

## Messier 11 (NGC 6705) known as the Wild Duck Cluster

The Wild Duck Cluster (also known as Messier 11, or NGC 6705) is an open cluster in the constellation Scutum. It was discovered by **Gottfried Kirch** of the Berlin observatory in 1681 and apparently first resolved into stars by **William Derham** about 1733. **Charles Messier** included it in his catalogue in 1764:

*In the night of May 30 to 31, 1764, I have discovered, near the star Kappa of Antinous, a cluster of a large number of small stars which one perceives with good instruments; I have employed for this a Gregorian telescope which magnifies 104 times.*

*When one examines it with an ordinary [non-chromatic] refractor of 3 & a half feet focal length, this star cluster resembles a comet; the center is brilliant, there is among the small stars one star of eighth magnitude; two other, one of the ninth & one of the tenth: this cluster is intermixed with a faint light,*

The Wild Duck Cluster is one of the richest and most compact of the known open clusters, containing about 2900 stars. Its age has been estimated to about 250 million years. Its name derives from the brighter stars forming a triangle which could resemble a flying flock of ducks, or, from another angle, one swimming duck. The blue stars in the centre of the image are the young, hot stars of the cluster. The apparent diameter is given with discordant values; **E.E. Barnard** estimated 35', while the Sky Catalogue 2000 gives 14'. It is receding from us at 22 km/sec.

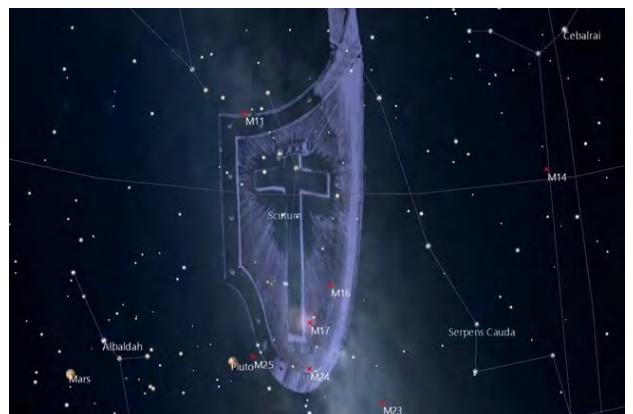
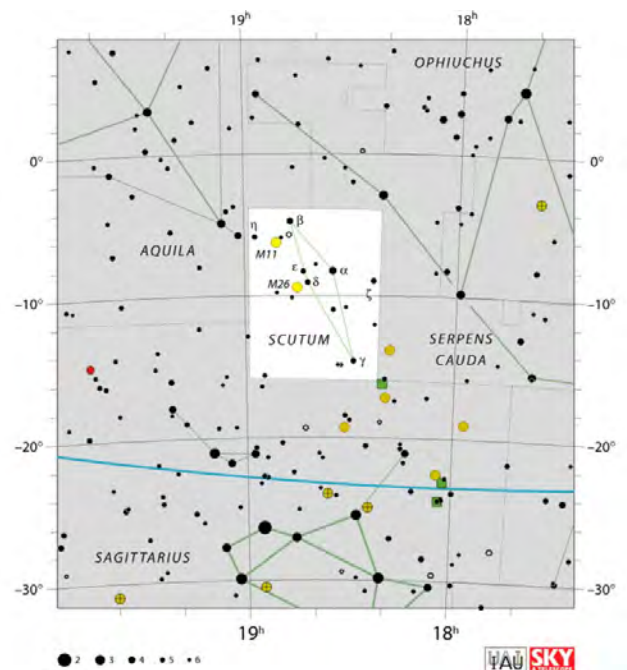
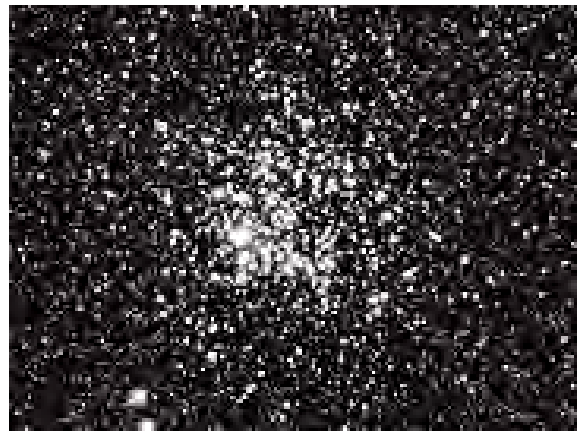
Its brightest and hottest main sequence stars are of spectral type B8 (according to the Sky Atlas 2000). A higher value is supported by the fact that this cluster also contains many yellow and red giants of absolute magnitude around -1.0. G.

M11 is situated near the northern edge of a rich Milky Way star cloud, the Scutum Cloud. About 1deg NW of M11, the variable star *R Scuti* can be found, one of the first variables known (discovered 1795 by **Edward Pigott**), and the first known variable of type RV Tauri, with brightness varying normally between mag 4.8 and 6.0, but occasional extreme between about mag 4.5 and 8.2.

The constellation Scutum was created by **Johannes Hevelius** (1611 – 1687) a councillor and mayor of Danzig, then part of the Polish-Lithuanian Commonwealth. As an astronomer he gained a reputation as "the founder of lunar topography", and described ten new constellations, seven of which are still recognized by astronomers. Hevelius, in his *Prodromus Astronomiae*, appears to have been uncommonly elated on having raised it to perpetual memory of John Sobieski, King John III of Poland, the glorious liberator of Vienna:

*"I wish you to know, benevolent reader, that this shield consists of lucid stars, partly of the fourth magnitude; four of these are placed in the border of this shield, and designate the princes of our serene king, who at that time were all among the living. In the middle of the shield I have designed a cross, in eternal remembrance of the battles most happily fought by him for the Christian faith: three notable stars shine in this cross, of which one indicates his own royal person, another the queen's, and a third the princess's; so these seven stars represent the whole reigning family."*

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This fine object is on the shield by which Hevelius intended, FOR EVER, to honour John III, king of Poland.

Gottfried Kirch was son of a shoemaker in Guben, Saxonia. **Kenneth Glyn Jones** (1968) gives the name alternation "Kirche" and the Latinisation, *Kirkius*. Kirch first became a maker of calendars and lived in Saxonia and Franconia (Germany). He learned astronomy from **E. Weigel** in Jena, and later from Hevelius in Danzig. There, starting 1667, he published calendars, and built several instruments and telescopes.

1686 Kirch went to Leipzig, where he observed the comet of this year together with the farmer and astronomer **Christoph Arnold** (1650-1695). There he married **Maria Margarethe Winckelmann**, who had learned astronomy from Arnold; she was his second wife. In 1700, Kirch was appointed as the first astronomer of the Prussian Royal Society of Sciences by King Frederick III. He devoted much time to the study of the double star Mizar (*Zeta Ursae Majoris*). Kirch discovered M11 in 1681 and M5 on May 5, 1702. Also discovered the variability of the Mira variable *Chi Cygni* in 1687. At age 71, Gottfried Kirch died on July 25, 1710 at Berlin. He was honored by naming a Moon Crater after him and Asteroid (6841) Gottfriedkirch, discovered on September 24, 1960.



Gottfried Kirch (1639 - 1710)

The Wild Duck Cluster is one of the easier objects to find in the night sky. Although M11 is in the constellation of Scutum, use Aquila as your guide. Its distinctive "T" shape shows in even relatively light polluted areas! Beginning with Altair (*Alpha Scu*), count four stars down the back towards the south. At the end of this chain, you will see two stars close together. Starhop almost this same distance west and you'll find Messier 11 with ease!

Using binoculars, it will show as a distinctive diamond-shaped compression of starfield and will begin some resolution. In the finderscope it will appear as a small hazy patch. Even in a small telescope it will resolve into a glorious open cluster and will show hundreds of stars to larger aperture. As with many Messier Objects, the credit for the most apt and detailed description goes to **Admiral Smyth**:

*"A splendid cluster of stars, closely to the east-south-east of the above described object [a double star]; it precedes the left foot of Antinous (the original Latin name for the Scutum constellation; immortalizing a Greek youth and a favourite, or lover, of the Roman emperor Hadrian). This object, which somewhat resembles a flight of wild ducks in shape, is a gathering of minute stars, with a prominent 8th-magnitude in the middle, and two following; but by all analogy these are decidedly between us and the cluster.*

Following his Naval Career, Smyth established a private observatory in Bedford, England, equipped with a 5.9-inch refractor telescope. He used this instrument to observe a variety of deep sky objects over the course of the 1830s, including double stars, star clusters and nebulae. He published his observations in 1844 in the Cycle of Celestial Objects, which earned him the Gold Medal of the Royal Astronomical Society in 1845 and also the presidency of the society. The second volume became known as the Bedford Catalogue and contained Smyth's observations of 1,604 double stars and nebulae. It served as a standard reference work for many years afterward. It was reprinted in 1986, and in the Foreword to that edition **George Lovi** (astronomer and writer) writes: "this work is full of colourful commentary on the highlights of the heavenly scene and it heavily influenced several subsequent works of its type, even to the present day.

**So where do the "wild ducks" come into play? It seems no one is too sure of who first began calling this open star cluster by this name. But it is the general consensus that the name arose as a result of the object resembling the V-shape of a flight of ducks, when viewed through a small telescope.**



Admiral William Henry Smyth (1788 – 1865) was an English naval officer, hydrographer, astronomer and numismatist. He is noted for his hydrographic charts, for his astronomical work, and for a wide range of publications.