

STARDOME OBSERVATORY & PLANETARIUM FACTS, RESOURCES AND ACTIVITIES ON...

DEEP SKY OBJECTS

How are they named?

Up until the twentieth century many of the faint objects in the night sky were grouped together as nebulae (fuzzy; cloudy-looking objects). We now know these to be galaxies, star clusters, star-forming regions, globular clusters, supernova remnants, etc.

These nebulous objects, which could be mistaken for comets, confused comet hunters in the eighteenth century. To help them Charles Messier, a French astronomer, catalogued a list of objects in 1774 that were definitely not comets. By 1781 his list of 75 had grown, with additions from other astronomers, to include 40 galaxies, 57 star clusters, 12 nebulae, and one binary star (M40).

The Messier Catalogue is still used by astronomy enthusiasts today.

However, some deep sky objects are missing from his list, particularly those seen from the Southern Hemisphere, because Messier did his observations in France. Most notable is the largest globular cluster of the Milky Way Galaxy, Omega Centauri, which is never observable from France.

Omega Centauri is, nevertheless, listed in the New General Catalogue as NGC 5139. The NGC catalogue contains 7,840 objects. It is one of the largest deep-sky object catalogues, compiled by John Louis Emile Dreyer in 1888.

In 1995 Patrick Moore compiled a list of deep sky objects especially for amateur astronomers,



The 'Horsehead' nebula is a dark dust nebula silhouetted against bright glowing gas in the belt of the constellation of Orion.

The well-known Matariki star cluster ('Pleiades', 'Subaru') is listed in the Messier Catalogue as 'M45'.

complementing the Messier Catalogue. It is known as the Caldwell Catalogue, and it includes a wide range of different objects across the whole sky, including the Southern Hemisphere.

Dark nebulae are also listed as deep sky objects. These are clouds of dust that obscure background stars. Best known is probably the 'Coal Sack' adjacent to the Southern Cross. Another large dark nebula is the striking 'Horsehead Nebula' in the Belt of Orion.

Patrick Moore helped raise funds to build Stardome's planetarium!

Check out these other resources...

- https://en.wikipedia.org/wiki/Deep-sky_object
- http://en.wikipedia.org/wiki/List_of_Messier_objects
- https://en.wikipedia.org/wiki/Caldwell_catalogue

Why did Patrick Moore name his list the Caldwell Catalogue?

What different types of objects does the Caldwell Catalogue include?

DISCUSSION POINTS

Who was Patrick Moore?



ACTIVITY

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NAKED EYE DEEP SKY OBJECTS

Discover what types of objects these are; then find them in the night sky:

- Milky Way
- Small Magellanic Cloud
- Omega Centauri
- M31
- Large Magellanic Cloud
- 47 Tucanae
- Orion's Sword

At 2.5 million light-years distant, the Andromeda galaxy is the furthest object visible with the naked eye.

If you're struggling to spot these, don't forget that there are many useful apps to download on your device which help you explore the night sky. Our favourites are **Starry Night** and **Stellarium**.

TELESCOPIC DEEP SKY OBJECTS

A nebula should refer to clouds of gas and dust, but groups of stars can appear nebulous until a telescope can separate the individual stars.

Small telescopes can resolve individual stars up to hundreds of thousands of light-years away, but large instruments are needed to see individual stars in galaxies millions of light-years distant. Stars in galaxies hundreds of millions or billions of light-years away cannot be resolved with current technology. An exception is the short appearance of an exploding massive star: a supernova can outshine its home galaxy.

- How many of the 35 galaxies in the Caldwell Catalogue can you find with binoculars or a telescope?



M31, the Andromeda Galaxy (now with h-alpha).
Credit: Adam Evans, Wikipedia Commons



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