

An Introduction to Summer & Spring Deep Sky Objects

The purpose of this program is to provide a starting point for new astronomers to begin their exploration of the sky. On a nice summer evening out under the stars, and with the help a good star chart, you should be able to find easily each of the objects mentioned on this page. The constellations and objects were chosen to be both easy to find and representative of each of the major types of deep sky objects: a globular cluster, a planetary nebula, a galaxy, open clusters, and a diffuse nebula. There is also one beautiful double star included. As you find each object, use an observing form to log your observations. We have provided an official [AAAA Observing Log](#) in PDF format for your convenience. To begin, find the constellation with your naked eye, then look for the object with binoculars. Finally, use a telescope to view the object up close. Enlist the help of your friends as necessary.

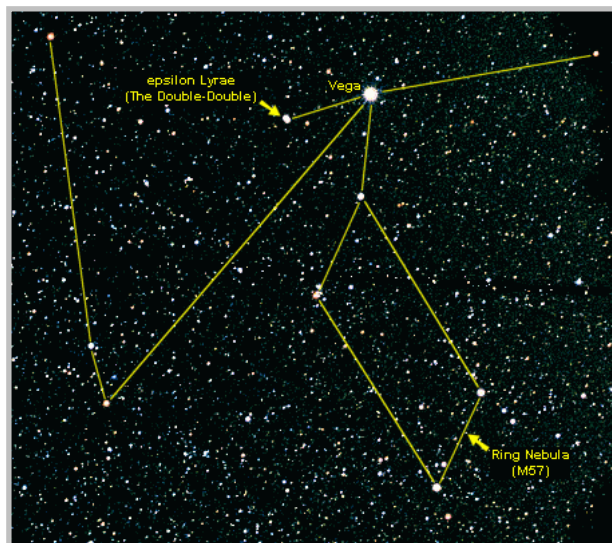
HERCULES



Almost overhead at the arrival of night in late summer are the constellations of Hercules and Lyra. Hercules is a large constellation whose brightest stars are relatively faint, so a good, dark sky is needed to see the complete outline of the heroic figure. Lyra, on the other hand, is small, but contains the bright star Vega as its brightest member. The objects of interest in this region are relatively close to us in space.

M13 This famous globular cluster is large and bright enough to be seen with the naked eye on good nights. It is about 12-15' in diameter, rather easily resolved across the center, and is seen to be somewhat ragged in appearance. There are long strings of stars curving away from the center, and a curious propeller shaped area at its southwest edge which seems almost devoid of stars.

LYRA



M57 The Ring Nebula. One of the jewels in the sky, the Ring Nebula is bright and easily found. The ring shape is easily seen in almost any size instrument. It is slightly elongated ENE-WSW, and has a star just off its eastern edge. This object handles magnification very well, and at 15th magnitude, its central star is only well seen in large amateur instruments.

SCORPIUS



The constellation of Scorpius is one of the few constellations which actually resembles what it is supposed to represent, a scorpion. This large and sprawling area contains many open and globular clusters, as well as a wealth of nebulosity, particularly in the region of its brightest star, Antares. As large as it is, Scorpius actually used to be much larger. In ancient times, the brightest stars of the constellation Libra used to be considered part of Scorpius, representing the scorpion's claws. There are several open clusters in Scorpius which are of particular interest.

M-6 The Butterfly Cluster. This fine open cluster is large, about 25' in diameter and contains over a hundred bright and relatively bright stars. It is called the Butterfly Cluster because some observers see the shape of a butterfly formed by the stars. This cluster is visible to the naked eye as a faint patch of light.

M-7 This beautiful open cluster is almost a degree in diameter, so either very low powers or binoculars should be used to optimally view it. This loosely concentrated cluster is easily visible to the naked eye.

SAGITTARIUS

The constellation of Sagittarius lies along the southern portion of the Milky Way, and within its boundaries lies the very heart of our galaxy. Because of this, when we look in this region, we should expect to find many open clusters, gaseous nebulae, planetary nebulae, and globular clusters which swarm around the galaxy's center. And this is exactly what we find here. Within Sagittarius' borders are found some of the finest examples of each of these object types. There are many Messier objects in this area, of which I will list only a few, along with

some lesser known objects from the Herschel list. This region is worthy of several night's of investigation, not only with a telescope, but also with binoculars. If you haven't started on your Binocular Messier Certificate yet, this is an excellent region with which to begin, as many of the objects are bright and easily seen.



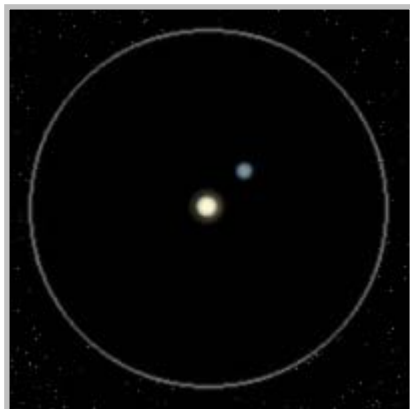
M-8 The Lagoon Nebula. With the possible exception of the Great Orion Nebula (M-42), this is probably the finest cluster and nebula combination in the heavens. A large and loosely scattered open cluster is seen in juxtaposition with a large and swirling mist of nebulosity. Many dark regions can be seen in looping patterns which are highlighted by the brighter regions. This object is easily seen in finder scopes, binoculars, and with the naked eye.

M-20 The Trifid Nebula. Only a short distance north of M-8, this object is rather easily found, but is considerably fainter than that object. A double star is seen surrounded by a mostly circular patch of light. This patch of light is divided into three separate regions by dark lanes which intersect near its center. On a good night, a fainter region of reflection nebulosity of almost equal size as the main portion can be seen to the north.

ANDROMEDA

Andromeda lies away from our galaxy's plane, and lets us see the inhabitants of intergalactic space.

M-31, 32, & 110 The Great Galaxy in Andromeda and its companions. M-31 is the closest large spiral galaxy to our own Milky Way galaxy, and therefore presents us with a wealth of details. Numerous dust lanes are evident, and large telescopes can even identify individual members of its system of globular clusters. I find the best view of this galaxy trio to be through large binoculars. At this magnification, the complete extent of the main galaxy can be seen, and the fuzz, star-like M-32 and the elliptical M-110 can be glimpsed quite easily in the same field of view.



Gamma Andromedae One of the prettiest double stars in the sky. It is easily split, and shows a golden-orange primary and a fine blue companion. A must see.



An Introduction to Spring Deep Sky Objects

The purpose of this program is to provide a starting point for new astronomers to begin their exploration of the sky. With the help of the star charts on the back, and the slide show this evening, you should be able to find each of the objects mentioned on this page. The constellations and objects were chosen from some of the major deep sky objects that can be observed during the spring season.

As you find each object, use an observing form to log your observations. We have provided two [Observing Logs](#) in PDF format for your convenience. To begin, find the constellation with your naked eye, and then look for the object with binoculars. Finally, use a telescope to view the object up close. Enlist the help of your friends as necessary.

Orion

Orion is one of the most easily recognized of all constellations. Led by the bright stars Betelgeuse and Rigel, this constellation holds many fine telescopic and binocular objects, along with some of the most photographed regions of the sky. Its arrival in the night sky in December signals the beginning of the winter observing season, with its crisp, clear nights and fine "seeing". It continues to share its wonders until early spring, when it finally disappears into the west in late April.



M42 - The Great Nebula in Orion—One of the finest sights in the entire sky, M42 is easily visible to the naked eye as the "fuzzy" star in the middle of Orion's sword. It appears distinctly nebulous in binoculars or finder scopes, and shows an amazing amount of detail through the telescope. It is fully a degree in extent, with a wealth of fine curling wisps of nebulosity curving out from the brightest region surrounding the four relatively bright stars known as the Trapezium. On good nights with low power, I have even been able to see colors in this object. The region around the Trapezium appears as a cold steel blue color, while the wispy regions further away can appear as a soft ruddy pink. Slightly separated from the main nebulosity is M-43. This nebula is seen as a comma shaped cloud

surrounding an eighth magnitude star just north of the Great Nebula. The more time you spend in this area, the more fine detail you can see.

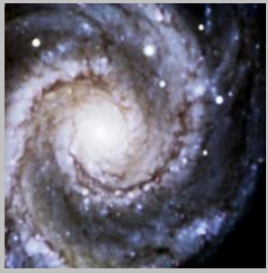
Ursa Major

Ursa Major is one of the most well known constellations in the heavens. It contains the famous grouping of stars known as the Big Dipper, which is often the first group of stars learned by people in the northern hemisphere. Several other "firsts" are associated with this constellation; the star Mizar was the first double star to be discovered through a telescope (1662), the first star to be photographed (1857), and the first star to be identified as a spectroscopic binary (1889). Also, the star Xi UMA was the first binary star to have its orbit calculated .



M-97—The Owl Nebula is of interest as the only large planetary nebula viewable in the spring skies. You will have to wait until early summer for the chance to view another. This large planetary nebula is almost 3' in diameter, and appears as a gray puff of light, slightly brighter in the center. At times, especially with averted vision, the "eyes" of the owl can be seen as two slightly darker spots.

Canes Venatici



M-51—The Whirlpool Galaxy. This is probably the finest example of a face on spiral galaxy in the northern hemisphere. It is about 10-15' in diameter, with a bright center and rather easily seen spiral arms. Just a few arc-minutes to the northeast is its companion galaxy, NGC 5195. This object is small, about 3x2', with a brighter center, and seemingly connected to M-51 by a bridge of stars.

Galaxies require special techniques such as averted vision and shaking the telescope tube, to coax detail out of them. Patience and practice will reward the persistent observer with details unseen by more casual observers.



M-3—This pretty globular cluster in Canes Venatici is almost easier to find starting in Bootes. While it is somewhat difficult to find, it is worth the trouble to do the search, since it is almost as spectacular as M13 in Hercules. M3, which is the only major globular cluster in the spring sky, is about 12-15' in diameter and handles magnification rather well. There are many stars arranged in curving chains resolved at its edges. The center is very dense, and was not resolved in my scope, which showed a granulated center.

Canis Major



M-41—Large and splashy, this fine open cluster in the constellation Canis Major is easily seen as a hazy patch to the naked eye, and is fully half a degree in diameter in the telescope. About 60-70 stars can be seen at low power, in many curving chains. The cluster is dominated by a bright orange star near its center. A great open cluster.

Also containing Sirius, the brightest star visible from earth, the constellation of Canis Major is one of the few constellations in the heavens which resembles what it is supposed to be: a large dog.

Cancer

Cancer is a small but important zodiacal constellation. It was the fourth constellation of the ancient zodiac, east of Aries, Taurus and Gemini, but is now fifth, since the first point of Aries, the point of the astrological Spring Equinox, has moved west into Pisces.



M-44—The Beehive Cluster. This bright open cluster (NGC 2632) is easily seen with the naked eye from a dark sky site. It is large, over a degree in diameter, and is best seen in binoculars or view finder. It is a somewhat loose cluster of about 50-100 stars, with several star chains and pairs seen. M44, often dubbed the Beehive Cluster, is also commonly known as Praesepe, or Crib, because it is sometimes associated with the Manger of Christian teachings. It is one of the largest, nearest, and brightest of the galactic star clusters.

Praesepe, easily visible to the naked eye in a dark sky, was one of the few clusters mentioned in ancient times, although its true nature as a group of stars was not known until the invention of the telescope. According to legend, Praesepe was used in ancient times as a weather indicator. The invisibility of this cluster in an otherwise clear sky was considered to forecast the approach of a violent storm.