point. This precedes a star of the 7th magnitude, and a group of small stars follow, about 10' north of the nebula . . . . .	2
313	14	16	14	31	5	A very minute group of small stars, about 2' long, extended in the parallel of the equator . . . . .	1
314	15	9	—	31	29	(16 Circini, Bode) described in the Connaissance des Tems as nebula, with two small stars in it. There are three stars of the 8th magnitude very near each other, forming a triangle, which answers to the place . . . . .	

No.	R	S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h m s	° ' "	of 16 Circini; but there is no nebula accompanying them, neither is there any nebula accompanying any of the stars in this place....	6
315	15 21 30	31 55	A small rather faint nebula, 20" or 25" diameter, at the preceding extremity of a line of four or five very small stars .....	1
316	16 29 6	31 45	A very faint ray of nebula, about 1½' long, and 15" or 20" broad, extended north preceding and south following, with rather a condensation of the nebulous matter near the south following extremity. There is a minute star near the north preceding extremity, but I do not think it is involved in the ray.....	1
317	17 43 28	31 11	A faint ill-defined round nebula, very faint at the margin, perhaps 1½' or 2' diameter .....	1
318	17 53 —	31 43	A group of eighteen or twenty small stars of nearly equal magnitudes, extended 8' long, and 4' broad.....	1
319	22 7 20	31 58	A very small cluster of very minute stars, resembling a small faint nebula, 2' diameter .....	1
320	4 5 7	32 23	A small faint nebula, about 12" diameter, with three very small stars north of it .....	3
321	10 27 13	32 37	A very small cluster of very small bright stars; round figure, about 4' diameter; rich in extremely small stars resembling faint nebula ..	4
322	10 30 7	32 17	A star of the 7th magnitude, involved in faint nebula .....	1
323	10 59 —	32 16	(5 Centauri, Bode) is a very large cluster of stars about the 9th magnitude, with a red star of the 7—8th magnitude, north following the centre of the cluster. Elliptical figure: the stars are pretty regularly scattered .....	3
324	11 17 0	32 43	Seven or eight small stars in a line oblique to the equator .....	1
325	11 32 —	32 19	A cluster of stars in strong milky nebulosity .....	1
326	16 5 21	32 28	A group of very small stars of an irregular branched figure, 15' or 20' diameter. The central part is very thin of stars .....	4
327	17 48 16	32 26	A very faint nebula, rather extended north, about 30" or 40" long ..	1
328	19 15 46	32 41	A small faint nebula, about 20" diameter, with a minute star in the preceding margin .....	1
329	21 19 —	32 19	(47 Indi, Bode). This is described as two small stars in nebula. I can find no nebula in this place; but there are three small stars forming an obtuse triangle, which answers to the place of 47 Indi. There is also an angular line of very minute stars, about 1' in length, following about 2' or 3' in time, and 30' south, which would have a nebulous appearance through a small telescope .....	4
330	9 22 30	33 46	A faint cluster of small stars of mixed magnitude, with two or three pretty bright stars in it. This answers to 485 Argus (Bode), and is described as a small star surrounded by nebula. This precedes 492 Argus, about 3' in R, and 3' or 4' north of the star, and is probably the object intended; the cluster is about 5' diameter, irregular figure, no nebula .....	2

MDCCCXXVIII.

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No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
331	5	12	30	33 37	A rather bright nebula about 1' diameter, very faint at the margin, gradually bright to the centre: a small star north, and another south, both involved in the margin of the nebula. A group of very small stars north .....	2
332	10	10	6	33 57	A very faint ray of nebula, about 2' broad, and 6' or 7' long, joining two small stars at the south following extremity, which are very slightly involved, but their lustre is not diminished from that of similar small stars in the field. The north extremity also joins a group of small stars, but they are not involved.—Figure 15. ....	2
333	14	29	40	33 10	A group of small stars with faint nebula. There is rather a gathering of the nebulous matter, about 10" diameter, near the north side ...	2
334	15	43	42	33 1	A faint round nebula, about 1½' diameter, very slightly bright towards the centre. A small star is south, rather preceding the nebula, and Normæ is south following .....	3
335	16	4	52	33 31	A cluster of small stars of mixt magnitudes, congregated into several groups or patches, with a pretty bright star near the centre. ....	1
336	16	40	13	33 54	A small faint nebula, about 10" or 12" diameter, with a small star involved in the north extremity. This follows a pretty bright small star .....	2
337	3	7	47	34 5	A very bright round nebula, about 1½' diameter, pretty well defined and gradually bright to the centre. A small star north following..	2
338	4	16	14	34 28	A pretty large round nebula, about 4' diameter, moderately and gradually condensed to the centre. A very small star near the following edge, not involved. ....	2
339	4	28	33	34 52	A small round pretty well defined nebula, bright in the centre, north preceding $\alpha$ Doradûs .....	1
340	9	8	51	34 48	A very faint round nebula, about 2' diameter. There are seven or eight very minute stars in the nebula .....	1
341	12	3	24	34 38	A very small nebula, about 12" or 15" diameter, with a very minute star involved in the south side. This nebula is near the preceding extremity of a small crescent of very minute stars: the crescent is not conspicuous .....	2
342	14	22	24	34 15	A group of small stars of the 11th and 12th magnitude, with a multitude of minute stars mixt, extended south preceding and north following .....	2
343	15	37	28	34 1	A pretty large faint nebula, with several minute stars in it; round figure, 4' or 5' diameter, resolvable. ....	2
344	16	3	5	34 40	An extremely faint pretty large nebula, 5' or 6' diameter, with two small stars in the north preceding side, and several very minute stars scattered in it .....	1
345	17	20	36	34 30	A very small fan-shaped nebula, about 10" or 12" long, with a brightish point at the small or south extremity, north of a double star of the 10th magnitude .....	3
346	17	35	28	34 41	A small round nebula with a bright point in the centre; diameter about 15" .....	1

No.	R			S.P.D.		Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s	°	'		
347	23	25	36	34	53	A faint round nebula, about 20" diameter.....	1
348	4	1	8	35	23	A very faint nebula, about 35" diameter. This precedes a group of small stars .....	1
349	11	42	13	35	13	A pretty large faint nebula, 6' or 7' diameter, easily resolvable with slight compression of the stars to the centre, or rather towards the following side of the centre .....	4
350	14	20	30	35	51	A curved line of small stars, south preceding a star of the 7th magnitude.....	2
351	14	53	36	35	4	A pretty large cluster of small stars resembling faint nebula, general figure round, south preceding 2 Pyxidis .....	2
352	14	59	30	35	1	A small round nebula, about 20" diameter, a little brighter in the centre	1
353	15	38	30	35	34	A rather faint easily resolvable nebula, of an irregular figure, 2' diameter .....	1
354	22	29	42	35	34	A small faint round nebula, about 15" diameter, south following a pretty bright small star.....	1
355	10	32	8	36	52	A triangular group of small stars resembling faint nebula, with several stars in it of some considerable magnitude.....	4
356	14	35	40	36	14	A group of eight or ten pretty bright small stars, in the form of a $\sphericalangle$ (the letter Y), about 5' long, parallel to the equator, with small stars in it resembling faint nebula .....	3
357	14	15	—	36	17	A very extensive cluster of stars of mixed small magnitudes; the stars appear to be either congregating together in different parts of the cluster, or breaking up; there are several groups already formed, the whole cluster is composed of lines of stars, but no general attraction towards any particular point .....	1
358	15	47	37	36	55	A pretty large faint nebula, of an irregular figure, about 6' diameter, very faint.....	3
359	15	54	10	36	23	Three very minute stars forming a triangle, with a faint round nebula, about 20" diameter in the centre, but none of the stars are involved in the nebula .....	
360	15	59	27	36	13	A pretty large cluster of small stars of mixed magnitudes, about 12' diameter; the stars are considerably congregated towards the centre, extended south preceding and north following.....	5
361	16	2	—	36	51	A cluster of stars extended south preceding and north following, of various mixed magnitudes, considerably compressed to the centre..	1
362	16	11	—	36	57	A space in the milky way, exceedingly rich in small stars .....	1
363	16	13	5	36	43	A faint cluster of very minute stars, about 2' diameter, resembling faint nebula .....	1
364	16	35	12	36	29	A round faint nebula, about 1' diameter, with three small stars in it; a bright star south of the nebula .....	1
365	17	4	27	36	1	A very faint small round nebula, about 15" diameter, with a bright point in the centre. I cannot say there is a gradual condensation of the nebulous matter; the minute point may be a star .....	1

No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
366	17	27	10	36 25	A pretty large nebula, extended nearly in the parallel of the equator, brightest and broadest in the middle; a group of very small stars in the middle give it the appearance of a nucleus, but they are not connected with the nebula, but are similar to other small stars in this place which are arranged in groups. The nebula is resolvable into stars.....	4
367	18	45	11	36 19	An extremely faint nebula, of an irregular figure, 3' or 4' diameter, a little brighter in the middle; south following $\lambda$ Telescopii.....	1
368	19	21	16	36 35	An extremely faint small round nebula, very difficult to be seen, about 9' north of a star of the 6-7th magnitude.....	1
369	3	56	13	37 10	A faint nebula, elliptical in the parallel of the equator, about 30" long and 12" broad.....	1
370	4	25	6	37 59	An extremely faint round nebula, about 15" diameter, with a small star in the centre. The faint nebula resembling an atmosphere or chevelure; the star is in the centre, a small star south of it has nothing of this nebulous appearance.....	1
371	8	24	38	37 52	A small faint elliptical nebula, with three minute stars in it. This is near the north following extremity of a crooked line of pretty bright small stars.....	1
372	9	21	46	37 17	A very faint nebula, of an irregular round figure, about 1' diameter, very slight condensation to the centre.....	1
373	16	44	34	37 15	A very small round nebula, north preceding $\epsilon$ Aræ, another nebula follows this.....	1
374	16	45	44	37 27	A very faint nebula, of an irregular round figure, about 2' diameter, slightly bright towards the centre, easily resolvable into very minute stars, slightly compressed to the centre; this also precedes $\epsilon$ Aræ.....	4
375	17	33	30	37 53	A very faint small nebula, about 25" diameter, round figure, south following a star of the 7th magnitude.....	1
376	18	4	6	37 44	A pretty bright round nebula, about 1 $\frac{1}{4}$ ' diameter, moderately condensed to the centre; three very small stars involved in the preceding margin.....	4
377	15	6	53	38 48	A very small faint nebula, 10" or 12" diameter, north following a small group or cluster of stars.....	1
378	16	2	31	38 15	A small faint round nebula, about 10" diameter, north following two pretty bright stars.....	1
379	16	11	30	38 32	A small faint round nebula, with a bright centre.....	2
380	16	13	49	38 52	A pretty large faint nebula, about 6' diameter, rather elongated in the direction of the meridian; no sensible condensation towards the centre.....	1
381	17	10	0	38 25	An extremely faint small nebula, about 12" diameter, with a bright point in the centre.....	1
382	17	18	16	38 17	A small faint round nebula, about 35" diameter.....	1
383	17	37	18	38 26	A small faint nebula, about 30" diameter, with a small star slightly involved in the preceding margin.....	1

No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
384	18	16	18	38 30	A very faint ill-defined nebula, very small.....	1
385	19	28	40	38 32	A faint ray of nebula, about 1½' long, and 15" or 20" broad, extended in the parallel of the equator; a small star precedes it, but is not involved. The following extremity of the ray is the brighter .....	2
386	10	15	9	39 12	11 Roboris Caroli (Bode). A group of eight or ten pretty bright small stars, with very small stars, about 6' diameter .....	2
387	13	12	50	39 53	A very small round nebula, about 10" diameter, bright immediately at the centre. A star of the 7th magnitude, about 4' north of it ....	1
388	13	36	0	39 32	A bright exceedingly well-defined rather elliptical nebula, about 1' diameter, exceedingly condensed almost to the very edge, and gradually a little brighter to the centre. This is about 6' north of M Centauri.—I have strong suspicion that this is resolvable into stars	6
389	15	16	34	39 59	A very fine round pretty bright nebula, about 3' diameter, gradually brighter towards the centre, and well defined at the margin: this is resolvable. With a power of 260 it has a beautiful globular appearance. The stars are considerably scattered on the south side..	8
390	16	7	50	39 47	A very small nebula, about 8" or 10" diameter, with a very bright nucleus, or else a very minute star in a small nebula. I think the bright point is rather to the north side of the centre. There is a small star preceding, and another following, forming an obtuse triangle with the nebula .....	2
391	16	22	38	39 22	A very faint small nebula, about 30" diameter, with two brightish points in it, which I suspect to be exceedingly minute stars .....	2
392	16	23	23	39 24	A small faint nebula, about 25" diameter. These two nebulae are nearly in the same parallel .....	1
393	16	37	8	39 13	A small faint nebula, 12" or 15" diameter, with two small stars slightly involved in the following side .....	1
394	17	36	23	39 27	A very small round nebula, well defined, about 12" diameter, a star of the 12th or 14th magnitude near the preceding edge. The star is not involved.....	1
395	18	17	30	39 53	An extremely faint small round nebula, about 15" diameter, with two very minute points in it, which I suspect to be stars. The nebula is extremely faint, but pretty well defined.....	1
396	18	20	50	39 27	A small round faint nebula, with a bright point in the centre, a star of the 7th magnitude following .....	1
397	9	34	40	40 26	A very small faint round nebula, about 15" diameter, with two or three exceedingly small stars slightly involved in it, and another small star about 1' south of it .....	1
398	13	57	5	40 59	An extremely faint nebula, about 4' or 5' long, and 2' or 3' broad, elliptical in the parallel of the equator. This is easily resolvable into minute stars, with no sensible condensation or compression towards any point .....	1
399	15	42	47	40 12	A small faint rather elliptical nebula, about 12" diameter, with a bright point in the north preceding side of the centre. This precedes a very pretty double star .....	1

No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
400	16	22	48	40 42	A pretty large faint nebula, about 6' diameter, easily resolvable, round figure, with two rows of small stars following .....	2
401	16	23	17	40 32	A very faint cluster of small stars, with a branch extended; the head of the cluster is rich in small stars .....	3
402	17	11	9	40 11	A very fine round cluster of very small stars, slightly compressed to the centre, about 8' diameter .....	3
403	17	29	30	40 49	A small round faint nebula, about 25" diameter, very slightly bright towards the centre; a very small star is near the north edge, but is not involved, and a star of the 6th magnitude preceding.....	1
404	17	38	20	40 34	A very faint round nebula, about 1' diameter, following a pretty bright small star .....	1
405	18	55	24	40 48	A small faint nebula, about 25" diameter, with a small star preceding it	1
406	21	7	36	40 44	A small round nebula, about 12" or 15" diameter, very bright immediately at the centre, resembling a small star surrounded by an atmosphere. This is north following a star of the 6th magnitude....	1
407	22	50	55	40 1	A very small faint round nebula, with a bright point in the centre ...	1
408	0	47	35	41 38	A pretty large rather ill-defined nebula, of a round figure, with a bright point, or small nucleus near the centre; the nebula is extremely faint almost to the very centre. There is a star of the 8th or 9th magnitude near the south preceding side, but not involved .....	1
409	4	3	56	41 47	A very small and very faint round nebula, about 20" diameter .....	2
410	8	6	—	41 26	A curiously arranged group of pretty bright small stars of mixt magnitudes. This answers to the place of 310 Argûs (Bode), and is described by LACAILLE as nebula with five small stars forming the letter T in it. There is no nebulosity in this place. The diameter of the cluster may be about 12'.—Figure 16. is a very good representation of the group .....	2
411	12	55	30	41 31	A beautiful long nebula, about 10' long, and 2' broad, forming an angle with the meridian, about 30° south preceding and north following; the brightest and broadest part is rather nearer the south preceding extremity than the centre, and it gradually diminishes in breadth and brightness towards the extremities, but the breadth is much better defined than the length. A small star near the north, and a smaller star near the south extremity, but neither of them is involved in the nebula. I have strong suspicions that this nebula is resolvable into stars, with very slight compression towards the centre. I have no doubt but it is resolvable. I can see the stars, they are merely points. This is north following the 1st ζ Centauri.—Figure 17. ....	6
412	16	15	14	41 20	A pretty large round nebula, about 4' diameter, gradually a little brighter towards the centre. There is a small star on the north, and another on the south side, both involved. This is easily resolved into stars, with slight compression to the centre .....	4
413	16	29	0	41 35	A cluster of small stars, with a bright star in the preceding side. A very considerable branch or tail proceeds from the north side, which joins a very large cluster .....	3



No.	R			S.P.D.	Description of the Nebulae and Stars.	No. of Obs.
	h	m	s			
414	16	45	27	41 32	A very faint ill-defined nebula, about $1\frac{1}{2}'$ or $2'$ diameter, with two small stars in it; easily resolvable, with slight compression to the centre.	1
415	17	8	3	41 10	A small nebula, of a long oval figure, with a very small star in the centre, and three stars in a line following.....	1
416	17	10	15	41 25	A faint ray of nebula extended in the parallel of the equator, about $2\frac{1}{2}'$ or $3'$ in length, with two very minute stars in it: this is very feeble and ill-defined. A nebula precedes this.....	1
417	17	14	0	41 42	A rather faint nebula, of an irregular round figure, $4'$ diameter, slightly branched; easily resolvable into stars, with slight compression of the stars to the centre.....	6
418	17	33	56	41 38	An exceedingly faint nebula, about $2'$ long, and $1'$ broad, of an irregular figure, with two or three very minute points in it, which I suspect to be small stars.....	1
419	17	41	6	41 1	A very faint and very ill-defined small nebula.....	1
420	17	45	11	41 57	A very small round nebula, with a minute star north of it, but not involved. A nebula follows this.....	1
421	17	45	23	41 50	A very faint small round nebula.....	1
422	18	10	20	41 47	A faint round nebula, about $30''$ diameter. A pretty large nebula north following this.....	1
423	18	11	25	41 59	An angular group of extremely small stars resembling a faint nebula, with stars of some considerable magnitude in it; irregular figure, $4'$ or $5'$ long.....	3
424	18	16	50	41 23	A very faint small round nebula, with two very minute stars involved in it. This is north following $\zeta$ Telescopii, a dusky greenish star of the 5th magnitude.....	1
425	19	54	13	42 12	A very small faint nebula, about $15''$ diameter.....	1
426	3	38	18	42 8	A very faint nebula, about $1'$ diameter, rather elliptical in the parallel of the equator; with a brightish point or condensation of the nebulous matter, a little to the preceding side of the centre.....	2
427	3	46	45	42 7	A pretty large nebula, round figure, $2'$ or $3'$ diameter.....	2
428	3	47	37	42 0	An extremely faint ill-defined small nebula. A pretty large nebula precedes this.....	1
429	4	3	48	42 34	A very small faint round nebula.....	1
430	8	54	20	42 3	A group of very small stars of mixed magnitudes, irregular figure, about $3'$ diameter.....	1
431	13	56	—	42 35	A curiously curved line of small stars, of nearly equal magnitudes; two stars of 7th magnitude following.....	3
432	16	15	—	42 52	A cluster of very small stars following 47 Normæ.....	1
433	17	26	30	42 48	A round faint pretty well-defined nebula, $10''$ or $12''$ diameter, south preceding a star of the 7th magnitude.....	1
434	17	31	0	42 29	A star of the 7th magnitude, accompanied by several small stars. This answers to the place of 68 Aræ (Bode), but there is no nebula....	2

No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
435	17	31	23	42 37	A very faint small round nebula, very equally faint. A pretty bright small star following, distant about 1'. A star of the 7th magnitude about 7' south .....	1
436	18	11	24	42 0	A large faint nebula, of an irregular figure, 4' or 5' long; resolvable; mixed magnitudes .....	2
437	1	1	47	43 4	An extremely faint small nebula; round, with a very minute bright point in the centre .....	1
438	3	52	7	43 18	A very faint nebula, about 1' diameter; round figure.....	1
439	6	29	50	43 23	A faint small nebula, about 20" diameter, with a very small star in the north preceding side; the nebula is surrounded by six or seven small stars in the form of a circle, about 6' diameter .....	1
440	13	16	—	43 26	$\omega$ Centauri (Bode) is a beautiful large bright round nebula, about 10' or 12' diameter, easily resolvable to the very centre; it is a beautiful globe of stars very gradually and moderately compressed to the centre; the stars are rather scattered preceding and following, and the greatest condensation is rather north of the centre: the stars are of slightly mixed magnitudes, of a white colour. This is the largest bright nebula in the southern hemisphere .....	8
441	15	32	12	43 32	An exceedingly small faint nebula, 6" or 8" diameter, with a very minute star in the following margin, very much resembling a minute double nebula; but the following is a small star.....	1
442	16	34	50	43 24	Seven or eight small stars in a group, about 1' diameter, with a minute line of stars on the north side .....	2
443	17	16	25	43 32	A faint ill-defined small nebula, following a small star .....	1
444	20	32	20	43 4	A very small ill-defined nebula, with a very small star involved in the south preceding side .....	1
445	10	9	17	44 29	A pretty large pretty bright round nebula, 4' or 5' diameter, very gradually condensed towards the centre, easily resolved into stars; the figure is rather irregular, and the stars are considerably scattered on the south preceding side: the stars are also of slightly mixed magnitudes .....	5
446	11	3	55	44 21	A very minute star in the centre of a small round nebula, about 15" diameter; this has very much the appearance of a small star surrounded by an atmosphere. There is a similar small star near the following margin, not involved .....	2
447	15	8	12	44 52	A very small nebula, with a very minute star involved in the north side; the nebula is about 1' north of a star of the 9—10th magnitude....	1
448	17	42	20	44 7	A very small round faint nebula, about 15" diameter, very bright immediately at the centre; no star of any considerable magnitude in the field; this is in the milky way, and is very rich in small stars ..	1
449	19	3	36	44 49	A small faint round nebula, about 15" diameter, north following a star of the 10th magnitude; two bright stars in the field south.....	1
450	19	19	24	44 0	A very faint round nebula, about 25" diameter, south, preceding a star of the 6th magnitude.....	1

No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
451	20	12	16	44 37	An extremely small faint elliptical nebula, about 12" long and 8" broad, with a small bright point in the following extremity, which may be a star .....	1
452	5	29	5	45 14	A very faint small ill-defined nebula, with a very minute double star in it .....	1
453	8	44	0	45 10	A group of ten or twelve pretty bright small stars, south following 409 Argûs.....	1
454	16	37	23	45 33	A faint nebula, about 4' or 5' diameter, irregular round figure, easily resolvable into stars; with stars of larger magnitudes scattered in the preceding side of it .....	6
455	16	41	20	45 23	An extremely faint ill-defined nebula, easily resolvable into stars; this is in the milky way.....	1
456	16	49	—	45 31	A very large patch of strong nebula, about 20' long, and 16' broad, rich in small and extremely minute stars .....	2
457	17	23	40	45 22	A beautiful round nebula, about 5' diameter, with a bright round well-defined disk or nucleus, about 15" diameter, exactly in the centre; this has the appearance of a planet surrounded by an extremely faint diluted atmosphere; there is a small star involved in the faint atmosphere: the atmosphere is at least 6' diameter.—Figure 18. ....	7
458	17	30	51	45 57	A very faint nebula of some considerable extent; extended in the parallel of the equator; resolvable into extremely minute stars.....	2
459	17	40	20	45 2	A very extremely faint ill-defined nebula, south—following a star of the 7th magnitude .....	
460	17	45	30	45 54	A very faint nebula, extended about 2½' in length, oblique to the equator, with a bright point in each extremity: the northern, I think, is a very small star; but the southern of the two, or the one at the south following extremity, is a small nucleus or condensation of the nebulous matter. This follows 16 Telescopii.—Figure 19. ....	7
461	17	49	33	45 55	A faint round nebula, about 40" diameter, gradually a little brighter in the middle .....	1
462	17	51	17	45 21	A very small faint round nebula, about 12" diameter; a large nebula north preceding this .....	1
463	18	3	7	45 47	A small round pretty well-defined nebula, about 8" or 10" diameter: a very small star near the following edge, but not involved—preceding σ Telescopii.....	1
464	18	22	33	45 45	A very fine double nebula, very nearly equal, about 10" diameter; distance about 17"; position in the parallel of the meridian: a small star follows .....	1
465	18	38	0	45 7	An extremely faint nebula, rather of a fan shape, with the small end preceding; it may be 3' broad at the following extremity: there is a very minute bright point (or star) near the small end involved in the nebula .....	1
466	3	59	5	46 5	A small faint round nebula, about 25" diameter, a little brighter in the centre: a star of the 10th or 12th magnitude preceding the nebula. ....	1

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No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
467	5	9	25	46 38	An extremely faint nebula, about 50'' diameter, round figure.....	1
468	9	34	30	46 44	A very faint easily resolvable nebula, extended about 10' long, and 4' or 5' broad: no central condensation.....	1
469	14	22	15	46 36	An exceedingly faint extended nebula, about 10' long; rather ill-defined	1
470	16	29	53	46 59	A round nebula, about 3' diameter, slightly bright to the centre; easily resolvable; gradual central condensation evident.....	1
471	16	35	35	46 32	A very faint small nebula, about 15'' diameter; another small nebula north of this.....	2
472	17	11	30	46 45	A faint nebula, about 2' diameter, rather elongated, slightly bright towards the centre. I suspect this is resolvable: a line of small stars south.....	1
473	17	55	14	46 22	A very bright round highly condensed nebula, about 3' diameter. I can resolve a considerable portion round the margin, but the compression is so great near the centre, that it would require a very high power, as well as light, to separate the stars; the stars are rather dusky.....	5
474	17	58	7	46 31	A small faint elliptical nebula, about 20'' diameter.....	1
475	23	7	9	46 28	A small faint nebula, rather elongated in the parallel of the equator, about 30'' broad, and 40'' long; there is a pretty bright point situated near the centre of the nebula: a small star precedes it.....	4
476	23	10	58	46 45	A small faint round nebula, about 30'' diameter: a double nebula follows this.....	2
477	23	12	40	46 53	Two very small round nebulae, nearly the same R, and differing about 1' in polar distances.....	1
478	0	36	23	47 23	A faint ray of nebula, with two very small stars in it.....	1
479	1	28	15	47 40	A very faint nebula, of a round figure, with two or three minute stars in it near the margin.....	1
480	3	51	18	47 6	A very faint ill-defined nebula, with two or three very small stars in it, and a small star following.....	1
481	11	18	0	47 36	A cluster of stars, about 10' diameter, mixt magnitude. This precedes 25 Centauri (Bode.).....	4
482	13	14	44	47 45	A very singular double nebula, about 2½' long, and 1' broad, a little unequal: there is a pretty bright small star in the south extremity of the southernmost of the two, resembling a bright nucleus: the northern and rather smaller nebula is faint in the middle, and has the appearance of a condensation of the nebulous matter near each extremity. These two nebulae are completely distinct from each other, and no connection of the nebulous matters between them. There is a very minute star in the dark space between the preceding extremities of the nebula: they are extended in the parallel of the equator nearly.—Figure 20. is a good representation.....	7
483	16	28	7	47 3	A cluster of very minute stars, of a round figure, about 4' diameter, following v Normæ.....	3
484	16	36	3	47 2	A very small feeble nebula.....	1



No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
485	17	59	18	47 37	A round pretty well-defined faint nebula, about 45" diameter, north of a triangle of small stars.....	1
486	18	39	20	47 44	A very singular body resembling a star, with a very faint diluted atmosphere, 8" or 10" diameter; it is paler than a star of the same magnitude, and precedes a pretty bright star.....	2
487	3	11	20	48 14	A pretty bright round nebula, about 1½' diameter, very bright and condensed to the centre, and very faint at the margin; with a very small star about 1' north, but not involved.....	1
488	7	8	48	48 21	An extremely faint small round nebula.....	1
489	8	40	0	48 43	A very faint nebula, about 6' diameter, with small stars scattered in it—in the milky way.....	2
490	8	40	32	48 28	A very large cluster of pretty bright stars, coarsely scattered, about 1° diameter, following a star 5th magnitude, 396 Argûs (Bode.).....	2
491	9	7	16	48 55	A very small faint elliptical nebula, about 15" diameter; a very small star involved in the north extremity.....	1
492	10	24	47	48 43	A pretty large faint nebula, of an irregular figure, easily resolvable. n. preceding 557 Argûs.....	1
493	13	35	40	48 35	A very small faint round nebula, about 10" diameter, gradually a little brighter in the middle; a star of the 7th magnitude north of the nebula.....	1
494	14	8	7	48 29	A very small faint nebula, south preceding a star of the 10th magnitude.....	1
495	15	14	30	48 22	An exceedingly faint ray of nebula, about 1' long, extended in the direction of the meridian: a group of small stars south of the nebula.....	1
496	16	28	5	48 35	An extremely small feeble nebula.....	1
497	16	28	25	48 39	A very small round nebula, about 10" diameter.....	1
498	16	29	50	48 25	A very small round nebula, about 12" or 15" diameter. These three nebulae are in the field together, and another small nebula follows, north.....	1
499	16	42	—	48 25	A cluster of pretty bright stars of mixt small magnitudes, considerably congregated to the centre, about 10' diameter, with a large branch of very small stars extended on the north side; this is 150 Scorpii (Bode.).....	3
500	17	3	18	48 55	A small nebula, about 20" diameter, round, or rather elliptical, pretty well defined, with a bright point in the centre.....	1
501	17	37	48	48 41	Two very small stars, with a small nebula between them; both the stars are involved in the nebula, but the nebula is not in a line between the stars.....	1
502	17	38	0	48 26	A group of small bright stars of nearly equal magnitudes.....	2
503	17	40	27	48 13	A very small faint elliptical nebula, about 10" diameter, preceding a very small star, and following a group of stars.....	1
504	18	9	0	48 36	A small round rather well-defined nebula, about 20" diameter: a very	

No.	R	S.P.D	Description of the Nebulæ and Stars.	No. of Obs.
			small star is involved in the northern margin, and a small star precedes it, distant 1' .....	1
505	h m s 18 33 8	48 35	A small rather elliptical nebula, about 15" long, with a small bright point preceding the centre.....	1
506	18 33 13	48 30	A very faint nebula, about 25" diameter. I suspect a very feeble ray proceeding towards the other nebula, but not connected. This nebula is rather confused and ill-defined .....	1
507	0 6 50	49 50	A beautiful long nebula, about 25" in length; position north preceding, and south following, a little brighter towards the middle, but extremely faint and diluted to the extremities. I see several minute points or stars in it, as it were through the nebula: the nebulous matter of the south extremity is extremely rare, and of a delicate bluish hue. This is a beautiful object.—Figure 21. ....	4
508	5 7 0	49 45	An exceedingly bright, round, well-defined nebula, about 1½' diameter, exceedingly condensed, almost to the very margin. This is the brightest small nebula that I have seen. I tried several magnifying powers on this beautiful globe; a considerable portion round the margin is resolvable, but the compression to the centre is so great, that I cannot reasonably expect to separate the stars. I compared this with the 68 Conn. des Tens, and this nebula greatly exceeds the 68 in condensation and brightness .....	5
509	12 15 0	49 32	A very curiously branched group of small stars in the form of an inverted F, about 1° in length: a bright star of the 7th magnitude in the preceding extremity of the figure.....	1
510	12 38 10	49 44	A faint nebula, about 12" or 15" diameter, a little brighter to the centre, very faint at the margin .....	2
511	12 40 4	49 30	A pretty large faint nebula .....	1
512	14 18 8	49 16	A very small round nebula, about 14" diameter, a little brighter in the middle, with a very small star involved in the margin of the nebula .....	1
513	15 51 0	49 28	A very singular body; it is not larger than a star of the 12th magnitude. With a higher power it has a considerable hairy appearance; it is very different from a star of the same magnitude, and is not dusky, but rather pale; preceding $\omega$ Lupi about 6½' in R, and 6' or 7' north of the star .....	2
514	16 13 20	49 46	A round cluster of small stars of nearly equal magnitudes, about 12' diameter, considerably congregated to the centre, not rich in small stars. This answers to the place of 44 Normæ (Bode), but there is no nebula .....	5
515	16 33 29	49 30	A small faint round nebula, about 10" diameter, with a bright point or nucleus in the centre .....	1
516	18 0 55	49 4	A very faint small ill-defined nebula, with two very minute stars in it: they are not near the centre, but involved in the north and south sides: this is north preceding two stars of the 6th magnitude ....	1
517	18 40 48	49 19	A small faint nebula, rather elongated in the direction of the meridian. The south extremity is brightest and broadest, and about 15" in length .....	1

No.	R			S.P.D.		Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s	°	'		
518	22	46	8	49	24	A very faint nebula extended preceding and following, about $1\frac{1}{2}$ ' long, and 20" or 25" broad; a little brighter in the middle, or rather nearer the north preceding extremity; the south following extremity is very ill defined .....	2
519	2	27	7	50	4	A faint nebula, of an irregular round figure, about 30" diameter, north of a bright small star .....	1
520	16	43	16	50	50	A cluster or group of small stars, about 4' diameter, with branches extending south preceding, and north following, with considerable compression of the stars towards the centre of the group. This answers to the place of 155 Scorpii (Bode), but there is no nebula .....	3
521	16	50	0	50	34	Two rows or lines of pretty bright small stars in the parallel of the equator, with a multitude of minute stars resembling faint nebula, 5' diameter .....	2
522	17	5	44	50	44	An exceedingly faint nebula, about $1\frac{1}{2}$ ' long, and 1' broad, elliptical in the direction of the meridian, with two or three very small stars in it .....	4
523	17	40	18	50	58	A small round pretty well-defined nebula, about 10" diameter .....	1
524	17	43	4	50	21	An extremely faint nebula, about 40" diameter, following a pretty bright small star .....	1
525	17	50	30	50	13	A very small, very faint round nebula, with a pretty bright point, immediately at the centre .....	1
526	18	8	58	50	52	A small elliptical nebula, about 25" long, and 15" broad, preceding a small star .....	1
527	18	9	20	50	11	A faint round nebula, about 1' diameter .....	1
528	18	50	56	50	9	A very small round nebula, about 10" or 12" diameter .....	2
529	22	6	30	50	56	An extremely faint small nebula, 8" or 10" diameter. I think there is rather a brightish point in the preceding side; the nebula is south following a pretty bright small star .....	1
530	0	47	23	51	24	A pretty large faint nebula, irregular round figure, 6' or 7' diameter, easily resolvable into exceedingly minute stars, with four or five stars of more considerable magnitude; slight compression of the stars to the centre .....	3
531	5	0	23	51	55	A long or rather elliptical nebula, about 2' long, and 50" broad, a little brighter in the middle, and well defined. There is a group of small stars on the north side .....	2
532	5	2	50	51	37	An elliptical nebula, about $1\frac{1}{2}$ ' long, brightest and broadest in the middle, well defined. The preceding nebula and this, are very similar in appearance and brightness .....	1
533	5	13	17	51	54	An extremely small faint nebula, with a brightish point near the centre .....	1
534	5	52	50	51	59	A very small extremely faint nebula, 10" diameter .....	1
535	7	45	4	51	59	A pretty large faint nebula, easily resolvable into small stars, or rather a cluster of very small stars, with a small faint nebula near the north preceding side, which is rather difficult to resolve into exceedingly small stars. This is probably two clusters or nebula in the same line; the small nebula is probably three times the distance of the large nebula .....	5

No.	R			S.P.D.		Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s	°	'		
536	16	17	55	51	33	A round nebula, about 1' diameter, bright immediately at the centre, and very faint from the bright nucleus to the margin. Another observation makes the figure rather elliptical, with a bright nucleus . . . .	2
537	17	13	25	51	3	An extremely faint ill-defined nebula, extended in the direction of the meridian, about 4' or 5' long, and 35" broad; the brightest part is near the south following extremity. There are two small stars near the south extremity in a line parallel with the nebula . . . . .	1
538	17	21	30	51	23	An extremely faint nebula, about 3' or 4' diameter, with three minute stars in it . . . . .	1
539	17	45	20	51	21	A small faint nebula, about 15" diameter, round, pretty well defined, two bright stars south . . . . .	1
540	17	54	7	51	36	A very small round nebula, about 14" diameter, a little brighter to the centre . . . . .	1
541	18	3	53	51	57	A very small and very faint round nebula, with a bright point exactly in the centre, resembling a very small star surrounded by an atmosphere or burr . . . . .	2
542	18	12	43	51	54	A small round or rather elliptical nebula, preceding a small star of the 10th magnitude . . . . .	2
543	18	42	56	51	6	A very small round nebula, 10" or 12" diameter, pretty well defined, and sensibly brighter in the centre; in a line between two small stars . . . . .	3
544	19	15	0	51	24	A very small faint nebula, with a brightish point in the centre . . . . .	1
545	22	22	0	51	5	Six or eight pretty bright small stars in the form of the letter T, about 4' long.—Figure 22. . . . .	2
546	23	26	12	51	46	An extremely feeble nebula, ill defined; it appears rather elongated oblique to the equator; it is north following a star of the 7th magnitude, and also north of the small stars . . . . .	1
547	3	17	24	52	13	A small faint round nebula, about 15" diameter . . . . .	1
548	3	17	37	52	3	A rather bright round nebula, about 1½' diameter, gradually condensed to the centre. . . . .	2
549	5	2	27	52	17	A faint nebula, about 2½' long, and fully 1' broad, extended south preceding and north following; a very minute star near each extremity, not involved . . . . .	2
550	6	40	56	52	46	A very small faint round nebula, with a very small star near the centre. The star is not exactly in the centre. . . . .	1
551	15	31	12	52	2	Three or four small stars involved in faint nebula. I think there is rather a condensation of the nebulous matter near the following extremity . . . . .	1
552	15	35	3	52	50	A beautiful round pretty bright nebula, about 2' diameter, pretty well defined . . . . .	3
553	16	20	7	52	23	A very faint nebula of a round figure, about 2½' diameter, with two small stars in it . . . . .	1
554	16	35	16	52	44	A very fine bright round nebula, 50" diameter, gradually condensed to the centre . . . . .	1

No.	R h m s	S.P.D. ° ' "	Description of the Nebulæ and Stars.	No. of Obs.
555	16 53 20	52 17	Two very minute stars involved in a small faint nebula. This precedes a very curious line of small stars . . . . .	1
556	16 54 35	52 18	A curiously curved line of pretty bright small stars, with many very small stars mixt . . . . .	3
557	17 38 30	52 59	A small well-defined rather bright nebula, about 20" diameter; a very small star precedes it, but is not involved; following $\gamma$ Telescopii	5
558	17 48 0	52 12	A faint nebula, of an irregular round figure, about 2' diameter, with several extremely small stars in it . . . . .	1
559	18 53 0	52 2	A singular dark space in the heavens, of an irregular figure, about $1\frac{1}{2}^{\circ}$ long, and $1\frac{1}{2}^{\circ}$ broad; no stars except exceedingly minute stars in the greatest portion of this space. There is a bright star in each side . .	1
560	19 12 28	52 51	A very small star surrounded with faint nebula like an atmosphere; other stars in the field are not accompanied with this appearance; the nebula is very faint, and the star is very near the centre . . . . .	1
561	21 27 22	52 45	A small faint round nebula, 10" or 12" diameter . . . . .	1
562	3 37 39	53 14	A pretty large faint round nebula, about $3\frac{1}{2}'$ diameter, gradual slight condensation to the centre, very faint at the margin . . . . .	2
563	8 6 —	53 12	A large cluster of stars of mixt magnitude, rather extended figure, not rich in very small stars . . . . .	2
564	9 8 17	53 53	A pretty large faint nebula of a round figure, 6' or 8' diameter; the nebulosity is faintly diffused to a considerable extent. There is a small nebula in the north preceding side, which is probably a condensation of the faint diffused nebulous matter; the large nebula is resolvable into stars with nebula remaining . . . . .	2
565	13 0 17	53 15	A very small and very faint elliptical nebula, north preceding <i>m</i> Centauri (Bode); the nebula is in a line between two small stars, and is rather nearer the northern star of the two . . . . .	1
566	13 4 0	53 10	A very extensive cluster of stars of the 8th and 9th magnitudes, with several stars of the 7th magnitude in it; not rich in very small stars	1
567	17 7 40	53 27	A very faint small ill-defined nebula, with a small star in it, with two small stars south of it, but not involved . . . . .	1
568	17 28 30	53 6	A very faint cluster of very small stars, resembling faint nebula; the stars are considerably congregated to the centre, irregular round figure . . . . .	3
569	17 54 14	53 45	A pretty large faint nebula, round figure, 5' or 6' diameter, resolvable into very minute stars, with nebula remaining . . . . .	2
570	18 24 20	53 9	A very faint nebula, with an extremely faint ray or tail, about 4' long, proceeding from it south rather following; there are two very small stars slightly involved in the head, and also two very minute stars involved near the central line of the ray or tail.—Figure 23. . . . .	1
571	18 38 40	53 16	A pretty large faint nebula, ill defined, with a number of stars of small magnitude scattered in it . . . . .	1
572	18 45 53	53 23	A very small round nebula, with a very minute star in the north side . .	1
573	18 49 15	53 10	A beautiful bright round nebula, about $3\frac{1}{2}'$ diameter, moderately and	



No.	R	S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
			gradually condensed to the centre. This is resolvable. The moderate condensation, and the blueish colour of the stars which compose it, give it a very soft and pleasant appearance. This is rather difficult to resolve, although the condensation is not very great . . . .	6
574	h m s 3 31 20	° 54 23	A rather faint, pretty well-defined elliptical nebula, about 1' long, and 50" broad, a little brighter to the centre . . . . .	1
575	5 19 20	54 24	A very small extremely faint nebula, with a bright point or nucleus in the centre . . . . .	1
576	5 24 19	54 40	A faint small nebula, n. preceding $\epsilon$ Columbæ . . . . .	1
577	6 35 9	54 29	A very small elliptical nebula, about 15" or 20" diameter . . . . .	1
578	6 42 22	54 11	A pretty bright round nebula, 3' or 4' diameter, moderately condensed to the centre. This is resolvable into stars . . . . .	6
579	16 55 23	54 3	An extremely feeble small nebula, ill defined . . . . .	1
580	17 39 30	54 49	A very faint small nebula, rather extended . . . . .	1
581	17 43 35	54 32	A small round nebula, 10" diameter, bright at the centre . . . . .	1
582	18 11 40	54 2	A very minute group of small stars, about 1' diameter, with a bright star in the centre, and extremely minute stars mixt, resembling faint nebulae . . . . .	1
583	18 17 23	54 43	A very small exceedingly faint nebula, with a bright point a little on one side of the centre. The nebula is a very few seconds in diameter . . . . .	1
584	18 20 0	54 30	A very small nebula, 8" or 10" diameter, pretty well defined, bright at the centre . . . . .	1
585	18 26 52	54 53	A round well-defined nebula, about 45" diameter, moderately condensed very gradually to the centre . . . . .	4
586	19 2 47	54 58	A very small nebula, with a bright point near the centre, rather on the south side. I cannot say whether this be a star or not . . . . .	1
587	19 20 25	54 25	An extremely faint nebula, about 25" long and 8" or 10" broad, elongated in the parallel of the equator . . . . .	1
588	19 58 30	54 7	A very curious nebula, very faint and well defined, with an exceedingly bright point in the centre, resembling a small star surrounded by an atmosphere about 30" diameter; the bright point is exactly in the centre, a bright star 12' or 15' south . . . . .	1
589	20 3 7	54 29	A faint ray of nebula, about 30" or 40" long, with two very small stars in it; the stars are not in the centre, but nearer the south side . . . .	1
590	0 23 7	55 41	A faint round nebula, about 2' diameter . . . . .	1
591	3 25 4	55 36	A very faint small ill-defined nebula . . . . .	1
592	5 34 32	55 24	A small round pretty well-defined nebula; another similar small nebula north . . . . .	1
593	5 34 39	55 27	A small round rather well-defined nebula . . . . .	1
594	5 40 40	55 38	A small faint nebula, with a ray shooting out on the north side . . . . .	1
595	17 32 12	55 11	A round faint nebula, about 1' diameter . . . . .	1

No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
596	17	33	34	55 5	A faint ray of nebula, about 5' long and 30" broad, with three stars in it.—Figure 24 .....	2
597	17	40	0	55 8	A pretty large faint nebula, easily resolvable. This precedes a cluster of stars .....	1
598	18	30	14	55 46	A very small nebula, with a minute star in the preceding side, a bright star preceding .....	1
599	0	21	6	56 8	A very faint nebula, about 25" diameter, rather elliptical. North of $\gamma$ Caelæ sculptoris. There are four small stars south of the nebula in the form of a lozenge .....	2
600	4	5	56	56 38	An extremely faint ill-defined nebula, rather elongated in the direction of the meridian, gradually a little brighter towards the centre .....	1
601	5	17	11	56 17	A small round faint nebula, about 12" diameter, with a bright point in the centre .....	1
602	14	0	4	56 15	An exceedingly small faint nebula, a very few seconds in diameter, n. preceding $\delta$ 48 Centauri .....	1
603	15	44	23	56 56	A very small round nebula, north preceding $\xi$ Lupi, which is a very fine double star .....	1
604	16	42	56	56 33	A very small oval nebula, the north end is rather the brightest and broadest .....	1
605	17	35	—	56 0	The milky way for several degrees in this place is very beautiful; as seen through the telescope, the small patches of the nebulosity and the alternate dark spaces of the sky very much resemble small circumuli clouds .....	1
606	18	2	37	56 32	A faint nebula, about 1 $\frac{1}{4}$ ' long and 30" or 40" broad, with a considerable brightness near each end, and faint in the middle, resembling two small nebulæ joined .....	1
607	18	27	3	56 55	A rather bright well-defined round nebula, about 12" or 14" diameter, following a star of the 6th magnitude .....	2
608	23	50	0	56 29	A faint round nebula, about 2' diameter, with very slight condensation towards the centre; a double star is north preceding .....	2
609	8	36	20	57 55	A small round faint nebula. N. of L. Pyxidis .....	1
610	11	12	—	57 0	A faint nebula, of an irregular figure, extended about 6' in length ...	1
611	14	51	8	57 39	A very singular body resembling a star with a burr. The light is equal to that of a star of the 7th and 8th magnitude, and the diameter is not sensibly larger, with various magnifying powers. This has the appearance of a bright nucleus, surrounded by a strong brush of light; and the nebulosity surrounding the bright point has not that softness which nebulæ in general possess. I consider this different from nebulæ in general .....	4
612	17	30	—	57 47	A cluster of small stars of mixt magnitudes, about 15' diameter, irregular figure .....	2
613	18	22	10	57 28	A pretty bright round well-defined nebula, about 1 $\frac{1}{4}$ ' diameter, gradually condensed to the centre; there is a small star about 1' south of the nebula .....	4
614	18	33	24	57 34	A pretty bright round nebula, about 1 $\frac{1}{2}$ ' diameter, very much condensed to the centre .....	5

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No.	R			S.P.D.	Description of the Nebulæ and Stars.	No. of Obs.
	h	m	s			
615	19	8	9	57 28	A very small feeble ill-defined nebula .....	1
616	6	25	30	58 40	An ill-defined faint nebulosity of some considerable extent, with several small stars scattered in it .....	1
617	11	10	35	58 12	A very faint pretty large nebula, about 2' broad and 4' long, very faint at the edges. The brightest and most condensed part is near the south following extremity; a small star is involved in the north preceding extremity, and there are two small stars near the south extremity, but not involved .....	2
618	16	9	0	58 25	A very small star of the 14th magnitude, surrounded by a considerable atmosphere or nebulous appearance, about 8" diameter. The star is perfectly in the centre. There are two small stars of rather larger magnitude, south following .....	1
619	18	3	30	58 9	A pretty well-defined round nebula, about 2' diameter, slight condensation to the centre .....	2
620	19	30	54	58 35	A beautiful large round bright nebula, about 6' or 7' diameter, gradually condensed to the centre, easily resolvable.....	2
621	1	29	6	59 40	A very small round nebula, about 15" diameter, pretty well defined, bright at the centre .....	1
622	9	39	0	59 45	A faint elliptical nebula, 2½' long and 1½' broad, with a small star involved in the preceding margin.....	1
623	13	29	54	59 15	A very small and very bright nebula, very much resembling a small star, surrounded by a very strong burr; this is a singular body ..	2
624	18	46	7	59 18	A very beautiful nebula, with a very bright round well-defined disk or nuclei, about 15" diameter, surrounded by a gradually decreasing light or chevelure, about 1¼' diameter; this is exceedingly bright immediately at the centre .....	4
625	3	13	—	60 —	(This is the place nearly), a round nebula, about 2' diameter, very bright at the centre, and very faint from the centre to the margin, almost equally faint from the bright nucleus to the margin. There are two pretty bright small stars following the nebula rather north .	1
626	7	47	0	60 27	A cluster of small stars, of an irregular round figure, with faint nebula, easily resolvable. The 257 Argûs is south following.....	1
627	16	51	0	60 11	160 Scorpii (Bode) is a pretty bright round nebula, considerably condensed, and rather suddenly bright at the centre, pretty well defined at the margin .....	2
628	13	15	3	61 2	185 Centauri (Bode) is a very beautiful round nebula, with an exceedingly bright well-defined planetary disk or nucleus, about 7" or 8" diameter, surrounded by a luminous atmosphere or chevelure, about 6' diameter. The nebulous matter is rather a little brighter towards the edge of the planetary disk, but very slightly so. I can see several extremely minute points or stars in the chevelure, but I do not consider them as indications of its being resolvable, although I have no doubt it is composed of stars .....	5
629	17	8	25	61 55	A very small faint round nebula, about 8" or 10" diameter, bright in the centre. There is a very small star south of the nebula, distant about 10" from it, but is not involved or connected with the nebula	1

The Nebula Minor, to the naked eye, has very much the appearance of a small cirrus-cloud; and through the telescope, it has very much the appearance of one of the brighter portions of the milky way, although it is not so rich in stars of all the variety of small magnitudes, with which the brighter parts of the milky way in general abound, and therefore it is probably a beautiful specimen of the nebulosity of which the remote portion of that magnificent zone is composed.

Plate IV. is a very correct drawing of the nebula, which if faithfully represented by the engraver, will convey a better idea of it than I could possibly hope to do by words.

Its situation in the heavens is between  $0^{\text{h}} 27'$  and  $1^{\text{h}} 6'$  or  $7'$  in right ascension, and between  $74^{\circ} 30'$  and  $72^{\circ} 53'$  in south declination. Its position is oblique to the equator, south preceding and north following; and its form is nearly that of a parallelogram about two degrees long and fully one degree broad, and may be arranged according to its natural general appearance, into bright, faint, and very faint nebulosity. The bright nebula forms the south extremity and the preceding side, and is equal to the breadth of the nebula at the south end, and gradually diminishing in breadth and brightness till it terminates in an accumulation of the nebulous matter in the north extremity. The bright portion of the nebulous matter is not uniformly bright, but has something the appearance of small cumular clouds, although not very decidedly marked, and which I cannot well delineate. The faint nebula which is on the following side, is broad at the north extremity and gradually diminishing in breadth to where, with the other faint shade, it joins the following side of the brighter portion of the nebula, near the south extremity. The very faint shade is also on the following side, and extends from the northern to the southern extremity of the nebula, and is rather more strongly marked at what I would call its terminating border, than where it joins or blends with the faint shade; and I suspect it is faintly connected with a patch of faint nebula which follows at a little distance, and is represented in the figure.

There are two pretty bright small nebulæ situated in the following margin of the bright shade, and a considerable number of faint nebulæ and accumulations of the nebulous matter variously situated throughout, and also in the patch which follows; but they are described in the general catalogue.

The figure of the Nebula Major is so irregular, and divided into so many parcels, that without the assistance of letters of reference it will be impossible for me to attempt a description. However, the appearance and construction of the different nebulæ which compose it, are more minutely described in the general catalogue. I will here only attempt to describe the apparent connection of one portion or branch of the nebulous matter with another. I find the existence of extensively diffused faint nebulosity throughout a great portion of this quarter of the heavens, from the Robur Caroli to the Nebula Major, and I can even trace its existence in the vicinity of Nebula Minor.

The Nebula Major is situated between  $4^h 46'$  and  $6^h 3'$  in right ascension, and between  $66^\circ 30'$  and  $71^\circ 30'$  of south declination; but the body or principal portion of the nebula is situated between  $5^h 7'$  and  $5^h 40'$  in right ascension, and between  $69^\circ$  and  $71^\circ$  of south declination, and is composed of very strong bright nebula, very rich in small nebulæ and clustering stars of all the variety of small magnitudes: I compared this portion of the nebula with Sobieski's Shield, which in this latitude is near the zenith. The observation says, "The Nebula Major very much resembles the brightness in Sobieski's Shield; it is scarcely so large, but I think it is equally bright." Another observation says, "The ridge or brighter portion of Nebula Major is more condensed than the Shield." Plate V. is a correct representation of Nebula Major.

The bright ridge or body of the nebula is extended obliquely to the equator, north preceding and south following, and the following extremity breaks off rather suddenly, faint, decreasing in brightness in a south following direction to the distance of fully a degree and a half towards the star  $\beta$ , which is slightly involved in the narrow extremity: preceding the star marked  $\gamma$ , a considerable increase of the brightness of the nebulous matter takes place; another accumulation takes place at  $\delta$  about  $15'$  diameter. There is a small star north with a small nebula preceding, but neither of them are involved in the accumulation of the nebulous matter.  $\delta$  and  $\epsilon$  are connected by streams of unequal brightness,  $\epsilon$  is pretty large and is rich in small stars and nebulæ: opposite  $\delta$  and  $\epsilon$ , towards the principal body of the nebula, the nebulous matter is very faint and of unequal brightness;  $\epsilon$  is south following a beautiful group of nebulæ of various forms and magnitudes, on a ground of strong nebulosity common to all, with the 30 Doradus (Bode) in the centre.



South of the 30 Doradûs a pretty bright accumulation of the nebulous matter takes place, extended, preceding and following, and is joined by pretty strong nebula to the arm  $\alpha$ , which proceeds in a northerly direction from the body of the nebula; the bright star near the north extremity of the arm is not involved in the bright nebula. Between the arms  $\alpha$  and  $\lambda$  the nebula is very faint, and the bright accumulations of the nebulous matter on the north side are all connected together by nebulosity of various brightness, and are connected to the main body by the arms  $\alpha$  and  $\lambda$ ; and I strongly suspect the nebula at  $\varphi$  is connected by very faint nebula with the group surrounding the 30 Doradûs. The accumulation of the nebulous matter at  $\xi$  is connected with the preceding extremity of the body of the nebula, by nebula increasing in brightness towards the neck of the body, but I cannot say that the  $\psi$  is connected with the  $\xi$ . Two arms proceed from the neck towards the south, which are connected by faint nebula between them, which gradually increases in brightness towards the junction of the arms; between the arm  $\eta$  and the body the nebulosity is faint, of various shades of brightness, and from the arms  $\eta$  and  $\nu$ , to the head  $\xi$ , the nebulosity is of various degrees of brightness.

I have made a very good general representation of the various appearances of the milky way, from the Robur Caroli to where it crosses the zenith in Scorpio. Plates VI. VII. and VIII. This was generally made by the naked eye, except in particular places where I suspected an opening or separation of the nebulous matter, when I applied the telescope. However, the dark space on the east side of the Cross, or the black cloud as it is called, is very accurately laid down by the telescope: the darkness in this space is occasioned by a vacancy or want of stars; it contains only two or three of the 7th magnitude, and very few of the 8th or 9th magnitude. I may here remark that the Nebula Minor is not so bright as the Nebula Major.

Neither of the two nebulæ, Major and Minor, are at present in the place assigned to them by LACAILLE; and it has been suspected that nebulous appearances change their form and also their situation. Yet, although the situation of these nebulæ, as given by LACAILLE and compared with their present situation, would be favourable to such a surmise, still we must consider the dimensions of the instruments with which he made his observations, and make a reasonable allowance.

However, the 30 Doradûs is at present involved in pretty strong and pretty bright nebula, and is also situated very near the brightest part of the Nebula Major; and it would be singular if its relative situation was the same when LACAILLE observed it as it at present is; that he should have assigned to it a place in the Dôrado and not in the Nebula Major, to which, from its nature, it was not only nearly allied, but in which it was actually involved. This circumstance, it must be confessed, is favourable to the conjecture; and the 47 Toucani is similarly situated, with respect to distance, from the Nebula Minor, although it is not involved in nebulosity or connected with the nebula.

When reflecting on these circumstances, I was led to examine the present state of these nebulæ, and find that scarcely any nebulæ exist in a high state of condensation, and very few in a state of moderate condensation towards the centre. A considerable number appear a little brighter towards the centre, and several have minute bright points immediately at the centre. Others have small or very minute stars variously situated in them, but many of those bright points in, or near, the centre may be stars, for the Nebula Major in particular is very rich in small stars. But the greater number of the nebulæ appear only like condensations of the general nebulous matter, into faint nebulæ of various forms and magnitudes, generally not well defined; and many of the larger nebulous appearances are resolvable into stars of mixed small magnitudes; and a great portion of the large cloud is resolvable into innumerable stars of all the variety of small magnitudes with strong nebula remaining, very similar to the brighter parts of the milky way. And whether the remaining nebulous appearance may not be occasioned by millions of stars disguised by their distance, is what I cannot say.

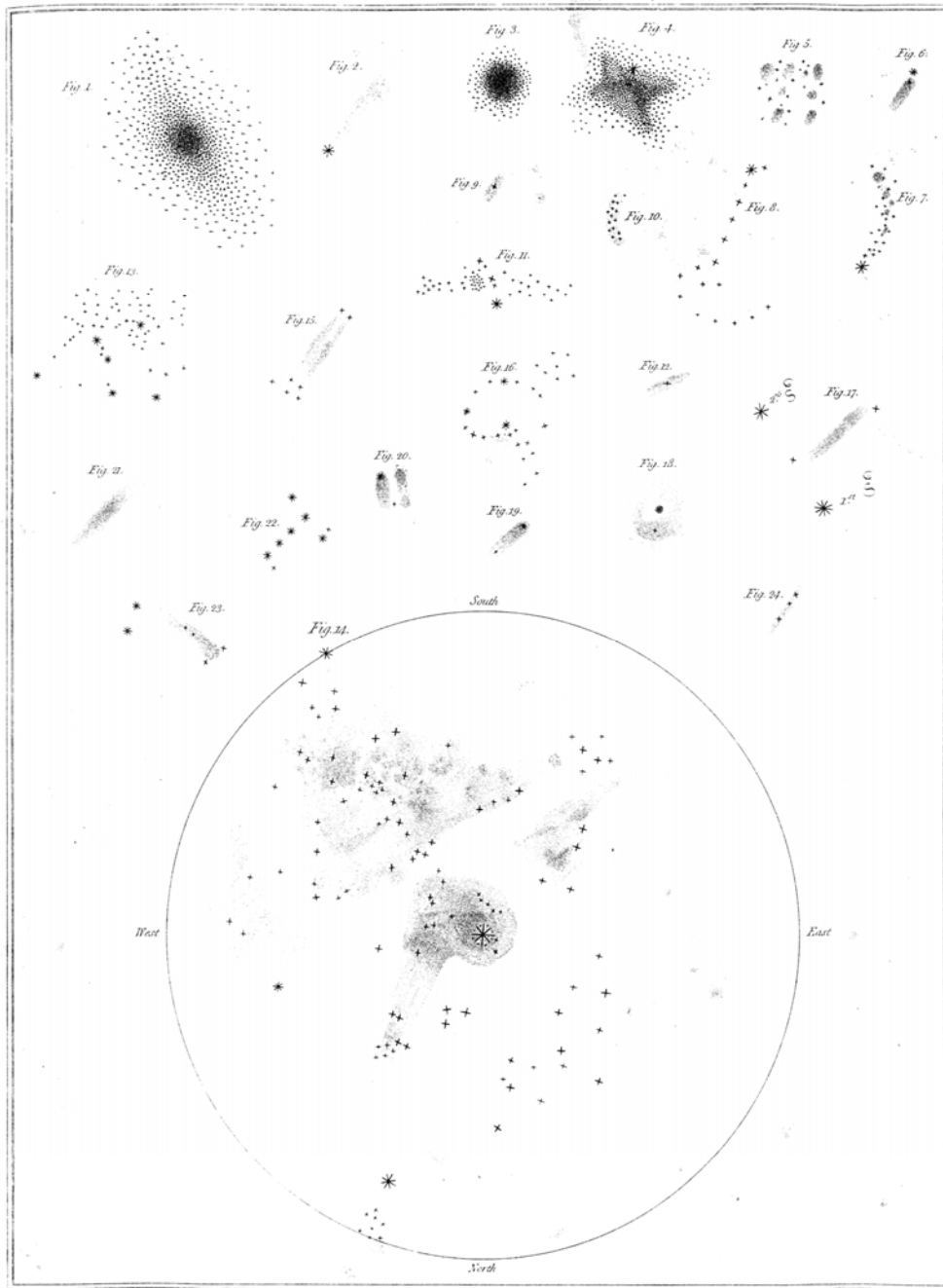
But a critical examination of these nebulæ would not only be a valuable treasure for the present generation to possess, but an invaluable inheritance for them to transmit to posterity. For it must be by the comparison of observations, made at distant periods of time, that we can draw any satisfactory conclusions concerning the breaking up or the greater condensation of the nebulous matter. It seems beyond a doubt that stars must assume a nebulous appearance when situated at immense distances; but whether all nebulous appearances are occasioned by stars, is a problem apparently beyond the reach of man to resolve, without the assistance of analogy, which ought not to be

trusted too freely, especially with objects almost equally beyond the reach of our hands and telescopes. Several of the very faint and delicate nebulae can be resolved into stars, and also many of the brighter nebulae are composed of stars: but there are a greater number which have not yet been resolved or shown to consist of stars; and it is not improbable, that "shining matter may exist in a state different from that of the starry."

JAMES DUNLOP.

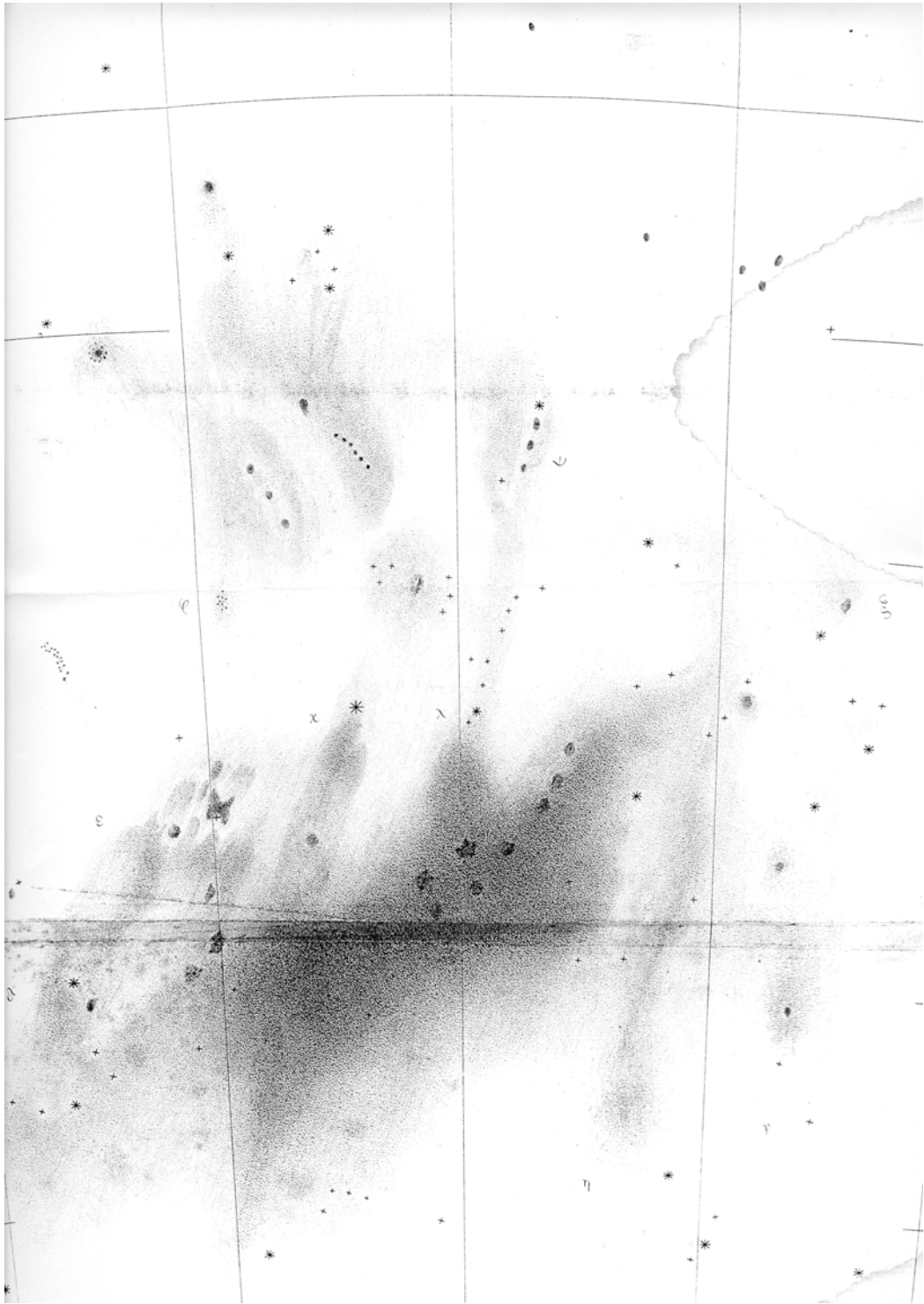
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P.S. Plate IX. has been added, at the suggestion of Mr. HERSCHEL, to illustrate the distribution of the Southern Nebulae. The nebulae are laid down without any regard to their form, magnitude, brightness, or nature; and but little to their strict places, only so far as to cause every rectangular space on the map, which occupies one degree in Polar distance and one hour in Right ascension, to contain the same number of nebulae as actually occur in the heavens, according to the observations detailed in this paper; the object of the plate being solely to give an idea of their arrangement generally in the heavens.

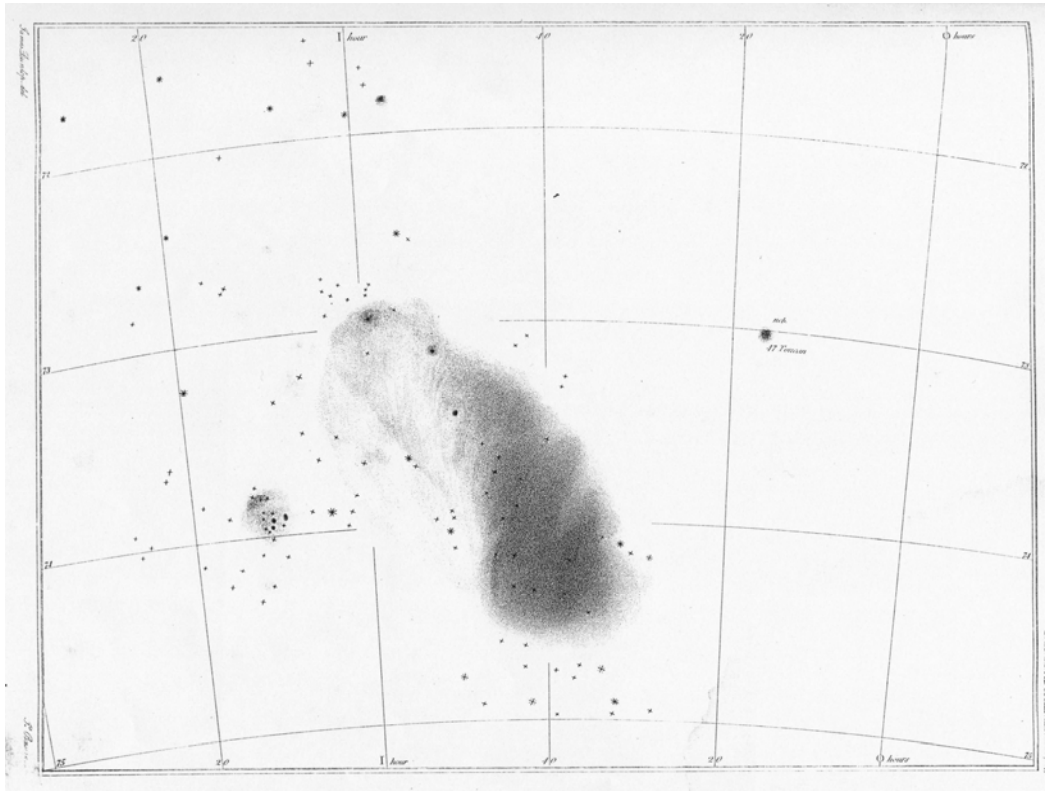


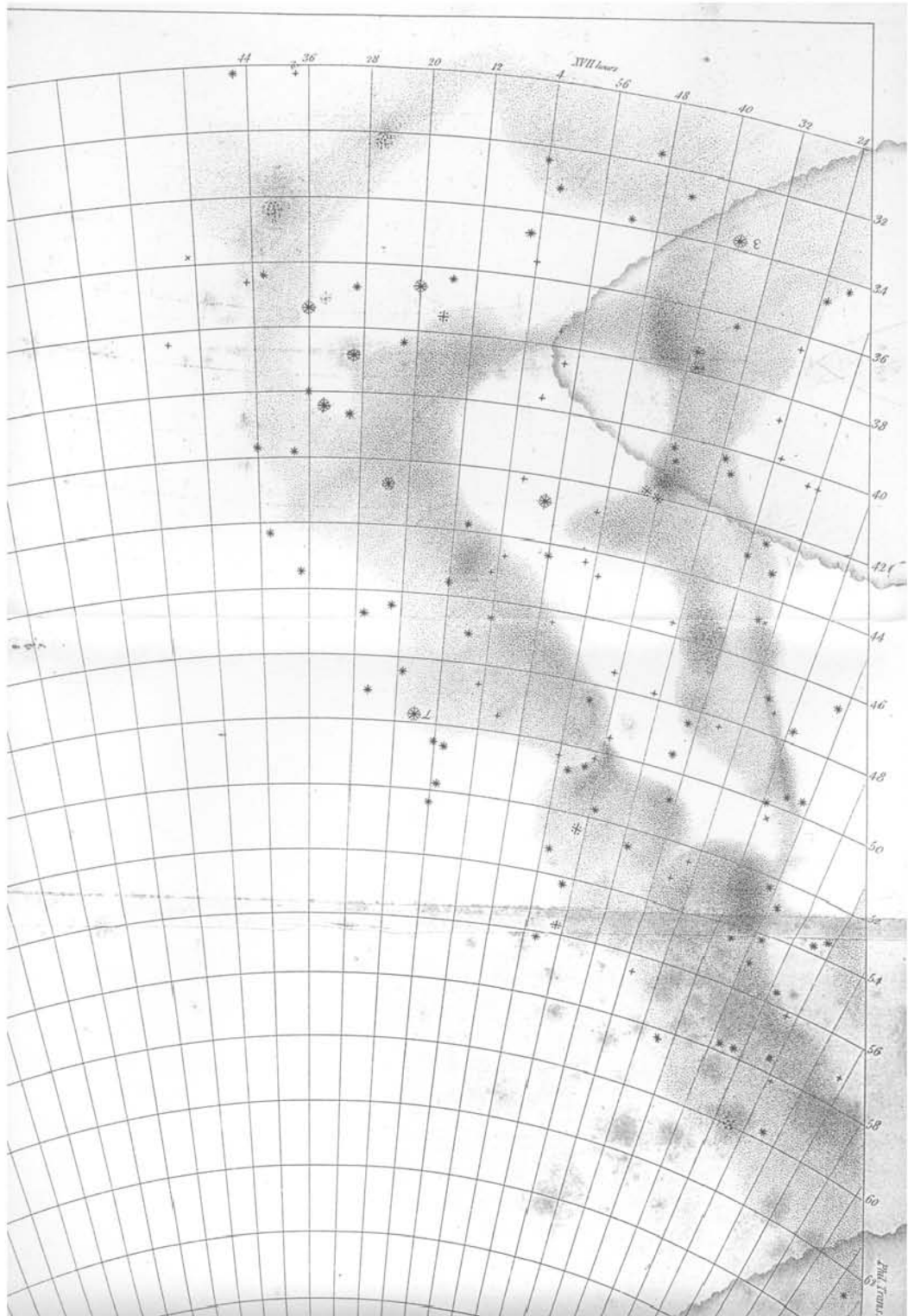
Samuel Langley, del.

J. A. Mearns, sculp.









## APPENDIX D – J2000 COORDINATES FOR THE DUNLOP CATALOGUE

On the accompanying CD-ROM, the Excel file named ‘J2000 Coordinates Dunlop Catalogue’ lists all 629 objects in the Dunlop catalogue with the original coordinates precessed to J2000 in decimal form.

The table also gives the identification of the object, where known, and for those objects:

1. The ESO catalogue Right Ascension and Declination as a decimal value
2. The difference between the Dunlop position and the ESO position, in the sense ESO – Dunlop for Right Ascension and Declination in arc-minutes
3. The radial distance (radius) in arc-minutes of the Dunlop position from the ESO position.

This file contains the information used for the statistical analyses done in this thesis, using the 404 objects with known ESO Right Ascension and Declination and the 354 objects where the radial distance is less than 30 arc-minutes.

Part of this file, the first 20 entries, is reproduced below.

Dun #	Dun RA J2000	Dun dec J2000	ID	ESO RA J2000 (hours)	ESO dec J2000 (degrees)	RA (ESO-Dun) (arc-min)	dec (ESO-Dun) (arc-min)	Radius (arc-min)
1	4.1062	-77.3211	D*	4.4108	-77.3333	60.1247	-0.7350	60.1292
2	0.6652	-73.3631	222	0.6789	-73.3833	3.5355	-1.2120	3.7375
3	0.7925	-73.0689	249	0.7592	-73.0667	-8.7274	0.1368	8.7284
4	0.8103	-73.1199	261	0.7744	-73.1000	-9.3773	1.1913	9.4526
5	0.8873	-73.2840	290	0.8539	-73.1500	-8.7199	8.0420	11.8621
6	0.8934	-73.4544	294	0.8847	-73.3667	-2.2356	5.2637	5.7187
7	1.2390	-73.3082	456	1.2289	-73.2833	-2.6176	1.4910	3.0124
8	1.2524	-73.2793	460	1.2442	-73.2667	-2.1274	0.7557	2.2576
9	1.2871	-73.3521	465	1.2614	-73.3333	-6.6297	1.1283	6.7251
10	1.3056	-73.2337	456	1.2289	-73.2833	-19.8581	-2.9793	20.0804
11	1.3410	-73.1667	??					
12	1.3492	-73.2174	exists					
13	1.3509	-73.2676	exists					
14	1.3561	-73.3681	D*					
15	1.4021	-73.2622						
16	1.4441	-73.3761	L104	1.4167	-73.3167	-7.0977	3.5662	7.9432
17	1.5018	-73.5717	602	1.4906	-73.5500	-2.8726	1.3012	3.1536
18	0.4043	-72.0547	104	0.4014	-72.0667	-0.8116	-0.7188	1.0841
19	0.7614	-73.0174	249	0.7592	-73.0667	-0.5835	-2.9548	3.0119
20	0.7730	-72.9180	L 40					

## APPENDIX E – INTRODUCTION TO THE DUNLOP DOUBLE STAR CATALOGUE

This first page of the Dunlop double star catalogue, *Approximate Places of Double Stars in the Southern Hemisphere*, published in the Memoirs of the Astronomical Society of London, vol. 3, page 257 is relevant as it describes the observing technique used by Dunlop to make both this catalogue and the catalogue of nebulae and clusters (Appendix C). Here again the handwritten notation was done by Dunlop.

*W. Patrick Esq.  
with James Dunlop's  
Respectful Complts*

XVII. *Approximate Places of Double Stars in the Southern Hemisphere, observed at Paramatta in New South Wales. By JAMES DUNLOP, Esq. In a Letter addressed to Sir T. MACDOUGAL BRISBANE, K.C.B. &c.*

Read May 9, 1828.

SIR,

IN presenting this list of double stars, it may be necessary for me to make some apology for its imperfect state, as regards the true apparent distance and position of a great many of the double stars, the situation of which it points out in the heavens.

You are aware that during your administration of the government of the colony of New South Wales, my time and attention were wholly devoted, in your employ, to the Paramatta observatory in the miscellaneous observations which occurred; and principally in observing the right ascensions and polar distances of the fixed stars, thereby collecting materials towards the formation of a catalogue of the stars in that hemisphere (which materials have been presented by you to the Royal Society of London): and your departure from the colony alone prevented me from pursuing that branch further.

Finding myself in possession of reflecting telescopes, which I considered capable of adding considerably to our knowledge of the nebulae and double stars in that portion of the heavens, I resolved to remain behind to prosecute my favourite pursuits, in collecting materials towards the formation of a catalogue of the nebulae and double stars in that hemisphere, and any other object which might have attracted my attention.

The nebulae being a primary object with me, I devoted the whole of the favourable weather in the absence of the moon to that department, and the moonlight, in general, was allotted to the observations of double stars; a portion only of which I have been able to subject to the various measurements necessary for the accurate determinations of their relative distances and positions.

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