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# The Caldwell Catalogue on Microsoft Access

The Caldwell Catalogue is a list of 109 deep-sky objects devised by the late Sir Patrick Moore which was first published in 1995.

It is similar, in concept, to the Messier Catalogue but it also features deep-sky objects in the Southern Celestial Hemisphere which are not visible from the UK.

If you are au fait with MS Access you will be able to apply the search and query tools directly to the programme file to investigate aspects of the Caldwell Catalogue.

Some demonstrations on how the file can be used to study the Caldwell Catalogue have been given in this tutorial so that people who do not have the database can still benefit from its features.

### Types of Information (Database Fields)

Caldwell Label: Caldwell Number:	C 1 to C109 In numerical form to facilitate listing in order.	Popular Name: Alternative Nam	e:	Constellation: Constellation Rai	nk: Numerical label
NGC Number:	The New General Catalogue Number is given where appropriate.	Type: Object typ	oe	Type Details:	
		Main Database:	This gives the main database of which the object is a member.		Using the SIMBAD database to check data.
		Magnitude:			
		Distance:	Using lightyears		
Right ascension a	nd declination for J2000 epoch.				
Right ascension a	nd declination for Christmas Australis (1 am	BST 25 <sup>th</sup> June 202	21)		
	ar this highlights cases where there are signi- ation from different sources.	ficant differences			
The form in the d	atabase called "Caldwall Catalogue" chows t	hicinformation			

The form in the database called "Caldwell Catalogue" shows this information ...

The Caldwall Catala area	
The Caldwell Catalogue	
Caldwell Label: C1   Caldwell Number: 1   Alternative   NGC Number: 188     Type:   Open star cluster   Type Details:   II 2r   Main Database:   Star Clusters   SIMBAD Details:     Magnitude:   8.1   Distance (Ly):   7507.3	
RA Hours J2000:       RA Mins J2000:       RA Secs J2000:       Dec Degs J2000:       Dec Mins J2000:       Dec Secs J2000:         0       48       25.92       85       15       18         RA Hours Xmas A:       RA Mins Xmas A:       RA Secs Xmas A:       Dec Degs Xmas A:       Dec Mins Xmas A:       Dec Secs Xmas A:         0       50       47.2       85       22       25.1         Notes:       Distance 4800 ly (Wikipedia)       Unikipedia)       Unikipedia       Unikipedia	
Record: H     I of 109     H     K     No Filter     Search       Form View     Image: Book of the search     Image: Book of the search     Image: Book of the search	

 $\uparrow$  Click on the arrow keys to show different Caldwell objects.

#### 1. Listing the Objects in Descending Order of Angle of Declination.

It is claimed that the numerically labelled objects in the Caldwell Catalogue are in descending order of angle of declination. Is this actually the case?

Use the query "Coordinates J2000" which lists the Caldwell Objects in descending order of angle of declination.

Coordinates	(J2000)							
Caldwell 👻	Popular Name 🚽 👻	RA Hours J2000 👻	RA Mins J2000 👻	RA Secs J2000 👻	Dec Degs J2000 🔻	Dec Mins J2000 👻	Dec Secs J2000 👻	Constellation $\cdot$
1	Polarissima Cluster	0	48	25.92	85	15	18	Cepheus
2	Bow-Tie Nebula	0	13	1.02	72	31	19.1	Cepheus
3		12	16	42.12	69	27	45.3	Draco
4	Iris Nebula	21	1	36.89	68	9	47.9	Cepheus
5	Maffei 1 Group	3	46	48.52	68	5	46	Camelopardalis
6	Cat's Eye Nebula	17	58	33.43	66	37	59.5	Draco
7		7	36	51.4	65	36	9.2	Camelopardalis
8		1	29	31.2	63	18	7.2	Cassiopeia
9	Cave Nebula	22	57	17	62	28	32.9	Cepheus
10	Lawnmower Cluster	1	46	8.89	61	14	6	Cassiopeia
11	Bubble Nebula	23	20	48.29	61	12	6.1	Cassiopeia
12	Fireworks Galaxy	20	34	52.34	60	9	13.3	Cygnus
13	Dragonfly Cluster	1	19	35.04	58	17	13.2	Cassiopeia
14	Double Cluster	2	19	0.01	57	7	40.8	Perseus
15	Blinking Planetary Nebula	19	44	48.16	50	31	30.3	Cygnus
16		22	15	7.92	49	53	52.8	Lacerta
17		0	33	12.13	48	30	31.5	Cassiopeia
18		0	38	57.98	48	20	14.6	Cassiopeia
19	Cocoon Nebula	21	53	24.01	47	16	1.2	Cygnus
20	North America Nebula	20	58	47.05	44	19	48	Cygnus
21		12	28	11.12	44	5	36.8	Canes Venatici
22	Blue Snowball	23	25	53.59	42	32	6	Andromeda
23		2	22	32.91	42	20	54	Andromeda
24	Perseus A	3	19	48.17	41	30	42.1	Perseus
25	Intergalactic Wanderer	7	38	8.52	38	52	54.9	Lynx
27	Crescent Nebula	20	12	6.96	38	21	18	Cygnus
26		12	17	29.66	37	48	25.6	Canes Venatici
28		1	57	41.04	37	47	6	Andromeda
29		13	10	56.32	37	3	32.2	Canes Venatici

Note that C26 and C27 are out of order!

aldwell 👻	Popular Name 🚽 👻	RA Hours J2000 👻	RA Mins J2000 👻	RA Secs J2000 👻	Dec Degs J2000 🔻	Dec Mins J2000 👻	Dec Secs J2000 👻	Constellation
30	Deer Lick Group	22	37	4.1	34	24	57.3	Pegasus
31	Flaming Star Nebula	5	17	24	34	22	48	Auriga
32	Whale Galaxy	12	42	8.01	32	32	29.4	Canes Venatici
33	East Veil Nebula	20	56	18.97	31	44	34.8	Cygnus
34	Filamentary Nebula	20	45	38	30	42	29.9	Cygnus
35	Coma B	13	0	8.1	27	58	37.3	Coma Berenices
36	Koi Fish Galaxy	12	35	57.69	27	57	35.1	Coma Berenices
37	10 Vulpeculae Cluster	20	12	0.96	26	28	40.8	Vulpecula
38	Needle Galaxy	12	36	20.81	25	59	14.6	Coma Berenices
39	Eskimo Nebula	7	29	10.77	20	54	42.5	Gemini
40		11	20	3.8	18	21	24.5	Leo
42		21	1	29.47	16	11	16.5	Delphinus
43	The Little Sombrero Galaxy	0	3	14.95	16	8	42.8	Pegasus
41	Hyades	4	27	0	15	52	0.1	Taurus
44	Superman Galaxy	23	4	56.67	12	19	22.4	Pegasus
45		13	37	32.07	8	53	6.2	Bootes
46	Hubble's Variable Nebula	6	39	9.95	8	44	9.7	Monoceros
47		20	34	11.37	7	24	16.1	Delphinus
48		9	10	20.12	7	2	16.5	Cancer
49	Rosette Nebula	6	30	28.81	5	3	0	Monoceros
50	Rosette Nebula	6	31	54.96	4	56	31.2	Monoceros
51		1	4	47.81	2	7	4	Cetus
52		12	48	35.91	-5	-48	-3.1	Virgo
53	Spindle Galaxy	10	5	13.98	-7	-43	-6.9	Sextans
54		8	0	0.96	-10	-46	-12	Monoceros
55	Saturn Nebula	21	4	10.88	-11	-21	-48.3	Aquarius
56	Skull Nebula	0	47	3.34	-11	-52	-18.9	Cetus
57	Barnard's Galaxy	19	44	56.2	-14	-47	-51.3	Sagittarius
58	Caroline's Cluster	7	17	42.97	-15	-38	-31.2	Canis Major

Note that C41 (The Hyades) is out of place.

Caldwell 👻	Popular Name 🚽	RA Hours J2000 👻	RA Mins J2000 👻	RA Secs J2000 👻	Dec Degs J2000 🕞	Dec Mins J2000 👻	Dec Secs J2000 👻	Constellation
59	Ghost of Jupiter Nebula	10	24	46.11	-18	-38	-32.6	Hydra
60	Antennae	12	1	53.01	-18	-52	-3.3	Corvus
<b>61</b> /	Antennae	12	1	53.69	-18	-53	-8.2	Corvus
62	Burbidge Chain	0	47	8.56	-20	-45	-37.4	Cetus
63	Helix Nebula	22	29	38.54	-20	-50	-13.6	Aquarius
64	Pirate's Jewels Cluster	7	18	41.04	-24	-57	-18	Canis Major
65	Sculptor Galaxy	0	47	33.14	-25	-17	-19.7	Sculptor
66		14	39	36.53	-26	-32	-18	Hydra
67		2	46	19.06	-30	-16	-29.7	Fornax
68	R CrA Nebula	19	1	46.4	-36	-57	-40	Corona Australi
69	Bug Nebula	17	13	44.2	-37	-6	-15.9	Scorpius
70	Southern Pinwheel Galaxy	0	54	53.48	-37	-41	-3.8	Sculptor
71	Electric Guitar Galaxy	7	52	10.08	-38	-31	-48	Puppis Australi
72	String of Pearls	0	14	53.61	-39	-11	-47.9	Sculptor
73		5	14	6.77	-40	-2	-47.6	Columba
74	Eight-Burst Planetary Nebula	10	7	1.77	-40	-26	-11.1	Vela
75		16	25	19.92	-40	-39	-10.8	Scorpius
76	Northern Jewel Box Cluster	16	54	8.51	-41	-49	-36	Scorpius
77	The Hamburger Galaxy	13	25	27.62	-43	-1	-8.8	Centaurus
78	Cacciatore Cluster	18	8	2.36	-43	-42	-53.6	Corona Australi
79		10	17	36.83	-46	-24	-44.9	Vela
80	Omega Cen Cluster	13	26	47.29	-47	-28	-46.1	Centaurus
81		17	25	29.11	-48	-25	-19.8	Ara
82		16	41	19.92	-48	-45	-46.8	Ara
83	The Tweezers Galaxy	13	5	27.28	-49	-28	-4.4	Centaurus
84		13	46	26.81	-51	-22	-27.3	Centaurus
85	Omicron Velorum Cluster	8	40	31.92	-53	-1	-58.8	Vela
86		17	40	42.09	-53	-40	-27.6	Ara
87		3	12	16.21	-55	-12	-58.4	Horologium

All in order!

90 91 Wish 92 eta C	orma Cluster hing Well Cluster Carinae Nebula o Globular Cluster	RA Hours J2000 • 15 16 9 11 10	5 18 21 5	31.21 49.93	-55 -57 -58	-35 -56 -18	-42 -6 -40.7	Constellation Circinus Norma Carina
89 S Nor 90 91 Wish 92 eta C 93 Pavo	hing Well Cluster Carinae Nebula o Globular Cluster	16 9 11 10	18 21 5	49.93 25.34 39.12	-57 -58	-56 -18	-6 -40.7	Norma
90 91 Wish 92 eta C 93 Pavo	hing Well Cluster Carinae Nebula o Globular Cluster	9 11 10	21 5	25.34 39.12	-58	-18	-40.7	
91 Wish 92 eta C 93 Pavo	Carinae Nebula o Globular Cluster	11 10	5	39.12				Carina
92 eta C 93 Pavo	Carinae Nebula o Globular Cluster	10			-58	45		
93 Pavo	o Globular Cluster		44	10.01		-45	-10.8	Carina
		10		19.01	-59	-53	-21.1	Carina
94 Jewe		19	10	52.12	-59	-59	-4.4	Pavo
	el Box	12	53	38.88	-60	-21	-43.2	Crux
95		16	3	17.04	-60	-25	-55.2	Triangulum Au
96 Diam	mond Cluster	7	58	4.08	-60	-45	-10.8	Carina
97 Pear	rl Cluster	11	36	18	-61	-36	-54	Centaurus
99 Coals	lsack Nebula	12	50	0.01	-62	-30	0	Crux
98 Coals	Isack Cluster	12	42	18	-62	-59	-42	Crux
100 Runn	ning Chicken Nebula	11	38	20.41	-63	-22	-22.1	Centaurus
101		19	9	46.1	-63	-51	-27.2	Pavo
102 Sout	thern Pleiades	10	42	58.08	-64	-24	0	Carina
103 Tarar	antula Nebula	5	38	42.01	-69	-6	0	Dorado
104		1	3	14.27	-70	-50	-55.6	Tucana
105 The S	Southern Butterfly	12	59	33.92	-70	-52	-35.4	Musca
106 47 Tu	ucanae	0	24	5.36	-72	-4	-53.2	Tucana
107		16	25	48.12	-72	-12	-7.9	Apus
108		12	25	45.43	-72	-39	-32.7	Musca
109		10	9	20.91	-80	-51	-30.7	Chamaeleon

The Coalsack Nebula and the Coalsack Cluster are not in order.

# 2. Constellations

The following table shows how the 109 Caldwell objects are distributed across various constellations.

Constellation	Number of Caldwell Objects	Constellation	Number of Caldwell Objects	Constellation	Number of Caldwell Objects
Draco	2	Virgo		Corona Australis	2
Camelopardalis	2	Scorpius	3	Ara	3
Cassiopeia	6	Sagittarius	1	Norma	1
Cepheus	4	Aquarius	2	Centaurus	6
Lacerta	1	Taurus	1	Crux	3
Cygnus	7	Gemini	1	Carina	5
Bootes	1	Cancer	1	Vela	3
Canes Venatici	4	Leo	1	Puppis (Australis)	1
Lynx	1	Sextans	1	Columba	1
Auriga	1	Corvus	2	Dorado	1
Perseus	2	Hydra	2	Horologium	1
Andromeda	3	Monoceros	4	Tucana	2
Pegasus	3	Canis Major	2	Pavo	2
Delphinus	2	Cetus	3	Triangulum Australe	1
Vulpecula	1	Fornax	1	Circinus	1
Coma Berenices	3	Sculptor	3	Musca	2
				Apus	1
				Chamaeleon	1
				TOTAL	109

#### 3. Listing the Objects in Ascending Order of Magnitude Value.

Use the query "Magnitude" which lists the Caldwell Objects in ascending order of magnitude value. (That is, the objects get dimmer as the list goes on.)

Magnitude									
Caldwell 👻		- Magnitude -		RA Mins J2000 👻	RA Secs J2000 👻	Dec Degs J2000 🔹	Dec Mins J2000 👻	Dec Secs J2000 👻	Constellation
41	1 Hyades	0.5		1 27	0	15	52		Taurus
14	4 Double Cluster	3.8	3 2	2 19	0.01	57	7	40.8	Perseus
20	0 North America Nebula	4	L 20	) 58	47.05	44	19	48	Cygnus
64	4 Pirate's Jewels Cluster	4.1	7	7 18	41.04	-24	-57	-18	Canis Major
50	0 Rosette Nebula	4.8	6	5 31	54.96	4	56	31.2	Monoceros
28	3	5.7	7 1	L 57	41.04	37	47	6	Andromeda
71	1 Electric Guitar Galaxy	5.8	3 7	7 52	10.08	-38	-31	-48	Puppis Australi
31	1 Flaming Star Nebula	6	i 5	5 17	24	34	22	48	Auriga
16	ō	6.4	22	2 15	7.92	49	53	52.8	Lacerta
13	3 Dragonfly Cluster	6.4	l 1	l 19	35.04	58	17	13.2	Cassiopeia
4	4 Iris Nebula	6.8	3 21	1	36.89	68	9	47.9	Cepheus
34	4 Filamentary Nebula	7	7 20	) 45	38	30	42	29.9	Cygnus
33	3 East Veil Nebula	7	7 20	) 56	18.97	31	44	34.8	Cygnus
10	0 Lawnmower Cluster	7.1	1	L 46	8.89	61	14	6	Cassiopeia
69	9 Bug Nebula	7.1	17	7 13	44.2	-37	-6	-15.9	Scorpius
19	9 Cocoon Nebula	7.2	2 21	L 53	24.01	47	16	1.2	Cygnus
58	8 Caroline's Cluster	7.2	2 7	7 17	42.97	-15	-38	-31.2	Canis Major
27	7 Crescent Nebula	7.4	L 20	) 12	6.96	38	21	18	Cygnus
54	4	7.6	5 8	3 0	0.96	-10	-46	-12	Monoceros
63	3 Helix Nebula	7.6	j 22	2 29	38.54	-20	-50	-13.6	Aquarius
9	9 Cave Nebula	7.7	7 22	2 57	17	62	28	32.9	Cepheus
72	2 String of Pearls	7.9	0	) 14	53.61	-39	-11	-47.9	Sculptor
65	5 Sculptor Galaxy	8	3 0	) 47	33.14	-25	-17	-19.7	Sculptor
55	5 Saturn Nebula	8	3 21	4	10.88	-11	-21	-48.3	Aquarius
70	0 Southern Pinwheel Galaxy	8.1	0	54	53.48	-37	-41	-3.8	Sculptor
57	7 Barnard's Galaxy	8.1	19	44	56.2	-14	-47	-51.3	Sagittarius
F	6 Cat's Eye Nebula	8.1	17	7 58	33.43	66	37		Draco
	7 10 Vulpeculae Cluster	8.1	20	) 12	0.96	26	28	40.8	Vulpecula
	1 Polarissima Cluster	8.1							Cepheus

Magnitude	Denviler Nerre	A face in the of a	D.4. Heure 12000	DA Mine 12000	DA Sam 12000	Dec Dece 12000	Dee Mine 12000	D = = C = == 12000	Constallation
aldwell -	· · · · · · · · · · · · · · · · · · ·	Magnitude -				Dec Degs J2000 👻			Constellation -
	Blue Snowball	8.3				42			Andromeda
	Ghost of Jupiter Nebula	8.6				-18			Hydra
47		8.8				7			Delphinus
	Blinking Planetary Nebula	8.8				50			Cygnus
7		8.9				65			Camelopardalis
	Hubble's Variable Nebula	9				8			Monoceros
	Rosette Nebula	9				5			Monoceros
	Maffei 1 Group	9.1				68	5		Camelopardalis
	Intergalactic Wanderer	9.1				38			Lynx
	Burbidge Chain	9.1				-20		-37.4	Cetus
32	Whale Galaxy	9.2				32		29.4	Canes Venatici
18		9.2		38		48	20		Cassiopeia
51		9.2				2			Cetus
21		9.4	12	28	11.12	44	5	36.8	Canes Venatici
8		9.5		29	31.2	63	18	7.2	Cassiopeia
17		9.5	0	33	12.13	48	30	31.5	Cassiopeia
67		9.5	2	46	19.06	-30	-16	-29.7	Fornax
30	Deer Lick Group	9.5	22	37	4.1	34	24	57.3	Pegasus
12	Fireworks Galaxy	9.6	20	34	52.34	60	9	13.3	Cygnus
39	Eskimo Nebula	9.7	7	29	10.77	20	54	42.5	Gemini
53	Spindle Galaxy	9.9	10	5	13.98	-7	-43	-6.9	Sextans
11	Bubble Nebula	10	23	20	48.29	61	12	6.1	Cassiopeia
36	Koi Fish Galaxy	10	12	35	57.69	27	57	35.1	Coma Berenices
26		10	12	17	29.66	37	48	25.6	Canes Venatici
23		10.1	2	22	32.91	42	20	54	Andromeda
48		10.5	9	10	20.12	7	2	16.5	Cancer
42		10.5	21	1	29.47	16	11	16.5	Delphinus
3		10.5	12	16	42.12	69	27	45.3	Draco
2	Bow-Tie Nebula	10.7	0	13	1.02	72	31	19.1	Cepheus

1										
ġ.	Magnitude									
	Caldwell 👻	Popular Name 👻	Magnitude 👻	RA Hours J2000 👻	RA Mins J2000 👻	RA Secs J2000 👻	Dec Degs J2000 👻	Dec Mins J2000 👻	Dec Secs J2000 👻	Constellation $\bullet$
	44	Superman Galaxy	10.9	23	4	56.67	12	19	22.4	Pegasus
	60	Antennae	10.9	12	1	53.01	-18	-52	-3.3	Corvus
	66		10.9	14	39	36.53	-26	-32	-18	Hydra
	45		11	13	37	32.07	8	53	6.2	Bootes
	52		11	12	48	35.91	-5	-48	-3.1	Virgo
	61	Antennae	11.1	12	1	53.69	-18	-53	-8.2	Corvus
	40		11.2	11	20	3.8	18	21	24.5	Leo
	35	Coma B	11.3	13	0	8.1	27	58	37.3	Coma Berenices
	43	The Little Sombrero Galaxy	11.6	0	3	14.95	16	8	42.8	Pegasus
	56	Skull Nebula	11.8	0	47	3.34	-11	-52	-18.9	Cetus
	38	Needle Galaxy	12.4	12	36	20.81	25	59	14.6	Coma Berenices
	24	Perseus A	12.5	3	19	48.17	41	30	42.1	Perseus
	29		13.7	13	10	56.32	37	3	32.2	Canes Venatici
*										

The following list shows the Caldwell Objects, which are not visible from the south coast of England, in ascending order of magnitude value. (That is, the brightest objects come first.)

Magnitude									
Caldwell -	Popular Name 👻	Magnitude 🔹	RA Hours J2000 🔹	RA Mins J2000 🔹	RA Secs J2000 🔹	Dec Degs J2000 🔹	Dec Mins J2000 🔹	Dec Secs J2000 🔹	Constellation -
92	eta Carinae Nebula	1	10	44	19.01	-59	-53	-21.1	Carina
102	Southern Pleiades	1.9	10	42	58.08	-64	-24	0	Carina
85	Omicron Velorum Cluster	2.5	8	40	31.92	-53	-1	-58.8	Vela
76	Northern Jewel Box Cluster	2.6	16	54	8.51	-41	-49	-36	Scorpius
91	Wishing Well Cluster	3	11	5	39.12	-58	-45	-10.8	Carina
96	Diamond Cluster	3.8	7	58	4.08	-60	-45	-10.8	Carina
106	47 Tucanae	4.1	0	24	5.36	-72	-4	-53.2	Tucana
94	Jewel Box	4.2	12	53	38.88	-60	-21	-43.2	Crux
100	Running Chicken Nebula	4.5	11	38	20.41	-63	-22	-22.1	Centaurus
95		5.1	16	3	17.04	-60	-25	-55.2	Triangulum Austr
82		5.2	16	41	19.92	-48	-45	-46.8	Ara
86		5.2	17	40	42.09	-53	-40	-27.6	Ara
80	Omega Cen Cluster	5.3	13	26	47.29	-47	-28	-46.1	Centaurus
97	Pearl Cluster	5.3	11	36	18	-61	-36	-54	Centaurus
89	S Norma Cluster	5.4	16	18	49.93	-57	-56	-6	Norma
75		5.8	16	25	19.92	-40	-39	-10.8	Scorpius
93	Pavo Globular Cluster	6.3	19	10	52.12	-59	-59	-4.4	Pavo

### The limiting magnitude for naked-eye vision is around 6.5

So the following Caldwell Objects would need to be viewed using telescopes or binoculars.

aldwell 🚽	Popular Name 👻	Magnitude 👻	RA Hours J2000 👻	RA Mins J2000 👻	RA Secs J2000 👻	Dec Degs J2000 👻	Dec Mins J2000 👻	Dec Secs J2000 👻	Constellation
104		6.6	1	1 3	14.27	-70	) -50	-55.6	5 Tucana
77	The Hamburger Galaxy	6.8	3 13	3 25	27.62	-43	-1	-8.8	8 Centaurus
98	Coalsack Cluster	6.9	9 12	2 42	18	-62	-59	-42	2 Crux
73		7.2	2 5	5 14	6.77	-40	) -2	47.6	i Columba
78	Cacciatore Cluster	7.3	3 18	8 8	2.36	i -43	-42	-53.6	o Corona Austra
103	Tarantula Nebula	7.3	3 5	5 38	42.01	-69	-6	0	) Dorado
105	The Southern Butterfly	7.8	3 12	2 59	33.92	-70	) -52	-35.4	Musca
88		7.9	9 15	5 5	31.21	-55	i -35	-42	2 Circinus
79		8.2	2 10	0 17	36.83	-46	i -24	-44.9	Vela
84		8.3	3 13	3 46	26.81	-51	-22	-27.3	8 Centaurus
101		8.3	3 19	9 9	46.1	-63	-51	-27.2	2 Pavo
87		8.6	5 3	3 12	16.21	-55	-12	-58.4	Horologium
81		8.9	) 17	7 25	29.11	-48	-25	5 -19.8	Ara
83	The Tweezers Galaxy	9.3	3 13	3 5	27.28	-49	-28	-4.4	Centaurus
108		9.9	9 12	2 25	45.43	-72	-39	-32.7	Musca
90		10	) 9	9 21	. 25.34	-58	-18	-40.7	7 Carina
74	Eight-Burst Planetary Nebula	10	0 10	0 7	1.77	-40	) -26	-11.1	Vela
107		10.1	1 16	5 25	48.12	-72	-12	7.9	Apus
109		11.6	5 10	9 9	20.91	-80	) -51	-30.7	7 Chamaeleor

### 4. <u>Caldwell Objects in the New General Catalogue (NGC Catalogue)</u>

All but the following ten Caldwell Objects are listed in the NGC Catalogue.

Magnitude									
🖊 Caldwell 👻	Popular Name 👻	Magnitude 👻	RA Hours J2000 👻	RA Mins J2000 👻	RA Secs J2000 👻	Dec Degs J2000 👻	Dec Mins J2000 👻	Dec Secs J2000 🔹	Constellation 👻
5	Maffei 1 Group	9.1	3	46	48.52	68	5	46	Camelopardalis
9	Cave Nebula	7.7	22	57	17	62	28	32.9	Cepheus
19	Cocoon Nebula	7.2	21	53	24.01	47	16	1.2	Cygnus
31	Flaming Star Nebula	6	5	17	24	34	22	48	Auriga
41	Hyades	0.5	4	27	0	15	52	0.1	Taurus
51		9.2	1	4	47.81	2	7	4	Cetus
85	Omicron Velorum Cluster	2.5	8	40	31.92	-53	-1	-58.8	Vela
99	Coalsack Nebula		12	50	0.01	-62	-30	0	Crux
100	Running Chicken Nebula	4.5	11	38	20.41	-63	-22	-22.1	Centaurus
102	Southern Pleiades	1.9	10	42	58.08	-64	-24	0	Carina

#### 5. Types of Caldwell Objects

The following tables show the types of Caldwell Objects described on Stellarium.

STELLARIUM	
Astronomical Object	Total
Active Galaxies	6
Galaxies	27
Interacting Galaxies	2
Dark Nebula	1
Globular Star Clusters	18
Planetary Nebulae	13
Supernova Remnants	2
Cluster-Nebulosity	3
H II Regions	6
Emission Nebula	2
Reflection Nebula	1
Interstellar Matter	1
Open Star Clusters	27

Grand Total

WIKIPEDIA	
Astronomical Object	Tota
Galaxies	35
Dark Nebula	1
Globular Star Clusters	18
Planetary Nebulae	13
Supernova Remnants	2
Cluster-Nebulosity	6
Nebulae	9
Open Star Clusters	25

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CALDWELL OBJECTS ON STELLARIUM									
Galaxies		Cluster -	Dark	Nebulae	Globular	Open Star Clusters		Planetary	Supernova
		Nebulosity	Nebula		Star Cluster			Nebulae	Remnants
C3	C48	C4	C99	C9	C25	C1	C91	C2	C33
C5	C51	C19		C11	C42	C8	C94	C6	C34
C7	C52	C103		C20	C47	C10	C95	C15	
C12	C53	Listed by		C27	C66	C13	C96	C22	
C17	C57	WIKIPEDIA		C31	C73	C14	C97	C39	
C18	C60	C64		C46	C78	C16	C98	C55	
C21	C61	C76		C49	C79	C28	C102	C56	
C23	C62	C100		C68	C80	C37		C59	
C24	C65			C92	C81	C41		C63	
C26	C67			C100	C84	C50		C69	
C29	C70	1			C86	C54		C74	1
C30	C72	1			C87	C58		C90	1
C32	C77	1			C93	C64		C109	1
C35	C83	1			C104	C71			
C36	C101	1			C105	C75			
C38		-			C106	C76			
C40					C107	C82			
C43					C108	C85			
C44						C88			
C45					1	C89			
35		3	1	10	18	2	27	13	2
,									
				Total	109				

Note that there is a slight discrepancy between Stellarium and Wikipedia since Wikipedia lists three extra clusters associated with nebulosity.

# 6. Listing the Distance of Caldwell Objects from Earth

Use the query "Distances" which lists the Caldwell Objects in ascending order of distance (in lightyears) from Earth.

Caldwell 🗸	Popular Name 🚽	Distance (Ly) 👻	Notes -	Constellation
41	Hyades	153.3	Melotte 25	Taurus
63	Helix Nebula	518.7		Aquarius
102	Southern Pleiades	543.9	Distance 492 ly (Wikipedia) / IC	Carina
85	Omicron Velorum Cluster	574.1	IC 2391	Vela
99	Coalsack Nebula	600.2		Crux
96	Diamond Cluster	1128.7		Carina
4	Iris Nebula	1300.2	Distance 1400 ly (Wikipedia) / C	Cepheus
33	East Veil Nebula	1470.2	Distance 2500 ly (Wikipedia) / H	Cygnus
34	Filamentary Nebula	1470.2	Distance 2500 ly (Wikipedia) / Ir	Cygnus
28		1494	Distance 4700 ly (Wikipedia)	Andromeda
31	Flaming Star Nebula	1500.2	IC 405 / Radio source	Auriga
75		1533.1		Scorpius
56	Skull Nebula	1549.4	Magnitude 8 (Wikipedia)	Cetus
91	Wishing Well Cluster	1621.2		Carina
20	North America Nebula	1892		Cygnus
37	10 Vulpeculae Cluster	1957.2	Magnitude 6 (Wikipedia)	Vulpecula
9	Cave Nebula	2400.2	LBN 529 / SH 2-155	Cepheus
69	Bug Nebula	2417.1	Distance 5200 ly / Magnitude 13	Scorpius
95		2508.5		Triangulum Australe
46	Hubble's Variable Nebula	2609.6	Herbig Ae/Be star (SIMBAD)	Monoceros
16		2635.7	Distance 2500 ly (Wikipedia)	Lacerta
59	Ghost of Jupiter Nebula	3568.6	Distance 1400 ly (Wikipedia)	Hydra
8		3718.7		Cassiopeia
89	S Norma Cluster	3728.1		Norma
82		3767.6		Ara
64	Pirate's Jewels Cluster	3814.4	Distance 5100 ly (Wikipedia) / C	Canis Major
88		3888.3		Circinus
71	Electric Guitar Galaxy	3986.2		Puppis Australis
98	Coalsack Cluster	3989.4		Crux

Caldwell 🔻	Popular Name 👻	Distance (Ly) 🕞	Notes -	Constellation	
2	Bow-Tie Nebula	4074.2	Distance 3500 ly (Wikipedia)	Cepheus	
76	Northern Jewel Box Cluster	4077.5	Distance 6000 ly / Open cluster	Scorpius	
39	Eskimo Nebula	4106.9		Gemini	
74	Eight-Burst Planetary Nebula	4119.9	Distance 2000 ly / Magnitude 8 (	Vela	
55	Saturn Nebula	4322.2	Distance 1400 ly (Wikipedia)	Aquarius	
27	Crescent Nebula	4700.5	Interstellar matter (SIMBAD)	Cygnus	
15	Blinking Planetary Nebula	5186.6	Distance 2200 ly (Wikipedia)	Cygnus	
13	Dragonfly Cluster	5219.2		Cassiopeia	
49	Rosette Nebula	5219.2	NGC 2237 / Distance 4900 ly (Wi	Monoceros	
6	Cat's Eye Nebula	5294.2	Distance 3000 ly (Wikipedia)	Draco	
97	Pearl Cluster	5692.2		Centaurus	
100	Running Chicken Nebula	5852	Open cluster and nebula (Wikip	Centaurus	
58	Caroline's Cluster	6155.4	Distance 3700 ly (Wikipedia)	Canis Major	
22	Blue Snowball	6400	Distance 3200 ly (Wikipedia)	Andromeda	
109		6442.5	Distance 5400 ly (Wikipedia)	Chamaeleon	
19	Cocoon Nebula	6478.6	Distance 3300 ly (Wikipedia) / C	Cygnus	
92	eta Carinae Nebula	6524	Distance 7500 ly / Magnitude 3 (	Carina	
14	Double Cluster	6781.7	Distance 7300 ly / NGC 869 and I	Perseus	
86		7176.4	Melotte 176	Ara	
90		7267.7	Distance 5500 ly (Wikipedia)	Carina	
1	Polarissima Cluster	7507.3	Distance 4800 ly (Wikipedia)	Cepheus	
50	Rosette Nebula	9109.3	Distance 4900 ly (Wikipedia)	Monoceros	
11	Bubble Nebula	11090.8	Distance 7100 ly (Wikipedia)	Cassiopeia	
94	Jewel Box	11206.9	Distance 4900 ly (Wikipedia)	Crux	
54		11286.5	Distance 10000 ly (Wikipedia)	Monoceros	
93	Pavo Globular Cluster	13048		Pavo	
106	47 Tucanae	15298.8		Tucana	
80	Omega Cen Cluster	15788	Distance 17000 ly / Magnitude 6	Centaurus	
79		16310		Vela	

C	aldwell 👻	Popular Name 🛛 👻	Distance (Ly) 👻	Notes 👻	Constellation
	108		18919.6	Magnitude 7.8 (Wikipedia)	Musca
	10	Lawnmower Cluster	19385.8	Distance 7200 ly (Wikipedia)	Cassiopeia
	81		19572		Ara
	105	The Southern Butterfly	21529.2	Distance 19,600 ly (Wikipedia)	Musca
	78	Cacciatore Cluster	22834		Corona Australis
	104		27727		Tucana
	84		35882		Centaurus
	73		39470.2		Columba
	107		49908.6		Apus
	47		52192	Distance 57,000 ly (Wikipedia)	Delphinus
	87		53496.8		Horologium
	66		114104.8		Hydra
	42		137004		Delphinus
	103	Tarantula Nebula	170015.4	Open cluster and nebula	Dorado
	25	Intergalactic Wanderer	269441.2	Distance 275,000 ly (Wikipedia)	Lynx
	18		2055000	Distance 2.3 M ly (Wikipedia) / I	Cassiopeia
	17		2381000	Dwarf spheroidal galaxy	Cassiopeia
	57	Barnard's Galaxy	4078000	Distance 2.3 M ly (Wikipedia) / I	Sagittarius
	51		5252000	Distance 2.3 M ly (Wikipedia) /I	Cetus
	70	Southern Pinwheel Galaxy	6459000	Distance 3.9 M ly (Wikipedia)	Sculptor
	72	String of Pearls	6491000	Distance 4.2 M ly (Wikipedia)	Sculptor
	5	Maffei 1 Group	8905000	Distance 10 M ly (Wikipedia) / S	Camelopardalis
	21		10047000	Irregular galaxy / Emission-line	Canes Venatici
	62	Burbidge Chain	11482000	Distance 6.8 M ly (Wikipedia) / 3	Cetus
	65	Sculptor Galaxy	11613000	Distance 9.8 M ly (Wikipedia) / 3	Sculptor
	7		13700000	Spiral galaxy	Camelopardalis
	77	The Hamburger Galaxy	15984000	Seyfert 2 galaxy (SIMBAD)	Centaurus
	3		17800000	Distance 7 M ly (Wikipedia) / Ba	Draco
	12	Fireworks Galaxy	20877000	Distance 18 M ly / Originally Ce	Cygnus

e,	Distances				
	Caldwell 🔻	Popular Name 🛛 👻	Distance (Ly) 🕞	Notes 👻	Constellation
	26		21105000	Distance 10 M ly (Wikipedia) / S	Canes Venatici
	32	Whale Galaxy	22508000	Barred spiral galaxy	Canes Venatici
	83	The Tweezers Galaxy	22964000	Distance 17 M ly (Wikipedia) / S	Centaurus
	23		29749000	Distance 31 M ly (Wikipedia) / S	Andromeda
	101		36861000	Distance 34 M ly (Wikipedia)	Pavo
	53	Spindle Galaxy	43385000	Distance 22 M ly (Wikipedia) / L	Sextans
	36	Koi Fish Galaxy	43711000	Distance 32 M ly (Wikipedia) / S	Coma Berenices
	30	Deer Lick Group	53171000	Distance 47 M ly (Wikipedia) / S	Pegasus
	48		55454000	Spiral galaxy	Cancer
	38	Needle Galaxy	56759000	Distance 32 M ly / Magnitude 9.	Coma Berenices
	67		65566000	Distance 47 M ly (Wikipedia) / L	Fornax
	52		68176000	Distance 76 M ly (Wikipedia) / E	Virgo
	45		74047000	Spiral galaxy	Bootes
	29		81876000	Distance 69 M ly / Magnitude 9.	Canes Venatici
	40		85791000		Leo
	60	Antennae	91010000	Distance 83 M ly (Wikipedia)	Corvus
	61	Antennae	91010000	Distance 83 M ly (Wikipedia)	Corvus
	43	The Little Sombrero Galaxy	113191000	Distance 49 M ly (Wikipedia)	Pegasus
	44	Superman Galaxy	119715000	Distance 106 M ly (Wikipedia) /	Pegasus
	24	Perseus A	224752000	Distance 230 M ly (Wikipedia) /	Perseus
	35	Coma B	391440000	Distance 300 M ly / Type-cD gala	Coma Berenices
*					

Note that some considerable differences exist in the distances quoted by Stellarium and Wikipedia!

\* The distance of the Caldwell Object C 68 (R CrA Nebula) is quoted as 424 lightyears by Wikipedia.

#### 7. Details of Galaxy Types

Use the query "Type Details" to compare the descriptions of the 35 Caldwell galaxies by Stellarium and by the SIMBAD database. This gives a glimpse of the level of understanding required to study the evolution of galaxies!

Type Details				
🔼 Caldwell 👻	Popular Name 👻	Type 👻	Type Details 🕞	SIMBAD Details 👻
24	Perseus A	Active Galaxy	cD pec, NLRG	p D
62	Burbidge Chain	Active Galaxy	SAB(s)d	SAB(s)d D
65	Sculptor Galaxy	Active Galaxy	SAB(s)c	SAB(s)c D
67		Active Galaxy	R' 1	SB(s)b D
77	The Hamburger Galaxy	Active Galaxy	S0 pec	S0 pec D
83	The Tweezers Galaxy	Active Galaxy	SB(s)cd	SB(s)cd edge D
3		Galaxy	SB(s)dm	Sc D
5	Maffei 1 Group	Galaxy	SAB(rs)cdV	SA(s)cd D
7		Galaxy	SAB(s)cd	SAcd C
12	Fireworks Galaxy	Galaxy	SAB(rs)cd	SAB(rs)cd D
17		Galaxy	dSph/dE5	dGspDD
18		Galaxy	dSph/dE3, Sy2	dGspDD
21		Galaxy	IBm	Im/BCD C
23		Galaxy	SA(s)b	SA(s)b
26		Galaxy	Sc	Sd C
29		Galaxy	SAB(rs)bc	SABbc C
30	Deer Lick Group	Galaxy	SA(s)b	SAb C
32	Whale Galaxy	Galaxy	SB(s)d	Scd C
35	Coma B	Galaxy	E4	
36	Koi Fish Galaxy	Galaxy	SAB(rs)cd	SABcd C
38	Needle Galaxy	Galaxy	SA(s)b	Sab C
40		Galaxy	(R)SA(rs)0+	SAa C
43	The Little Sombrero Galaxy	Galaxy	SA(S)ab	SAa C
44	Superman Galaxy	Galaxy	SB(s)c	
45		Galaxy	SAB(rs)bc	SAc C
48		Galaxy	SA(r)ab	SAa C
51		Galaxy	IB(s)m	IB(s)m D
52		Galaxy	E6	EC
53	Spindle Galaxy	Galaxy	S0	S0 D
	Barnard's Galaxy	Galaxy	IB(s)m	IBm D
	Southern Pinwheel Galaxy	Galaxy	SA(s)d	Sc D
72	String of Pearls	Galaxy	SB(s)m	Irr D
101		Galaxy	SAB(r)bc	SAB(r)bc D
60	Antennae	Interacting Galaxy	SB(s)m pec	SB(s)m pec D
61	Antennae	Interacting Galaxy	SB(s)m pec	Sc D