



## **Moon**

Category: Natural Satellite

Type: Moon

Distance: The distance between the Earth and the Moon is about thirty times the Earth's width.

Size: It would take almost four moons to cover Earth's width.

The Moon, also sometimes called by its Latin name, Luna, to differentiate it from other moons in our solar system, is the second brightest object in the sky after the Sun. Even so, the Moon does not cast its own light. Like the planets, the light we see from the Moon is actually reflected from the Sun - even at night! The Moon is covered in countless craters from billions of years of being struck by asteroids and comets. Unlike Earth, its surface can't heal, as it has no atmosphere or bodies of liquid to weather away these craters. The Moon is currently the only other body that humans have ever visited.

## **Sun**

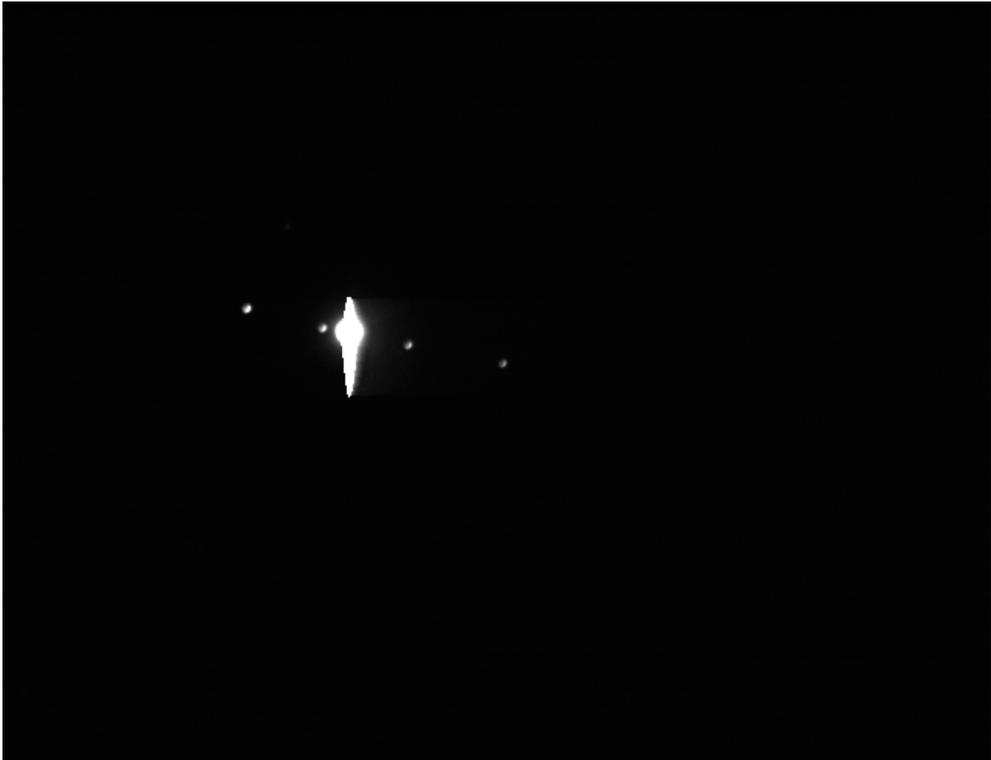
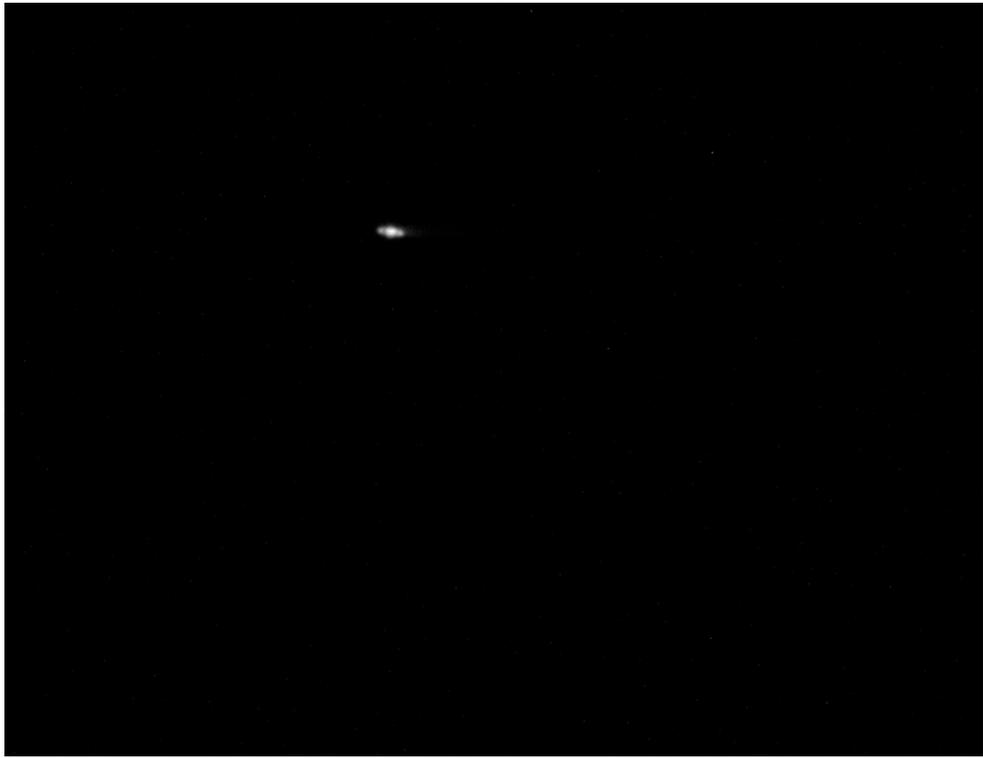
Category: Star

Type: A fairly normal one!

Distance: 1 Astronomical Unit.

Size: It would take 110 Earths to cover the Sun's width.

The Sun is the closest star to Earth and the only object in the Solar System that emits its own light. It may keep us warm and light up the day, but it is in fact a very average star. The Sun is not remarkably bright, hot, nor is it especially large. Other stars may be tens of millions of times brighter or many thousands of times dimmer. There is, however, one very special thing about the Sun. It's the only star we're aware of that hosts a planet which is home to living things.



# Saturn

Category: Planet

Type: Gas Giant

Distance: 9.5 Astronomical Units from the Sun. Saturn is about nine and a half times as far away from the Sun as Earth is.

Size: It would take about nine and a half earths to cover Saturn's width.

Saturn is best known for its spectacular rings which are easily visible in a small telescope or MicroObservatory. When Galileo Galilei first observed Saturn in one of his telescopes, he described the rings as looking like "ears" in his notes. Saturn, like all planets and moon are visible because they reflect light from the Sun.

# Jupiter

Category: Planet

Type: Gas Giant (A planet made almost entirely from hydrogen gas)

Distance: 5 Astronomical Units. Jupiter is about five times as far as Earth is from the sun.

Size: It would take ten Earths to cover Jupiter's width.

Jupiter appears brighter than any of the stars in the sky, although it doesn't give off any light of its own. Jupiter, like all planets, is visible because it reflects light from the Sun. Jupiter's four brightest moons were first observed by Galileo in 1610 and are visible in most images taken with MicroObservatory.



## **M6**

Category: Star Cluster

Type: Open Cluster

Distance 1,600 light years. Light takes about 1,600 years to reach us from M6.

Size: 12 light years across

M6, also called the Butterfly Cluster, is a group of young stars which formed together from the same nebula. Open clusters vary tremendously on how close their stars are to each other. This can be observed in MicroObservatory. Over the course of a just a few to hundreds of millions of years, stars can become ejected from their groups, causing the clusters to slowly disperse.

## **M15**

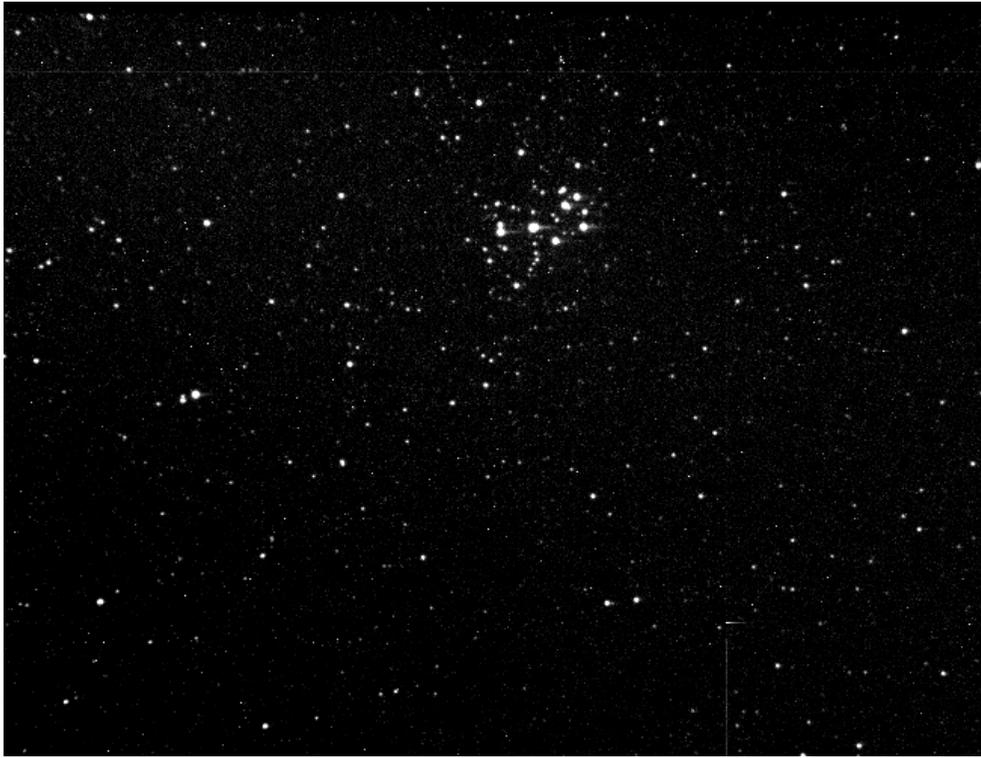
Category: Star Cluster

Type: Globular Cluster

Distance: 33,600 light years away. Light takes 33,600 years to reach us from M15.

Size: 130 light years across

M15 is a bright globular cluster in the constellation Pegasus. Globular clusters are swarms of hundreds of thousands of very old stars, tightly bound in the shape of a ball or globe, at the edges of galaxies. While not the brightest one in the sky, M15 may be the densest of all known globular clusters orbiting the Milky Way Galaxy.



## **M45**

Category: Star Cluster

Type: Open Cluster

Distance: 440 light years. Light takes 440 years to reach us from M45

Size: 12 light years

M45 is much better known as the Pleiades or "the Seven Sisters." The Pleiades are a group of stars held close to each other by their own gravity. Despite that only about five or six stars are easily visible to the naked eye, there are about a thousand stars in the cluster. Unlike globular clusters, the stars of the Pleiades tend to be very young, often only around a hundred million years old.

## **M45**

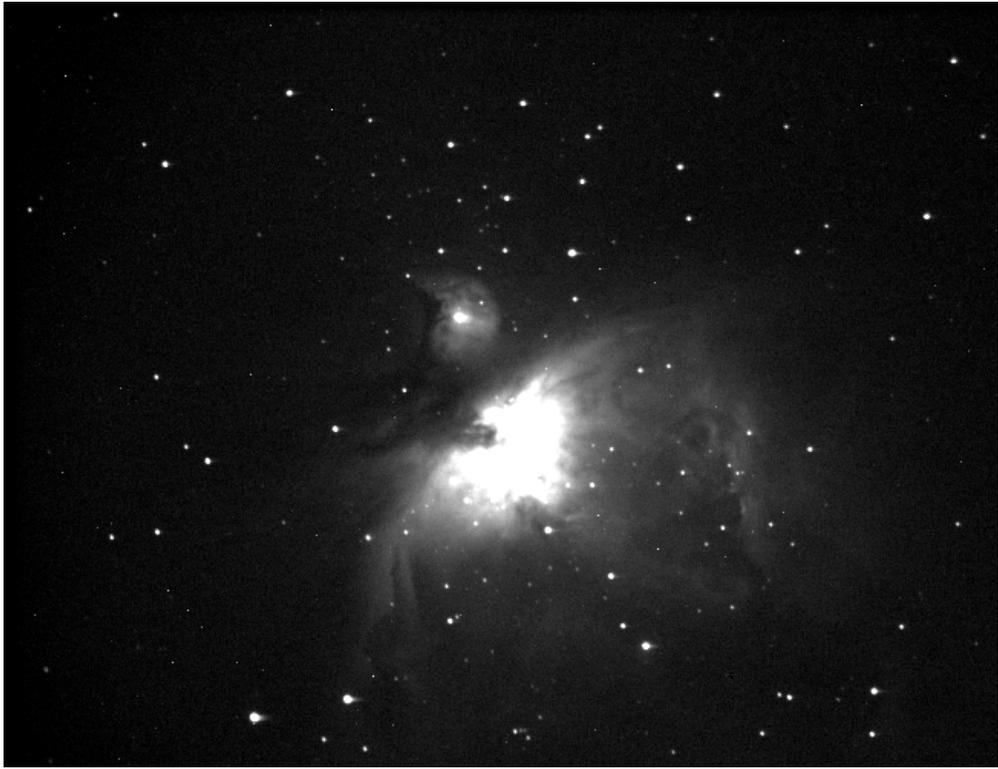
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## **Orion Nebula**

Category: Nebula

Type: Star forming nebula

Distance: 1,270 light years. Light takes 1,270 years to reach us from the Orion Nebula.

Size: About 12 light years across. Light takes 12 years to go from one side to the other.

The Orion Nebula is an example of a place where new stars are actually forming, unlike other clouds like the Dumbbell and Crab nebulas. Astronomers are able to observe hundreds of very young stars at different stages of formation within this object. It also makes a spectacular subject for color images with MicroObservatory...

## **Dumbbell Nebula**

Category: Nebula

Type: Planetary Nebula (but it has nothing to do with planets!)

Distance: 1,360 light years. Light takes 1,360 years to reach us from the Dumbbell Nebula.

Size: 3 light years across

The Dumbbell Nebula is an example of a "planetary nebula." These are clouds of dust and gas which are formed when an old star expels a massive amount of material off into space. It is predicted that our own sun will do this in about 5 billion years. Planetary nebulas have the name they do because William Herschel, an early observer of them, thought they sort of looked like planets. But they're not!



## **Crab Nebula**

Category: Nebula

Type: Supernova Remnant (Leftover gas and dust from an exploding star)

Distance: 6,500 light years. Light takes about 6,500 to reach us from the Crab Nebula.

Size: 15 light years across

The crab nebula formed from the explosion of a big hot star, an event called a "supernova." In 1054 AD, Chinese astronomers recorded the event, noting that it was so bright that the explosion could be seen during the day and lasted for weeks.

## **Centaurus A**

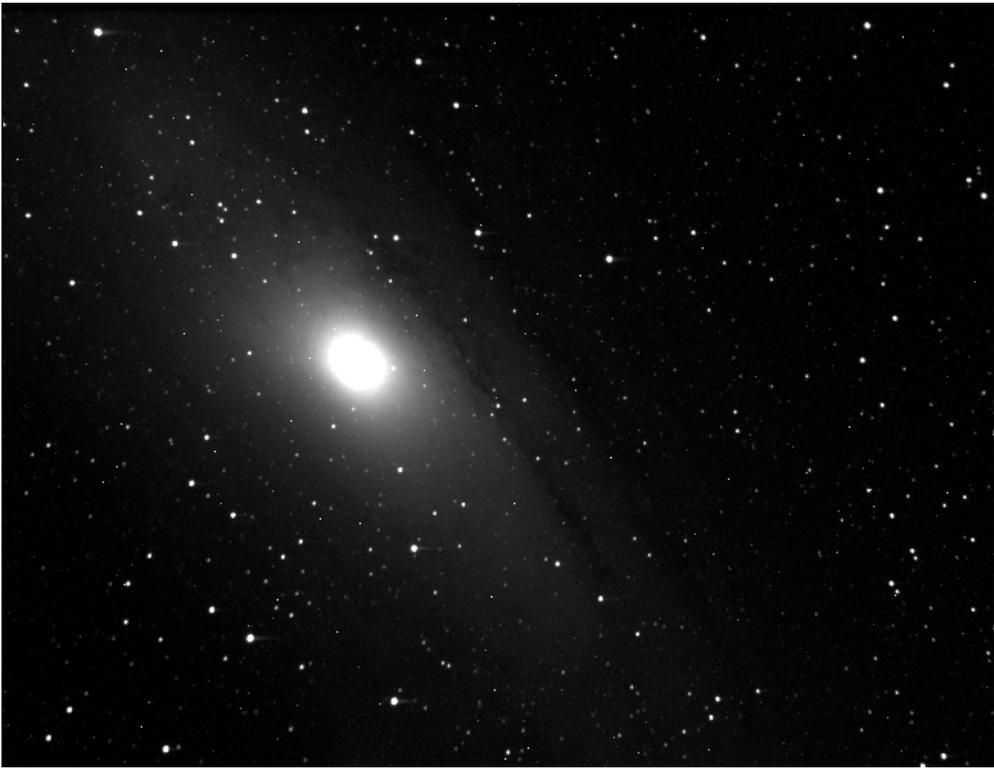
Category: Galaxy

Type: Irregular

Distance: 13,700,000 light years. Light takes about 13 million years to reach us from Centaurus A

Size: ~ 40,000 light years across

Centaurus A is a very strangely shaped galaxy. It's mostly shaped like an elliptical galaxy such as M87, but also has a dusty disk like a spiral galaxy, as seen with NGC 4565. Centaurus A is also a cannibal! Astronomers believe that about one billion years ago, Centaurus A ate up a large spiral galaxy.



# Andromeda Galaxy

Category: Galaxy

Type: Spiral Galaxy

Distance: 2,600,000 light years. Light takes 2,600,000 to reach us from the Andromeda Galaxy. This is about 26 times the width of our own Milky Way galaxy.

Size: Similar in size to the Milky Way

Andromeda is the closest large galaxy to the Milky Way and is getting closer! Astronomers predict that in about 3 billion years Andromeda will collide with the Milky Way, making one larger galaxy. Centaurus A is another galaxy observed to be undergoing a collision.

## M51

Category: Galaxy

Type: Spiral

Distance: 23,000,000 light years away. Light takes 23,000,000 years to reach us from M51

Size: the larger spiral is about 38,000 light-years across

M51, better known as the Whirlpool Galaxy, is a spiral galaxy similar to NGC 4565. The Whirlpool Galaxy looks similar to what we might expect our own Milky Way Galaxy to look like if we could stand very far away. Another galaxy, called NGC 5195, is visible at the end of one M51's spiral arms. Many scientists think the two galaxies are currently "interacting," tugging on each other and distorting the other with their gravity.



## **NGC 4565**

Category: Galaxy

Type: Spiral

Distance: 53,000,000 light years. Light takes 53,000,000 (53 million) years to reach us from NGC 4565

Size: about 50,000 light years across

NGC 4565 is a spiral galaxy similar to the Andromeda Galaxy or our own Milky Way. We see this object "edge on." It was discovered in 1785 by an astronomer named William Herschel and makes a fun MicroObservatory target.