# THE MESSIER CATALOG by Don Savat and Jim Rice



The 104 objects of the famous Messier catalog comprise a list notable for its historical interest, its even distribution throughout the heavens, and its variety. The Messier objects have long been favorites among amateur astronomers, but are rarely compiled separately. We have collected these objects and described their features and location.

CHARLES MESSIER was a comet hunter - without question the greatest of his time. Even though he also observed other astronomical phenomena - eclipses, occultations, transits, sunspots - his all-absorbing interest was the comets. From his tower observatory at the Hotel de Cluny in Paris he was able to discover, by his own count, 21 of them. During the period of his most intense work, from 1754 to 1770, he happened upon many other objects which might conceivably be mistaken for comets. To him these objects simply cluttered up the heavens, and in order to prevent other comet hunters from wasting time on them, he published a list 45 of these non-cometary objects in 1771. This was the first installment of the now famous Messier Catalog. It is perhaps a common impression that Messier discovered all of the objects in his remarkable list. Although this was true for some of them, for he was an indefatigable searcher of the heavens, his greatest contribution lay in the confirmation of objects reported by earlier observers: Hevelius, Huyhens, Halley, Maraldi, and Kirch, among others. Several of the objects he listed are doubtful (M40 and M73), and one, M102, does not exist. By the year 1784 his list had grown to 103 objects, and 6 more were added in 1786 by the astronomer Mechain.

Ml Mag.8 NGC.1952 Const.Tau.
The Crab Nebula, gaseous remnant of the nova first observed by Chinese astronomers over nine hundred years ago. It is now an indistinct planetary nebula which you will find just northeast of Zeta Tauri. Large aperture and good seeing conditions will bring out some detail, especially if red or orange filters are used.

M2 Mag.6 NGC.7089 Const.Aqr.
A lovely globular which is very similar to M5. A fine object for the larger telescope (8 inches or more), but beautiful in any instrument.

M3 Mag.3 NGC.5272 Const.CVn.
A brilliant globular cluster lying between Arcturus and Cor Caroli. Easily resolvable in a 6-inch telescope at high power. This one is well worth spending some time on.

M4 Mag.6 NGC.6121 Const.Sco.
A globular so large it almost fills the field at medium powers. Look for it below a line drawn between Antares and Sigma Scorpii.

M5 Mag.6 NGC.5904 Const.Ser.
The brightest globular in the northern skies. Its bright central area is surrounded by thousands of stars resolved into the pinpoints of light which make this splendid object so fascinating.

M6 Mag.5 NGC.6405 Const.Sco.
A very fine open cluster in the northeast corner of Scorpius. It is low in the sky for northern observers but when the atmosphere is clear near the horizon this cluster is well worth looking for.

M7 Mag.5 NGC.6475 Const.Sco.
Like M6, this brilliant and extensive open cluster appears every low in the sky. Look for it in a six-star asterism northeast of Lambda Scorpii.

M8 Mag.? NGC.6523 Const.Sgr.
The Lagoon Nebula. A large irregular, naked-eye nebulosity, easy to locate in Sagittarius. Use lowest powers for best effect, then shift to higher powers for the dark patches in this extended diffuse nebula.

M9 Mag.7 NGC.6333 Const.Oph.
A small globular cluster with a very bright nucleus. The outlying stars can be resolved with a moderate-sized telescope.

M1O Mag.7 NGC.6254 Const.Oph.
Very similar to M.12 but also hard to find. If you can locate M.12,M.10 lies just to the southeast, about 3 degrees away.

M11 Mag.6 NGC.6705 Const.Set.
A triangular patch in northern Scutum made up of hundreds of stars. Just visible to the naked eye and a wonderful open cluster for a 6-inch telescope.

M12 Mag.7 NGC.6218 Const.Oph.
A beautiful globular cluster but relatively hard to find since it lies in a sparce star field. Of some help is the fact that it is one corner of a parallelogram formed by Upsilon, Delta, and Lamba
Ophiuchi.

M13 Mag.6 NGC.6205 Const.Her.
The famous Hercules cluster. Like M.5, if has to be seen to be believed. Look for it about one-third of the straight-line distance between Eta and Zeta Herculis. On good nights you can see it with the naked eye. At such times see if your telescope can pick up the dark lanes and star streams described by many observers. Note, too, its elliptical shape.

M14 Mag.8 NGC.6402 Const.Oph.
Even though this globular lies in a sparse star field, it is not difficult to find since it forms the right angle of a triangle which includes Zeta Serpens Caudi and Mu Ophiuchi.

M15 Mag.6 NGC.7078 Const.Peg.
A famous globular cluster which contains over sixty variable stars. The edge stars show up well on nights of good seeing. On such nights this globular seems to have almost half the diameter
of the moon.

M16 Mag.6 NGC.6611 Const.Ser.
A bright open cluster of about 100 stars. But like M.24, it lies a dense star field. It lies about 2 degrees north of the Omega Nebula in a patch of nebuloslity.

M17 Mag.? NGC.6618 Const.Sgr.
The Omega, or Horseshoe, Nebule. Beautiful, brilliant; a satisfying object even in small telescopes. Use your highest power for detail, but wait for that moment of best seeing.

M18 Mag.8 NGC.6613 Const.Sgr.
Even though this open cluster is small, it is easier to find than its companions in the area since it is silhouetted against a dark background.

M19 Mag.7 NGC.6273 Const.Oph.
Fairly bright, but small. This globular lies almost due east of Antares and due north of M.62, in the "blank space" north of Scorpius.

M20 Mag.? NGC.6514 Const.Sgr.
The Trified Nebula, so-called for the three dark rifts which meet at the center of this diffuse cloud of gas. Beautiful with high power, but the rifts are difficult with anything less than an 8-inch telescope.

M21 Mag.7 NGC.6531 Const.Sgr.
Surrounded on all sides by more spectacular objects, this fine open cluster has been neglected by most amateurs. Yet it is a striking object in itself and well worth attention.

M22 Mag.6 NGC.6656 Const.Sgr.
A bright globular cluster lying above the handle of the Milk Dipper, northeast of Kaus Borealis. The stars are easily resolvable in small telescopes.

M23 Mag.7 NGC.6494 Const.Sgr.
A very fine open cluster for low-power viewing. There are at least 120 stars arranged in curved lines. The sixth-magnitude star on its western edge will help you find this beautiful
cluster.

M24 Mag.5 NGC.6603 Const.Sgr.
Bright but small, this open cluster is hard to find since it lies in a dense star field. But if you follow the curve generated by the handle of the Milk Dipper in Sagittarius, you will come upon it about 2 degrees beyond the end star, Mu.

M25 Mag.7 NGC.I 4725 Const.Sgr.
This sprawling open cluster of about 50 stars is rather undistinguished. But it does contain the variable star U Sagittani near its center.

M26 Mag.9 NGC.6694 Const.Sct.
20 stars in an open cluster. Difficult because of the brilliant background of the Scutum star cloud. But it is almost on a line drawn through Alpha and Epsilon Scuti and extended to the east
the distance the stars are apart.

M27 Mag.8 NGC.6853 Const.Sge.
The Dumbbell Nebula. Difficult in small telescopes, its shape becomes more apparent with increase in aperture and power. A marvelous sight in large telescopes.

M28 Mag.7 NGC.6626 Const.Sgr.
A relatively dim globular lying about 1 degree north of Lambda Sagittani.

M29 Mag.7 NGC.6913 Const.Cyg.
A small open cluster of about 20 stars, just south of Sador, the central star in the crossarm of the Northern Cross.

M30 Mag.8 NGC.7099 Const.Cap.
A small globular about 4 degrees east of Zeta Capricorni, near an eighth magnitude star. It is resolvable in a 6 inch reflector,and appears to have streamers of stars to the north and
west.

M31 Mag.4 NGC.224 Const.And.
The Great Spiral Galaxy in Andromeda. It appears as a fuzzy spiral and will at first be disappointing to those who expect it to look like its photographs. But further study under varying seeing conditions and magnifications reveal more and more detail in this beautiful object.

M32 Mag.9 NGC.221 Const.And.
A small elliptical companion galaxy to M.31, the Great Spiral Galaxy in Andromeda. Often overlooked because of its famous neighbor in space.

M33 Mag.8 NGC.598 Const.Tri.
A tremendous nebula whose spiral nature shows only in large telescopes. Because of its size and very poor contrast with the sky background, this object is hard to find. Use low power and search carefully with fully dark-adapted eyes. You will pick it up on a line drawn through Mirach in Andromeda and Hamal in Aries, halfway between the two stars, and about 4 degrees west of Metallah in triangulum. Most amateurs consider finding this great spiral a minor triumph of good observing techniques.

M34 Mag.6 NGC.1039 Const.Per.
A beautiful open cluster of more than ninety stars, spectacular under low power or in a wide-field telescope. Many of the stars are double. It is barely visible to the naked eye but you can pick it up easily in your finder by sweeping the area between Algol and Alamak.

M35 Mag.6 NGC.2168 Const.Gem.
A naked eye open cluster. Magnificent in a telescopes over 8 inches of aperture; an excellent object for any telescope. It appears almost triangular in small instruments but has a diamond
shape in a larger ones. Look for it near Tejat Prior.

M36 Mag.6 NGC.1960 Const.Aur.
On the threshold of naked-eye visibility, this open cluster of about sixty stars is found on the edge of the Milky Way, about midway between M.28 and M.37.

M37 Mag.6 NGC.2099 Const.Aur.
One of the finest objects for small telescopes, this brilliant open cluster of about 150 stars offers variety in both brilliance and grouping of its member stars.

M38 Mag.7 NGC.1912 Const.Aur.
very lovely open cluster with about one hundred stars visible to the naked eye. Small telescopes may reveal a cross-shape which disappears with increasing aperture. Look for it between Capella and Nath.

M39 Mag.6 NGC.7092 Const.Cyg.
A large open cluster. Great in small telescopes at low power.

M40 Mag.9 NGC.WNC4 Const.Ura.
A double star in Ursa Major. The two components are of visual magnitudes 9.0 and 9.3 and their separation of the sky is 49 seconds of arc. The double was very easily split using a 4-inch refractor at 25x.

M41 Mag.6 NGC.2287 Const.CMa.
There are more than fifty stars of about eighth magnitude in this open cluster. Look for the bright red star near the center and the curved-line arrangement of the other stars. About 4 degrees southwest of Sirius.

M42 Mag.- NGC.1976 Const.Ori.
The Great Nebula of Orion. Clouds of swirling gas make up this diffuse nebula, which many observers think the most beautiful in the heavens. It surrounds Theta Orionis, a quadruple star called the Trapezium. Easy to find even with the naked eye, it appears as the middle star in Orion's Sword.

M43 Mag.- NGC,1982 Const.Ori.
This is the northeast wing of the Great Nebula, M.42.

M44 Mag.6 NGC,2632 Const.Cnc.
Praesepe, or the Beehive, is one of the best open clusters in the heavens. The combinations of double and triple stars in a brilliant star field are exceptionally beautiful in a low-power field. The astronomer who coined the phrase" diamonds in the sky" for the stars must have had the Beehive in mind. There are more than sixty stars brighter than tenth magnitude in this cluster.

M45 Mag.- NGC,- Const.Tau.
The Pleiades, or Seven Sisters. You can see at least a hundred stars in this magnificent open cluster, even with a small telescope. Look for nebulosity around the stars Merope. Electra, Maia, and Celaeno, if your telescope is 6 inches or more you can see these nebulosities.

M46 Mag.9 NGC,2437 Const.Pup.
An open cluster of 150 stars. Less brilliant than M.35 or M.37, but well worth looking for.

M47 Mag.4.6 NGC,2422 Const.Pup.
Is Visible to the unaided eye. It contains about 50 stars in a area 25 minutes of arc in diameter, the brightest one being of visual magnitude 5.7 About 1,600 light-years from us, M47 has a linear diameter of 12 light-years.

M48 Mag.5.8 NGC 2548 Const.Hyd.
Cluter, very large, pretty rich, pretty much compressed toward the middle, 9th to 13th magnitude stars. A superb object in the 4-inch refractor and even partly resolved in binoculars. At 60 power, M48 is nearly circular and the brightest stars appear concentrated toward its center.

M49 Mag.9 NGC,4472 Const.Vir.
Not difficult in any telescope over 3-inch aperture. An elliptical nebula which is nearly round. It has been described as "pearly" in color and is well defined. It lies between two sixth-magnitude stars.

M50 Mag.7 NGC,2323 Const.Mon.
A straggling open cluster with a central red star located about one-third the distance between Sirius and Procyon.

M51 Mag.8 NGC.5195 Const.CVn.
A magnificent object, great spiral nebular. Bright, pretty small, little extended, very gradually brighter toward the middle.

M52 Mag.9 NGC.7654 Const.Cas.
A poorly defined irregular open cluster. Look for the orange-red star it contains.

M53 Mag.8 NGC.5024 Const.Com.
A beautiful globular which usually seems brighter than eighth magnitude. Look for a wide double star (Diadem), just below it.

M54 Mag.7 NGC.6715 Const.Sgr.
A small globular just above the bowl of the Dipper. It can be confused with M69 or M22. The three globulars make an interesting variation of size and brightness, all in the same region of the
sky.

M55 Mag.5 NGC.6809 Const.Sgr.
Bright enough to be seen with the naked eye, this splendid globular cluster can be found by following an imaginary line drawn eastward though the center of the Dipper. It lies 7.' from Ascella, the brightest star in the Dipper's bowl.

M56 Mag.8 NGC.6779 Const.Lyr.
Overshadowed by its famous neighbor, the Ring Nebula, this fine little globular cluster is often neglected.

M57 Mag.9 NGC.6720 Const.Lyr.
The great Ring Nebula in Lyra. You may not be able to see the center star unless you have a large telescope (12 inches or more) but you can see the "doughnut" in any telescope. Look particularly for the illumination in the center of the ring.

M58 Mag.10 NGC.4579 Const.Vir.
Although this one appears in the list as a spiral nebula, it is not well defined and very difficult to spot. It is a real challenge.

M59 Mag.11 NGC.4621 Const.Vir.
An elliptical nebula which often appears brighter than its assigned magnitude. Helpful in finding M58.

M60 Mag.9 NGC.4649 Const.Vir.
Larger than M59, it has the same magnitude. This is not a twin nebula; the other nebula in the field is a close spiral companion, NGC 4647.

M61 Mag.l0 NGC.4303 Const.Vir.
There is bright center in this faint spiral, but it still requires the light-gathering power of large aperture (8 to 10) to be seen clearly.

M62 Mag.7 NGC.6266 Const.Oph.
A fine, bright globular. Low in the sky, near RR Scorpii.

M63 Mag.l0 NGC.5055 Const.CVn.
A spindle-shaped spiral with a bright nucleus. Easily visible in 3-inch instruments, it lies above the triangle of stars which make up the main figure of Canes Venatici.

M64 Mag.9 NGC.4826 Const.Com.
The famous "black-eye" nebula. Unfortunately the dark patch which gives it its name can be seen only in large telescopes.

M65 Mag.10 NGC.3623 Const.Leo.
M65 and M66 are "twin" spiral nebula since they appear in the same field in moderate apertures and magnifications. They are featureless but bright enough to be found without much difficulty if you look along a line passing though Zosma and Coxa and extended below the triangle in Leo.

M66 Mag.9 NGC.3627 Const.Leo. See M65 for information..

M67 Mag.6 NGC.2682 Const.Cnc.
You can easily count sixty-five stars in this irregular open cluster and even more on a dark clear night. A wonderful object for low power.

M68 Mag.8 NGC.4590 Const.Hya.
A globular cluster lying just under Corvus in a sparse star field.

M69 Mag.8 NGC.6637 Const.Sgr.
A small globular which you can find just below the bowl of the Dipper in Sagittarius.

M70 Mag.l0 NGC.6681 Const.Sgr.
Another small globular cluster. About 2 degrees east of M69, it is located halfway between Ascella and Kaus Austrialis.

M71 Mag.9 NGC.6838 Const.Sge.
Look in the arrow of Sagitta for this small, great globular.

M72 Mag.10 NGC.6981 Const.Aqr.
A small fuzzy globular cluster which is difficult to resolve into stars even at the edge. Nevertheless, it stands out in the southern Aquarius and serves as a guidepost to find a more interesting object, the Saturn Nebula, one of the objects Messier failed to record.

M73 Mag.10 NGC.6994 Const.Aqr.
One of Messier's doubtful listings. A little asterism of only four stars.

M74 Mag.10 NGC.628 Const.Psc.
A broadside spiral. Small scopes will not reveal the spiral arms, but a night of good seeing and an 8-inch telescope brings out the delicate structure.

M75 Mag.8 NGC.6864 Const.Sgr.
A distant globular. It is small and its stars are difficult to resolve. It lies about halfway between the star Omega Sagittani and Dabih (Beta Capricorni).

M76 Mag.12 NGC.650-1 Const.Per.
This small planetary nebula which appears as two faint patches of light in contact. Known as the Little Dumbbell Nebula, it lies northwest of the star Phi Andromedae.

M77 Mag.9 NGC.1068 Const.Cet.
Very bright, pretty large, irregularly round, suddenly brighter toward the middle, some stars seen near the nucleus.

M78 Mag.? NGC.2068 Const.Ori.
A wispy, filamentous nebula. Look for the tenth-magnitude star embedded in it. It is about 20 minutes west of Mintaka.

M79 Mag.8 NGC.1904 Const.Lep.
A small, globular cluster, very bright in the center. Placed at one corner of a flattened parallelogram, of which the other three corners are the stars Delta, Beta, and Epsilon of the
constellation Lepus.

M80 Mag.8 NGC.6093 Const.Sco.
A small bright globular lying near the long-period variable R Scorpii.

M81 Mag.8 NGC.3031 Const.UMa.
A bright spiral nebula which appears even brighter because of its glowing nucleus .The spiral arms are faint, however. You can pick up M82 in the same area since the two nebulae are about 45 minutes apart.

M82 Mag.9 NGC.3034 Const.UMa.
An irregular nebula which appears only as a curved splash of light in anything other than large telescopes. Look for both M81 and M82 at the apex of an isosceles triangle whose base is the line between Gianfar in Draco and Dubhe in Ursa Major.

M83 Mag.10 NGC.5236 Const.Hya.
A broadside spiral, easily visible in small telescopes. Look for it about halfway along a line drawn between Delta Hydrae and Theta Centauri.

M84 Mag.10 NGC.4374 Const.Vir.
A dim elliptical nebula appearing in the field as M86, which is almost its twin. The two nebulae lie at right angles to each other.

M85 Mag.l0 NGC.4382 Const.Com.
Another dim elliptical nebula, the northern most of the Coma-Virgo group.

M86 Mag.10 NGC.4406 Const.Vir. Same as M84.

M87 Mag.l0 NGC.4486 Const.Vir.
Another of the roundish, dim galaxies of the Coma-Virgo group. Listed as an elliptical nebula.

M88 Mag.10 NGC.4501 Const.Com.
An elongated, pale spiral. It has no distinguishing features other than its shape.

M89 Mag.10 NGC.4552 Const.Vir.
A tiny, dim, almost perfectly round object. Listed as an elliptical nebula but looks more like a planetary.

M90 Mag.l1 NGC.4569 Const.Vir.
Another dim spiral, but easier to spot than M89 because of its size.

M91 Mag.9.5 NGC.4548 Const.
This galaxy is beautiful even with low power. At medium magnification, its irregularly oval outline and sharp curving extension can be discerned. This extension may be part of the galaxy's bar.

M92 Mag.6 NGC. 6341 Const.Her.
Often overlooked because of its proximity to its famous neighbor M13, this is a fine, bright globular although its stars are difficult to resolve.

M93 Mag.6 NGC.2447 Const.Pup.
A very lovely five-armed open cluster located just at the edge of the Milky Way rift in Puppis.

M94 Mag.8 NGC.4736 Const.CVn.
One of the three Messier objects lying between the end of the Big Dipper's handle and Cor Caroli (the other two: M51 and M63) . A spiral, but it looks like a luminous ball in small and medium telescopes.

M95 Mag.10 NGC.3351 Const.Leo.
With M96 only 4 minutes away this nebula makes a pair of spirals. In moderate-sized telescope, M96 is the brighter of the two although the difference is difficult to detect in small instruments.

M96 Mag.9 NGC.3368 Const.Leo. Same as M95.

M97 Mag.12 NGC.3587 Const.UMa.
The Owl Nebula. A famous planetary southeast of Merak in the Big Dipper. Two dark spots in an otherwise uniform disk give this planetary its name. Although the Owl Nebula itself is easy to locate and observe with a small telescope, you will probably find it difficult to see the dark spots.

M98 Mag.10 NGC.4192 Const.Com.
A pale spiral nebula whose light is flooded out by the nearby fourth-magnitude star. Use the star as a focus, then move it out of the field and the nebula will appear to the west.

M99 Mag.10 NGC.4254 Const.Com.
Although brighter than the accepted magnitude, this pale spiral is still a difficult object for the small telescope.

M100 Mag.10 NGC.4321 Const.Com.
One of the faint, very distant spirals of the Coma-Virgo group. You can be proud of your skill in finding elusive objects when you identify this one.

M101 Mag.10 NGC.5457 Const.UMa.
An easy object for any telescope. Look for it just above the handle of the Big Dipper as the third vertex of a triangle in which the other two are Mizar and Alkaid. A spiral in big telescopes, you will probably see it as a large, pale object.

M102 Mag.10 NGC.5457 Const.UMa. This object is a duplication of M101.

M103 Mag.7 NGC.581 Const.Cas.
An open cluster northeast of Rucha in Cassiopeia. Located on an imaginary line between Rucha and Segin (Epsilon Cassiopeiae) . It contains a red star at the focus of a brilliant field.

M104 Mag.9 NGC.4594 Const.Vir.
The "Sombrero Nebula," a spiral. Some observers think it looks more like an edge-on view of an oyster. In any event it is not well defined in small telescopes.

M105 Mag.10 NGC.3379 Const.Leo.
A dim elliptical nebula located just to the northeast of M96.

M106 Mag.10 NGC.4258 Const.CVn.
Another faint spiral, but like M99, appears brighter than its accepted magnitude. Almost in the same field is another spiral, NGC4217.

M107 Mag.9 NGC.6171 Const.Oph.
A good test for moderate-sized telescopes, this globular cluster lies approximately halfway between Zeta and Phi Ophiuchi.

M108 Mag.l0 NGC.3556 Const.UMa.
Easily visible in low power, this spiral nebula appears as a moderately bright strip in which is embedded a faint star. It lies close to Merak on a line between Merak and Phecda.

M109 Mag.11 NGC.3992 Const.UMa.
A barred spiral, fairly bright, located just south of the Big Dipper star Phicda. You will probably find it to be brighter than the accepted magnitude indicates.

M110 Mag.8 NGC.205 Const.
An impressive sight in the 4-inch refractor. It is almost uniform in luster, with a brighter middle. Near the top of the drawing is a curious soft extension that was near the limit of perception in the 4-inch. Other observers, however, do not mention any irregularities in the shape of M110.

THE AUTUMN MESSIER OBJECTS

M55 * M71 * M27 * M75 * M29 * M72 * M73 * M15 * M39 * M2 * M30 * M52 * M32 * M31 * M103 * M33 * M74 * M76

THE WINTER MESSIER OBJECTS

M34 * M77 * M45 * M79 * M38 * M1 * M36 * M42 * M43 * M78 * M37 * M35 * M41 * M50 * M46 * M93

THE SPRING MESSIER OBJECTS

M44 * M67 * M81 * M82 * M95 * M96 * M108 * M105 * M97 * M65 * M66 * M109 * M98 * M99 * M106 * M61 * M100 * M84 * M85 * M86 * M49 * M87 * M88 * M89 * M90 * M58 * M68 * M104 * M59 * M60 * M94 * M64 * M53 * M63 * M51

THE SUMMER MESSIER OBJECTS

M83 * M3 * M101 * M5 * M80 * M4 * M107 * M13 * M12 * M10 * M62 * M19 * M9 * M14 * M6 * M7* M23 * M20 * M8 * M21 * M24 * M16 * M18 * M17 * M28 * M69 * M25 * M22 * M70 * M26 * M11 * M57 * M54 * M56