The following list is a result of too many nights racing through Messier marathons, wandering through the Herschel 400, scanning the southern horizon for unexpected treasures, star-hopping for invisible faint fuzzies, and finally, finding myself at the helm of a 22-inch Go-To telescope, not knowing what to look at next! You’ll no doubt recognize many of the objects I’ve included. Many are the finest, most visited, destinations in the night sky. Some are the best in their class, although they may still seem a challenge with apertures under 20 inches. A few will make you yearn for your old 3-inch refractor, or dark skies from your earliest deep sky memories.

The list is compiled in “constellation by right ascension, right ascension within constellation”, order. If you use digital setting circles or a driven Go- To telescope, you’ll appreciate the “by constellation” tasking. The SkyQ designation rates the objects first by sky quality (naked-eye limiting magnitude 4-5-6+ was what I had in mind, it varies...), and exclamation marks flag objects that are particularly notable. For double and multiple stars, judge your night and your telescope on the Size/Sep column. Remarks are mostly from old notes scribbled at the eyepiece of a 20-inch Dobsonian or a 5-inch richest field refractor. Some notes were culled from other observer’s posts, periodicals, and numerous texts. Positional elements for all NGC and IC objects are epoch 2000, stellar positional elements are mixed. Current separations for double stars are estimated for 2000 (some are surprising if you’ve been observing true binaries for 30 years!) The farthest south object in the list is Alpha Centauri, followed closely by Eta Carina. The dimmest object, and most challenging, would have to be Einstein’s Cross at magnitude 17 1/2, followed by the Twin Lensing Quasar in Ursa Major at 16 1/2 (which was pretty easy at the Winter Star Party in my old 20-incher.) All told, of the 400 objects in the list there are 179 galaxies, 59 planetary nebulae, 37 open clusters, 29 globular clusters, 21 diffuse or “bright” nebulae, 4 super nova remnants, and 2 lensed quasars (numerous anecdotal objects are interspersed in the Remarks column.) The remaining 75 stellar objects are double and multiple stars, contrasting color double stars, and a good sampling of the best deep red carbon stars. There are 145 objects listed with a SkyQ of 4, perfect for small telescopes or average nights. On a better than average night you can easily add 170 objects with a SkyQ of 5, and on those truly remarkable deep sky nights, 85 objects with a SkyQ of 6 will test your telescope optics and your observing skills.

If you find I’ve omitted one of your favorite objects, make a note and send it to me. Similarly, if you feel an object on the list is overrated, I’d like to hear your opinion on that as well. The list is an evolving project, I hope you have as much fun using it as I had creating it.

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**My Favorite Deep Sky Go-To Tour (aka: The List)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SkyQ | NGC/other | Type | RA |  | DEC | | Con | Mag | Size/Sep | Remarks |
| 6 | 7793 | G | 23 | 57.8 | -32 35 | | SCL | 9.1 | 6'x4' | Sd, loose spiral pattern |
| 6 | 24 | G | 00 | 09.9 | -24 58 | | SCL | 11.3 | 6'x1' | easy edge-on |
| 6 | 55 | G | 00 | 14.9 | -39 11 | | SCL | 7.8 | 25'x4' | Irregular |
| 6 | 134 | G | 00 | 30.4 | -33 15 | | SCL | 10.1 | 5'x1' | Sb/Sc, nearly edge-on, in field of Eta SCL |
| 4 !! | 253 | G | 00 | 47.6 | -25 17 | | SCL | 8.9 | 24.6'x4.5' | Bright nearly edge-on galaxy with structure |
| 5 ! | 288 | GC | 00 | 52.8 | -26 35 | | SCL | 7.2 | 10' | Loose structured globular |
| 6 | 613 | G | 01 | 34.3 | -29 25 | | SCL | 10 | 5.8' | SBc, faint arm |
| 4 !! | 7789 | OC | 23 | 57.0 | +56 | 44 | CAS | 9.6 | 30' | Well resolved cluster of 900 stars with dark lanes |
| 4 ! | h3053 | CDBL | 00 | 02.5 | +66 | 06 | CAS | 5.9 | 15" | B-m7.3, yellow, blue |
| 4 !! | Eta | CDBL | 00 | 49.0 | +57 | 49 | CAS | 3.5 | 12.9" | B-m7.5, yellow, blue, Achird |
| 5 | 278 | G | 00 | 52.1 | +47 | 33 | CAS | 11.3 | 1.3' | Compact face-on spiral with structure |
| 6 | 281 | DN | 00 | 52.8 | +56 | 37 | CAS | 8 | 23'x27' | faint |
| 4 !! | 457 | OC | 01 | 19.1 | +58 | 20 | CAS | 6.4 | 12' | Dragonfly Cluster 200 stars |
| 4 !! | 663 | OC | 01 | 46.0 | +61 | 15 | CAS | 7.1 | 11' | Rich scatter of stars |
| 6 | 896 | DN | 02 | 24.8 | +61 | 54 | CAS | 8 | 20' | Use UHC, dark nebulae involved |
| 4 ! | Iota | MULT | 02 | 29.0 | +67 | 24 | CAS | 4.6 | 2.5" | B-m6.9, C-m8.4, 7.3" |
| 6 | IC289 | PN | 03 | 10.3 | +61 | 19 | CAS | 13 | .5' | annular |
| 6 | 7640 | G | 23 | 22.1 | +40 | 51 | AND | 10.8 | 11'x2.5' | S(B)b - definition |
| 4 !! | 7662 | PN | 23 | 25.9 | +42 | 33 | AND | 9.0 | 32"x28" | The Blue Snowball, annular, turquoise disk with central star |
| 5 | VX | Carbon | 00 | 17.2 | +44 | 26 | AND | 8-10 |  | N7 Carbon Star, 367 days |
| 4 !! | 224, M31 | G | 00 | 42.7 | +41 | 16 | AND | 4 | 180'x35' | Andromeda Galaxy w/M32 and M110 |
| 4 !! | Gamma | CDBL | 02 | 03.9 | +42 | 20 | AND | 2.2 | 9.8" | B-m5.1, yellow, blue, Alamak C-m6.3, 0.5", blue |
| 5 ! | 891 | G | 02 | 22.6 | +42 | 21 | AND | 11.5 | 11.8'x1.1' | Edge-on galaxy with dark lane, almost transparent |
| 5 !! | 598, M33 | G | 01 | 33.9 | +30 | 39 | TRI | 5.3 | 60' | Pinwheel Galaxy |
| 4 ! | Iota | CDBL | 02 | 12.4 | +30 | 18 | TRI | 5.3 | 3.9" | B-m6.9, yellow, blue |
| 5 ! | 628, M74 | G | 01 | 36.7 | +15 | 47 | PSC | 8.8 | 8' | Face on Sc - mini M101 |
| 4 | Alpha | DBL | 02 | 02.0 | +02 | 45 | PSC | 4.2 | 1.5" | B-m5.2, Alrisha |
| 5 ! | 246 | PN | 00 | 47.0 | -11 | 53 | CET | 8.5 | 240" | 3D bubble nebula with central and other embedded stars |
| 4 ! | Gamma | DBL | 02 | 40.7 | +03 | 02 | CET | 3.6 | 2.8" | B-m6.2 |
| 4 ! | 1068, M77 | G | 02 | 42.7 | -00 | 01 | CET | 8.4 | 6' | Seyfert |
| 4 ! | Gamma | DBL | 01 | 53.5 | +19 | 17 | ARI | 4.6 | 7.8" | B-m4.7, Mesarthim |

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| 5 | 772 | G | 01 | 59.3 | +19 | 01 | ARI | 10.9 | 5'x3' | Easy face-on spiral, elongated with bright nucleus |
| 4 !! | 650-1, M76 | PN | 01 | 42.3 | +51 | 34 | PER | 10.5 | 1.5' | Little Dumbbell Nebula |
| 4 !! | 869, 884 | OC | 02 | 19.0 | +57 | 09 | PER | 4.4 | 36' | Double Cluster |
| 4 ! | 1023 | G | 02 | 40.4 | +39 | 04 | PER | 9.2 | 4.0'x1.2' | Lens-shaped elliptical galaxy |
| 4 ! | Eta | CDBL | 02 | 50.6 | +55 | 53 | PER | 3.8 | 28.4" | B-m8.5, yellow, blue, Miram |
| 5 | 1245 | OC | 03 | 14.7 | +47 | 15 | PER | 6.9 | 30' | Dim, rich scatter of pinpoint stars |
| 6 ! | 1275 | G | 03 | 19.8 | +41 | 34 | PER | 11.6 | 2.6'x1.9' | Perseus A - brightest member of Perseus I Cluster (A426) |
| 6 | 1491 | DN | 04 | 03.4 | +51 | 19 | PER | 11.2 | 3'x3' | Use UHC, looks like a comet |
| 5 | 1513 | OC | 04 | 10.0 | +49 | 31 | PER | 8.8 | 12' | U-shaped, fairly condensed cluster of 40 stars |
| 5 | 1528 | OC | 04 | 15.4 | +51 | 14 | PER | 6.2 | 25' | Rich triangular scatter of 80 stars |
| 6 | 1579 | DN | 04 | 30.2 | +35 | 16 | PER | 8 | 12'x8' | Reflection Nebula |
| 6 ! | 1049 | GC | 02 | 39.7 | -34 | 17 | FOR | 12.9 | 24" | Extragalactic GC - Part of Fornax Dwarf System |
| 6 | 1097 | G | 02 | 46.0 | -30 | 17 | FOR | 9.3 | 9.3' | SBb |
| 6 | 1316 | G | 03 | 22.7 | -37 | 12 | FOR | 8.8 | 3.5x2.5 | SOp w/mag12.2 NGC1317 (Sb) |
| 5 | 1360 | PN | 03 | 33.3 | -25 | 51 | FOR | 9.4 | 6'x4.5' | egg-shaped, irregular - m8 central star |
| 5 !! | 1365 | G | 03 | 33.6 | -36 | 08 | FOR | 9.5 | 8'x3.5' | SBc, big, easy bar and spiral structure |
| 6 | 1380 | G | 03 | 36.5 | -34 | 59 | FOR | 10.2 | 5'x2' | SO, lens shaped - Fornax I Cluster |
| 6 | 1398 | G | 03 | 38.9 | -26 | 20 | FOR | 9.7 | 4.5'x3.8' | SBb - round, very faint spiral arms |
| 6 | 1084 | G | 02 | 46.0 | -07 | 35 | ERI | 10.6 | 3'x1.5' | Sc - dark lane |
| 4 ! | Theta | DBL | 02 | 58.3 | -40 | 18 | ERI | 3.2 | 8.2" | B-m4.3, Acamar |
| 6 | 1187 | G | 03 | 02.6 | -22 | 52 | ERI | 11.3 | 5.4'x4' | SBc, multiple arm spiral, bar?, slightly tilted |
| 6 ! | 1232 | G | 03 | 09.8 | -20 | 35 | ERI | 9.9 | 7'x6' | Sc, multiple arms, face-on spiral, mini M101 |
| 6 | 1291 | G | 03 | 17.3 | -41 | 08 | ERI | 8.5 | 10.5' | SB, round |
| 6 | 1421 | G | 03 | 42.5 | -13 | 29 | ERI | 11.4 | 3'x0.5' | Sb, gray splinter, mottled, hooked on one end |
| 4 ! | 32 | CDBL | 03 | 53.8 | -02 58 | | ERI | 4.7 | 6.9" | B-m6.2, yellow, blue |
| 6 | 1532 | G | 04 | 12.1 | -32 52 | | ERI | 11.8 | 5'x1' | Sb, nearly edge-on, w/m12.1 NGC1531 |
| 4 !! | 1535 | PN | 04 | 14.2 | -12 44 | | ERI | 9.3 | 20" | Smaller version of NGC3242 |
| 5 ! | Omicron 2 | DBL | 04 | 15.4 | -07 36 | | ERI | 9.5 | 8.5" | C-m11.1, red dwarf and white dwarf, |
|  |  |  |  |  |  |  |  |  |  | A component is m4.5, 82" distant, Beid |
| 6 | 1433 | G | 03 | 42.0 | -47 13 | | HOR | 10 | 6.8' | SBa - prominent bar, nearly face-on |
| 4 !! | 1435, M45 | DN | 03 | 46.1 | +23 47 | | TAU | 1.4 | 90' | Pleiades w/Merope Nebula |
| 5 | 1514 | PN | 04 | 09.2 | +30 47 | | TAU | 9.0 | 2'x1.5' | mag 9.4 central star |
| 5 ! | 1952, M1 | SNR | 05 | 34.5 | +22 01 | | TAU | 8.5 | 6'x4' | Crab Nebula |
| 4 ! | R | Carbon | 04 | 57.3 | -14 53 | | LEP | 6-11 |  | N6 Carbon Star, Hind's Crimson Star, 432 days |
| 4 ! | 1904, M79 | GC | 05 | 24.5 | -24 33 | | LEP | 8 | 3' | Small, well resolved |
| 5 | IC418 | PN | 05 | 27.5 | -12 42 | | LEP | 9.3 | 14"x11" | Small, round, pink, central star, the Raspberry |
| 6 | 1964 | G | 05 | 33.4 | -21 57 | | LEP | 10.8 | 6'x2' | Sb, elongated, embedded HII regions |
| 6 | 1792 | G | 05 | 05.2 | -37 59 | | COL | 10.2 | 3'x1' | Sc, elongated |
| 6 ! | 1808 | G | 05 | 07.7 | -37 31 | | COL | 9.9 | 7.2' | SB, faint outer arms, bar front-to-back, brighter nucleus, |
|  |  |  |  |  |  |  |  |  |  | some spiral arm structure |
| 5 ! | 1851 | GC | 05 | 14.1 | -40 | 03 | COL | 7.3 | 11' | faint stars |
| 4 | W | Carbon | 05 | 02.8 | +01 | 07 | ORI | 6.5-10 |  | N5 Carbon Star, 210 days |
| 4 | Beta | DBL | 05 | 14.5 | -08 | 11 | ORI | 0.2 | 9.2" | B-m6.7, Rigel |
| 4 | Eta | DBL | 05 | 24.5 | -02 | 23 | ORI | 3.7 | 1.5" | B-m5.1, WSP Snowman |
| 4 ! | Lambda | DBL | 05 | 34.8 | -09 | 52 | ORI | 3.6 | 4.3" | B-m5.5, yellowish, purple? |
| 4 !! | 1976, M42 | DN | 05 | 35.4 | -05 | 27 | ORI | 4 | 60' | w/M43 Orion Nebula, Theta 1 - The Trapezium, also nearby, |
|  |  |  |  |  |  |  |  |  |  | DN- NGC1999 1.2° south, use high power to reveal detail |
| 4 | Sigma | MULT | 05 | 36.2 | -02 | 38 | ORI | 3.7 | .25" | B-m?, C-m10, 11.2", D-m7.5, 12.9", E-m6, 42" |
|  |  |  |  |  |  |  |  |  |  | faint triple star Struve761 same field 3.5' distant |
| 6 !? | IC434 | DN | 05 | 41.0 | -02 | 24 | ORI | - | 3' | Horsehead Nebula (B33) |
| 5 ! | 2024 | DN | 05 | 41.9 | -01 | 51 | ORI | 10.5 | 30' | Flame or Maple Leaf Nebula, Zeta - triple star |
| 5 | 2022 | PN | 05 | 42.1 | +09 | 05 | ORI | 11.5 | 28" | Annular planetary with central star |
| 5 | 2068, M78 | DN | 05 | 46.7 | +00 | 03 | ORI | 10 | 8'x6' | Comet like |
| 4 !! | 2169 | OC | 06 | 08.4 | +18 | 57 | ORI | 5.9 | 7' | The "37" Cluster |
| 5 | 2194 | OC | 06 | 13.8 | +12 | 48 | ORI | 9.2 | 8' | Faint, rich grouping of finely resolved stars |
| 4 ! | 1907 | OC | 05 | 28.0 | +35 | 19 | AUR | 8.2 | 7' | Nice compact cluster, 110 stars |
| 4 ! | 2099, M37 | OC | 05 | 52.4 | +32 | 33 | AUR | 6.2 | 20' | Best Messier OC in Auriga |
| 6 | IC2149 | PN | 05 | 56.3 | +46 | 07 | AUR | 10.7 | 12"x6" | mag 11.6 central star, very small |
| 4 | Theta | DBL | 05 | 56.3 | +37 | 13 | AUR | 2.6 | 3" | B-m7.1 |
| 4 ! | 2168, M35 | OC | 06 | 08.9 | +24 | 20 | GEM | 5.3 | 30' | Mag11.0 N2158 faint, small, very rich OC SW of M35 |
| 5 | 2266 | OC | 06 | 43.2 | +26 | 58 | GEM | 9.8 | 5' | Similar to M11 |
| 5 | 2304 | OC | 06 | 55.0 | +18 | 01 | GEM | 10.1 | 5.5' | Irregular cluster of pinpoint stars, compact |
| 5 | 2355 | OC | 07 | 16.9 | +13 | 47 | GEM | 9.5 | 9' | Rich compact cluster of 70 stars |

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| 4 ! | Delta | CDBL | 07 | 20.1 | +22 | 00 | GEM | 3.6 | 5.7" | B-m8.2, yellow, blue, Wasat |
| 5 ! | 2371-2 | PN | 07 | 25.6 | +29 | 29 | GEM | 11.0 | 54"x35" | Two lobed planetary nebula surrounds central star, |
|  |  |  |  |  |  |  |  |  |  | look for arcs on short axis - 135"? w/OIII |
| 6 ! | Abell 21 | PN | 07 | 29.0 | +13 | 15 | GEM | 10.3 |  | The Medusa Nebula, use OIII, PK205+14.1 |
| 4 !! | 2392 | PN | 07 | 29.2 | +20 | 55 | GEM | 9.5 | 47"x43" | The Clown Face or Eskimo nebula |
| 4 ! | Alpha | DBL | 07 | 34.6 | +31 | 54 | GEM | 1.9 | 3.8" | B-m2.9, Castor |
| 5 | 2420 | OC | 07 | 38.5 | +21 | 34 | GEM | 10.2 | 7' | Well resolved cluster with nebulosity |
| 4 ! | 8 | CDBL | 06 | 23.8 | +04 | 36 | MON | 4.5 | 13" | B-m6.5, gold, blue |
| 4 ! | Beta | MULT | 06 | 28.8 | -07 | 01 | MON | 4.7 | 7.4" | B-m5.2, C-m6.1, 2.8" |
| 5 ! | 2244 | DN | 06 | 32.4 | +04 | 52 | MON | 6.2 | 40' | Rosette Nebula, best with UHC and wide field |
| 5 ! | 2261 | DN | 06 | 39.2 | +08 | 44 | MON | 10 | 2' | Hubble's Variable Nebula |
| 4 | 2323, M50 | OC | 07 | 03.2 | -08 | 20 | MON | 6 | 10' | 100 stars |
| 6 | 2346 | PN | 07 | 09.4 | -00 | 48 | MON | 11.8 | 1' | central star variable m11.3 - 13.5, 16 days |
| 5 ! | 2506 | OC | 08 | 00.2 | -10 | 47 | MON | 7.6 | 10' | Cluster of stars resolves into two groups (800 stars) |
| 6 | 2207 | G | 06 | 16.4 | -21 | 22 | CMA | 10.7 | 3'x1.5' | interacting w/IC2163 (m13) |
| 4 | Alpha | DBL | 06 | 45.2 | -16 | 42 | CMA | -1.5 | 5" | B-m8.5, separation widening, Sirius |
| 4 | Epsilon | DBL | 06 | 58.7 | -28 | 58 | CMA | 1.5 | 8" | B-m7.8, Adhara, try this one before Sirius |
| 4 ! | h3945 | CDBL | 07 | 16.6 | -23 | 18 | CMA | 4.8 | 26.6" | B-m6.8, orange, white |
| 5 ! | 2360 | OC | 07 | 17.8 | -15 | 37 | CMA | 9.5 | 12' | Rich cluster of 50 stars, salt and pepper |
| 5 ! | 2359 | DN | 07 | 18.6 | -13 | 12 | CMA | 11 | 8' | the Whistle Nebula - Thor’s Helmet, Wolf-Rayet central star |
| 4 !! | 2362 | OC | 07 | 18.8 | -24 | 57 | CMA | 10.5 | 6' | Cluster of 40 stars surrounds Tau Canis Majoris, the Arkenstone |
| 5 ! | 1501 | PN | 04 | 07.0 | +60 | 55 | CAM | 11.5 | 50" | A classic planetary nebula, mottling evident w/good seeing |
| 4 ! | 1502 | OC | 04 | 07.7 | +62 | 20 | CAM | 5.3 | 7' | Irregular cluster, 25 stars, shaped like a cross-bow, |
|  |  |  |  |  |  |  |  |  |  | Kemble's Cascade emanates from OC |
| 4 | ST | Carbon | 04 | 46.0 | +68 | 05 | CAM | 7-8.5 |  | N5 Carbon Star, 195 days |
| 5 | U | Carbon | 05 | 37.5 | +62 | 29 | CAM | 8-9.5 |  | N5 Carbon Star, 412 days |
| 5 ! | 2403 | G | 07 | 36.9 | +65 | 36 | CAM | 8.9 | 17'x10' | Large nearly face-on Sc-type spiral galaxy with structure |
| 6 | 2655 | G | 08 | 55.6 | +78 | 13 | CAM | 10.1 | 4'x3' | Sa mottled - round |
| 6 | IC3568 | PN | 12 | 32.9 | +82 | 33 | CAM | 9.0 | 15" | very small |
| 5 | 2421 | OC | 07 | 36.3 | -20 | 37 | PUP | 9.4 | 8' | Large, fairly rich cluster of dim stars |
| 4 ! | 2423 | OC | 07 | 37.1 | -13 | 52 | PUP | 6.9 | 20' | Cluster of 60 stars with nebulosity |
| 4 | Kappa | DBL | 07 | 38.8 | -26 | 47 | PUP | 4.5 | 9.8" | B-m4.6, Markeb |
| 4 !! | 2437, M46 | OC | 07 | 41.8 | -14 | 49 | PUP | 6 | 28' | w/PN N2438, annular, mag 11.3, 68" |
| 5 ! | 2440 | PN | 07 | 41.9 | -18 | 13 | PUP | 11.5 | 54"x20" | Bright, mini Bug Nebula, considerable detail |
| 6 | 2452 | PN | 07 | 47.4 | -27 | 20 | PUP | 12.2 | .5' | annular |
| 5 | 2477 | OC | 07 | 52.3 | -38 | 33 | PUP | 5.8 | 27' | 300 stars, m11+ |
| 5 ! | 2467 | DN | 07 | 52.6 | -26 | 23 | PUP | 7.2 | 16' | the Skull Nebula, Wolf-Rayet central star |
| 4 ! | 2539 | OC | 08 | 10.7 | -12 | 50 | PUP | 8.2 | 21' | Large cluster of 150 stars, resolves easily |
| 5 | 2567 | OC | 08 | 18.6 | -30 | 38 | PUP | 8.3 | 10' | Chain of 6 stars through cluster of 50 stars |
| 4 ! | Zeta | MULT | 08 | 12.2 | +17 | 39 | CNC | 5.6 | 0.7" | B-m6.0, C-m7.3, 5.9", Tegmeni |
| 4 ! | Iota-1 | CDBL | 08 | 46.7 | +28 | 46 | CNC | 4.2 | 30.4" | B-m6.6, yellow, blue |
| 4 | X | Carbon | 08 | 55.4 | +17 | 14 | CNC | 5.6-7.5 |  | N7.7 Carbon Star |
| 4 ! | 12 | MULT | 06 | 46.2 | +59 | 26 | LYN | 5.4 | 1.7" | B-m6.0, C-m7.4, 8" |
| 6 | 2419 | GC | 07 | 38.1 | +38 | 53 | LYN | 11.5 | 2' | Galactic Wanderer |
| 6 !? | JE1 | PN | 07 | 57.8 | +53 | 25 | LYN | 12.1 | 7' | low power and filter! faint Helix |
| 6 | 2537 | G | 08 | 13.2 | +46 | 00 | LYN | 11.7 | 1.7'x1.5' | the Bear Paw Galaxy, round, dusty |
| 4 !! | 2683 | G | 08 | 52.7 | +33 | 25 | LYN | 9.6 | 8'x1.3' | Edge-on galaxy, dark lane, mottled structure |
| 5 | 2613 | G | 08 | 33.4 | -22 | 58 | PYX | 10.4 | 6.6'x1.3' | Dim, warped edge-on galaxy |
| 5 ! | 2818 | OC | 09 | 16.0 | -36 | 37 | PYX | 8.2 | 9' | about 30 stars, contains m13 PN (2818A - 40" bipolar nebula in |
|  |  |  |  |  |  |  |  |  |  | elliptical ring) |
| 4 | Gamma | DBL | 08 | 09.4 | -47 | 20 | VEL | 1.8 | 41" | B-m4.3, C-mag8, 62" |
| 4 !! | 3132 | PN | 10 | 07.0 | -40 | 26 | VEL | 9.2 | 50" | the Eight-burst Nebula, m10 central star |
| 5 | 2997 | G | 09 | 45.6 | -31 | 11 | ANT | 11 | 6'x5' | Sc, tight spiral w/dark spirals, unusual |
| 5 | 3044 | G | 09 | 53.7 | +01 | 35 | SEX | 12.0 | 4'x1' | edge-on, bar-like core |
| 4 !! | 3115 | G | 10 | 05.2 | -07 | 43 | SEX | 9.3 | 4.0x1.2 | The Spindle Galaxy. lens-shaped |
| 6 | 3166 | G | 10 | 13.8 | +03 | 26 | SEX | 10.6 | 5.2'x2.7' | interacting w/mag10.5 N3169 (4.8'x3.2') and fainter N3165 |
| 6 | 3003 | G | 09 | 48.6 | +33 | 25 | LMI | 11.7 | 4'x1' | SBc, nearly edge-on |
| 6 | 3344 | G | 10 | 43.5 | +24 | 55 | LMI | 10 | 6'x5' | Sc, face-on, mini M101 |
| 5 | 3395 | G | 10 | 49.8 | +32 | 59 | LMI | 12.1 | 2'x1' | Sc interacting w/N3396 - Pec (m12.2) 3'x1' - group of 3 galaxies |
|  |  |  |  |  |  |  |  |  |  | 23' east, N3430, 24, 13 |
| 5 ! | 3432 | G | 10 | 52.5 | +36 | 37 | LMI | 11.4 | 5.8'x.8' | Edge-on streak w/3 stars superimposed |
| 5 !! | 2903 | G | 09 | 32.2 | +21 | 30 | LEO | 8.9 | 11.0'x4.6' | Spiral arms, dark lanes, central condensation |

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| 5 !! | 3190 | G | 10 | 18.1 | +21 | 50 | LEO | 11.0 | 3.0'x1.0' | Elongated galaxy in nice group of 4 galaxies |
|  |  |  |  |  |  |  |  |  |  | (N3185, 87, 93) (Hickson 44) |
| 4 !! | Gamma | DBL | 10 | 19.9 | +19 | 52 | LEO | 2.2 | 4.4" | B-m3.5, Algieba |
| 5 | 3227 | G | 10 | 23.5 | +19 | 52 | LEO | 10.8 | 3'x1' | Seyfert - interacting w/mag 11.4 N3226 (1') |
| 5 | 3351, M95 | G | 10 | 44.0 | +11 | 42 | LEO | 9 | 3' | Face on barred spiral |
| 5 | 3368, M96 | G | 10 | 46.8 | +11 | 49 | LEO | 9 | 6'x4' | Distorted w/dust lane and spiral structure |
| 5 | 3384 | G | 10 | 48.3 | +12 | 38 | LEO | 10.0 | 4.4'x1.4' | Elliptical galaxy in the same field as M105 and NGC3389 |
| 4 ! | 3521 | G | 11 | 05.8 | -00 | 02 | LEO | 8.9 | 7'x4' | Bright elongated galaxy with black eye |
| 5 | 3607 | G | 11 | 16.9 | +18 | 03 | LEO | 10.0 | 2' | w/3599 (m12), 3605 (m13), and 3608 (m11), all ellipticals |
| 4 ! | 3623, M65 | G | 11 | 18.9 | +13 | 05 | LEO | 9 | 8'x1.5' | dark lane, w/M66 |
| 4 ! | 3627, M66 | G | 11 | 20.2 | +12 | 59 | LEO | 8.5 | 8'x2.5' | Irr, distorted, also N3628 edge-on w/dust lane |
| 5 ! | 3628 | G | 11 | 20.3 | +13 | 36 | LEO | 9.4 | 12.0'x1.5' | Dim edge-on with dark lane, near M65 and M66 |
| 6 !? | 3753 | G | 11 | 37.9 | +21 | 59 | LEO | 14 | 1' | Copeland's Septet (Hickson 57) |
| 6 !? | 3842 | G | 11 | 44.0 | +19 | 57 | LEO | 13.3 | 1' | Leo Cluster (A1367) |
| 5 !! | 3372 | DN | 10 | 43.8 | -59 | 52 | CAR | 4.5 | 80'x85' | the Eta Carina Nebula |
| 5 | 2768 | G | 09 | 11.6 | +60 | 02 | UMA | 10.3 | 2.0'x1.0' | Elongated galaxy with bright nucleus |
| 5 ! | 2841 | G | 09 | 22.0 | +50 | 58 | UMA | 9.3 | 6.4'x2.4' | Elongated galaxy with central condensation |
| 6 | 2976 | G | 09 | 47.3 | +67 | 55 | UMA | 10.2 | 3.4'x1.3' | S/I |
| 5 | 2985 | G | 09 | 50.4 | +72 | 17 | UMA | 10.6 | 5.5'x5' | Face-on spiral near M81 and M82 - round |
| 4 ! | 3031, M81 | G | 09 | 55.6 | +69 | 04 | UMA | 7.9 | 21'x10' | Massive spiral galaxy, Bode's Nebula |
| 4 !! | 3034, M82 | G | 09 | 55.8 | +69 | 41 | UMA | 9.4 | 9'x4' | edge-on galaxy disrupted by M81 |
| 6 !? |  | Q | 10 | 01.3 | +55 | 54 | UMA | 16.5 | 6" | Twin Quasar Mirage |
| 5 ! | 3079 | G | 10 | 02.0 | +55 | 41 | UMA | 10.6 | 8.0'x1.0' | Distorted edge-on galaxy with dustlane, the Twin Quasar Mirage |
|  |  |  |  |  |  |  |  |  |  | north-northwest about 15' |
| 5 | 3184 | G | 10 | 18.3 | +41 | 25 | UMA | 9.8 | 4' | Sc - mini M101 |
| 6 | 3198 | G | 10 | 19.9 | +45 | 33 | UMA | 10.4 | 8'x3' | Sc - mini M101, tilted 30 degrees |
| 6 | 3359 | G | 10 | 46.6 | +63 | 13 | UMA | 10.5 | 6'x4' | S(B)c - mottled - S-shaped |
| 5 ! | 3556, M108 | G | 11 | 11.5 | +55 | 40 | UMA | 10 | 8'x1' | mottled |
| 5 ! | 3587, M97 | PN | 11 | 14.8 | +55 | 01 | UMA | 11 | 3' | Owl Nebula |
| 4 | Xi | DBL | 11 | 18.2 | +31 | 32 | UMA | 4.3 | 1.8" | B-m4.8, Alula Australis, 60 year binary |
| 6 | 3631 | G | 11 | 21.0 | +53 | 10 | UMA | 10.4 | 4' | Sc - mini M101 |
| 5 | 3675 | G | 11 | 26.1 | +43 | 35 | UMA | 10.9 | 4'x1.7' | Bright, elongated galaxy with dark structure near nucleus |
| 6 | 3718 | G | 11 | 32.6 | +53 | 04 | UMA | 10.5 | 8'x4' | SBap - mini 5128 w/N3729 m11.3 Pec (Hickson 56 7' south) |
| 6 ! | 3726 | G | 11 | 33.3 | +47 | 02 | UMA | 10.4 | 6'x4' | Sc - S-shaped - mini M83 |
| 5 | 3877 | G | 11 | 46.1 | +47 | 30 | UMA | 11.8 | 4'x1' | mottled, nearly edge-on |
| 5 | 3893 | G | 11 | 48.6 | +48 | 43 | UMA | 11.3 | 3.7'x1.9' | Face on with spiral structure?, knots, embedded stars |
| 6 | 3938 | G | 11 | 52.8 | +44 | 07 | UMA | 10.4 | 5' | Sc - mottled, face-on |
| 6 | 3945 | G | 11 | 53.2 | +60 | 41 | UMA | 10.6 | 5'x3' | SBa, faint bar, almost face-on |
| 6 ! | 3953 | G | 11 | 53.8 | +52 | 20 | UMA | 10.1 | 6.0'x2.8' | Sb - tilted 40 degrees, bar? |
| 5 | 3992, M109 | G | 11 | 57.6 | +53 | 23 | UMA | 9.5 | 7'x4' | Almost face on barred spiral |
| 5 | 4051 | G | 12 | 03.2 | +44 | 32 | UMA | 10.3 | 4.5'x3.6' | Large, diffuse spiral w/stellar core, structure? |
| 5 | 4088 | G | 12 | 05.6 | +50 | 33 | UMA | 10.5 | 4'x1.5' | Sb, warped, nearly edge-on |
| 5 | 4096 | G | 12 | 06.0 | +47 | 29 | UMA | 10.6 | 6'x1' | Sc - Irregular, mini 253 |
| 5 | 4605 | G | 12 | 40.0 | +61 | 37 | UMA | 11 | 4'x1.2' | Scp - warped |
| 4 ! | Zeta | DBL | 13 | 23.9 | +54 | 56 | UMA | 2.3 | 14.4" | B-m4.0, Mizar, Alcor (m4.0) 11.8' east |
| 5 !! | 5457, M101 | G | 14 | 03.2 | +54 | 21 | UMA | 8 | 22' | Face on Sc - Pinwheel Galaxy |
| 6 | 2610 | PN | 08 | 33.4 | -16 | 09 | HYA | 12.8 | 37" | annular, use high power |
| 4 !! | 3242 | PN | 10 | 24.8 | -18 | 38 | HYA | 7.8 | 40" | The Ghost of Jupiter, green and violet CBS |
| 6 | 3311 | G | 10 | 36.7 | -27 | 32 | HYA | 11.6 | 2.2' | Hydra I Cluster - N3308, 9, 12, 14AB pec (like Cocoon Galaxy) |
| 4 ! | V | Carbon | 10 | 49.2 | -20 | 59 | HYA | 6.5-12 |  | N6 Carbon Star, 575 days |
| 5 | 3621 | G | 11 | 18.3 | -32 | 49 | HYA | 10.5 | 5'x2' | Large diffuse galaxy in kite shaped stellar asterism |
| 4 !! | 5236, M83 | G | 13 | 37.0 | -29 | 52 | HYA | 7 | 10'x8' | Sc |
| 5 | 4027 | G | 11 | 59.5 | -19 | 16 | CRV | 11.6 | 2.0'x1.7' | Sc - distorted |
| 5 ! | 4038/9 | G | 12 | 01.9 | -18 | 52 | CRV | 11.5 | 2.5' | Ring-Tail Galaxy |
| 4 !! | 4361 | PN | 12 | 24.5 | -18 | 48 | CRV | 10.8 | 81" | Big, gray, oval with bright central star |
| 6 | 4169 | G | 12 | 12.2 | +29 | 10 | COM | 13 | 2.1' | The Box, Hickson 61 |
| 5 ! | 4192, M98 | G | 12 | 13.8 | +14 | 54 | COM | 9.7 | 8'x2' | mottled |
| 4 ! | 4254, M99 | G | 12 | 18.8 | +14 | 25 | COM | 9.5 | 4' | three spiral arms, Pinwheel |
| 5 ! | 4274 | G | 12 | 19.8 | +29 | 37 | COM | 10.3 | 6.7'x1.3' | Mini M106, with NGC4278 (m10.2) and 4283 (m12.0) |
| 5 | 4293 | G | 12 | 21.2 | +18 | 23 | COM | 11.5 | 4.6'x1.6' | Elongated peculiar spiral galaxy, bright, mottled |
| 5 | 4298 | G | 12 | 21.5 | +14 | 36 | COM | 11.4 | 3.2'x1.9' | w/mag11.6 N4302 (5.2'x1.1') dark lane |
| 5 | 4321, M100 | G | 12 | 22.9 | +15 | 49 | COM | 9.2 | 5' | Face on Sc |
| 5 | 4350 | G | 12 | 24.0 | +16 | 42 | COM | 11.0 | 1.8'x0.5' | Nice lenticular galaxy with elliptical companion |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5 !! | 4414 | G | 12 | 26.4 | +31 | 13 | COM | 9.7 | 3.2'x1.5' | Bright elongated Sc galaxy with black-eye? |
| 5 ! | 4419 | G | 12 | 26.9 | +15 | 03 | COM | 11.4 | 2.2'x0.6' | Elongated SB galaxy, 2 nuclei, dark lane? |
| 6 ! | 4450 | G | 12 | 28.5 | +17 | 05 | COM | 10.1 | 5'x3' | Sb - dark lanes |
| 5 | 4494 | G | 12 | 31.4 | +25 | 47 | COM | 9.6 | 1.3'x1.4' | Round, elliptical galaxy, bright stellar core near field star |
| 5 ! | 4501, M88 | G | 12 | 32.0 | +14 | 25 | COM | 9 | 5'x2.5' | spiral structure |
| 4 ! | 24 | CDBL | 12 | 35.1 | +18 | 22 | COM | 5.2 | 20.3" | B-m6.8, yellow, blue |
| 5 | 4548, M91 | G | 12 | 35.4 | +14 | 30 | COM | 9.5 | 4' | Face on barred spiral |
| 5 ! | 4559 | G | 12 | 36.0 | +27 | 58 | COM | 9.9 | 11'x4.5' | Diffuse elongated galaxy with spiral structure |
| 4 !! | 4565 | G | 12 | 36.3 | +25 | 59 | COM | 9.5 | 14.4'x1.2' | Dark lane, stellar nucleus, spans eyepiece field |
| 5 !! | 4725 | G | 12 | 50.4 | +25 | 30 | COM | 8.9 | 10'x5.5' | Backwards S, bright core, big and diffuse |
| 4 !! | 4826, M64 | G | 12 | 56.7 | +21 | 41 | COM | 8.5 | 6'x3' | Black-eye Galaxy |
| 6 !? | 4874 | G | 12 | 59.6 | +27 | 58 | COM | 11.9 | 2.7' | Coma Cluster (A1656) also N4889 (m11.4) |
| 5 ! | 5024, M53 | GC | 13 | 12.9 | +18 | 10 | COM | 7.6 | 3.3' | Small, loose? resolves well |
| 5 | 3918 | PN | 11 | 50.3 | -57 | 11 | CEN | 8 | 10" | the Blue Planetary Nebula, small blue disk |
| 5 | 4945 | G | 13 | 05.4 | -49 | 28 | CEN | 9.2 | 15'x2' | Sc, large, elongated, and dim |
| 6 | 5102 | G | 13 | 22.0 | -36 | 38 | CEN | 9.7 | 6'x2.5' | SO - round |
| 4 !! | 5128 | G | 13 | 25.5 | -43 | 01 | CEN | 7.2 | 10'x8' | Centaurus A |
| 4 !! | 5139 | GC | 13 | 26.8 | -47 | 29 | CEN | 3.7 | 36' | Omega Centauri |
| 5 | IC4329 | G | 13 | 49.1 | -30 | 18 | CEN | 12.8 | 1.5'x0.5' | IC4329 galaxy group, 9 galaxies in 25' field |
| 4 ! | Alpha | DBL | 14 | 40.0 | -60 | 50 | CEN | 0.0 | 17.5" | B-m1.2, Rigel Kent, m11.1 Proxima 131' southwest |
| 5 ! | 4111 | G | 12 | 07.1 | +43 | 04 | CVN | 9.7 | 3.3'x0.6' | Mini version of NGC 3115 |
| 5 | 4214 | G | 12 | 15.6 | +36 | 20 | CVN | 9.7 | 6.6'x5.8' | Large, bright, mottled, stellar core |
| 4 | 2 | CDBL | 12 | 16.1 | +40 | 40 | CVN | 5.8 | 11" | B-m8.1, gold, blue |
| 4 ! | 4244 | G | 12 | 17.5 | +37 | 49 | CVN | 10.1 | 14'x1' | Sb - spindle |
| 4 !! | 4258, M106 | G | 12 | 19.0 | +47 | 18 | CVN | 8 | 19'x8' | Distorted, tilted spiral |
| 5 ! | 4449 | G | 12 | 28.2 | +44 | 06 | CVN | 9.2 | 4.1'x3.4' | The Box Galaxy, irregular with spiral structure, knots |
| 4 ! | 4490 | G | 12 | 30.6 | +41 | 38 | CVN | 9.7 | 5.6'x2.1' | The Cocoon Galaxy, extensive core, looping arm - interacting |
|  |  |  |  |  |  |  |  |  |  | pair with mag11.6 N4485 |
| 5 ! | 4618 | G | 12 | 41.5 | +41 | 09 | CVN | 10.8 | 4' | Sc pec, mottled, spiral structure - w/N4625 (m12.3) |
| 4 !! | 4631 | G | 12 | 42.1 | +32 | 32 | CVN | 9.3 | 12.6'x1.4' | The Whale, companion galaxy NGC4627 |
| 4 !! | 4656 | G | 12 | 44.0 | +32 | 10 | CVN | 10.3 | 19'x2' | Fish hook galaxy w/many knots and 2 nuclei, companion |
|  |  |  |  |  |  |  |  |  |  | galaxy NGC4657 |
| 4 ! | Y | Carbon | 12 | 45.1 | +45 | 26 | CVN | 5-6.5 |  | N3 Carbon Star, 158 days |
| 5 | 4736, M94 | G | 12 | 50.9 | +41 | 07 | CVN | 7.5 | 7'x3' | Sb - pec |
| 4 ! | Alpha | DBL | 12 | 56.0 | +38 | 18 | CVN | 2.9 | 19.4" | B-m5.5, yellow, blue? Cor Caroli |
| 5 ! | 5005 | G | 13 | 10.9 | +37 | 03 | CVN | 9.8 | 4.4'x1.7' | Elongated spiral galaxy, tilted, mottled with bright elongated |
|  |  |  |  |  |  |  |  |  |  | double? core, NGC5033 0.5° southeast |
| 6 | 5033 | G | 13 | 13.4 | +36 | 36 | CVN | 10.1 | 10'x5' | Sb, elongated, faint spiral arms |
| 5 ! | 5055, M63 | G | 13 | 15.8 | +42 | 02 | CVN | 8.5 | 10'x6' | the Sunflower Galaxy |
| 4 !! | 5194, M51 | G | 13 | 29.9 | +47 | 12 | CVN | 8 | 11'X7' | Whirlpool Galaxy - companion N5195 |
| 4 !! | 5272, M3 | GC | 13 | 42.2 | +28 | 23 | CVN | 6.4 | 10' | Brilliant, nicely condensed GC |
| 5 | 5353 | G | 13 | 53.5 | +40 | 17 | CVN | 11.1 | 2.8'x1.5' | N5353 Group, 4 galaxies in 12' field - N5353/4 interacting, |
|  |  |  |  |  |  |  |  |  |  | 5371 m11.3 Sb 27' east (Hickson 68) |
| 5 | 4179 | G | 12 | 12.9 | +01 | 18 | VIR | 11.6 | 2.7'x0.6' | Mini version of M104 |
| 4 ! | 4216 | G | 12 | 15.9 | +13 | 09 | VIR | 9.9 | 7.4'x0.9' | Edge-on galaxy, bright core, dark lane? |
| 5 ! | 4303, M61 | G | 12 | 21.9 | +04 | 28 | VIR | 10 | 5' | Face on Sc |
| 4 ! | 4374, M84 | G | 12 | 25.1 | +12 | 53 | VIR | 9.3 | 2' | w/M86, N4388, N4387 - the Flux Capacitor |
| 4 | 4382, M85 | G | 12 | 25.4 | +18 | 11 | VIR | 8.9 | 4'x2' | Barred Spiral N4394 7' east |
| 5 ! | 4429 | G | 12 | 27.4 | +11 | 07 | VIR | 10.2 | 3.3'x1' | SO lenticular, bright, elongated, with 2 bright field stars |
| 5 ! | 4435 | G | 12 | 27.7 | +13 | 05 | VIR | 10.3 | 1.3'x0.8' | The Eyes Galaxies w/N4438, mag10.8, 8'x3' |
| 4 | 4472, M49 | G | 12 | 29.8 | +08 | 00 | VIR | 8.5 | 3'x2' | Irr Galaxy N4470 10' south |
| 4 ! | 4486, M87 | G | 12 | 30.8 | +12 | 24 | VIR | 8.6 | 2' | Jet extends NW |
| 5 ! | 4517 | G | 12 | 32,8 | +00 | 07 | VIR | 10.4 | 6'x1' | Sc - edge-on |
| 5 ! | 4526 | G | 12 | 34.0 | +07 | 42 | VIR | 9.6 | 3.3'x1' | Elongated elliptical galaxy with bright core flanked by 2 stars |
| 5 ! | 4535 | G | 12 | 34.3 | +08 | 12 | VIR | 10.0 | 6'x4' | SBc - S-shaped |
| 5 | 4536 | G | 12 | 34.5 | +02 | 11 | VIR | 10.4 | 6.9'x2.6' | Distorted galaxy with dimmer NGC4527 (m10.4 mottled spindle) |
|  |  |  |  |  |  |  |  |  |  | 3C273 1.4 degrees west |
| 5 ! | 4567 | G | 12 | 36.5 | +11 | 15 | VIR | 11.3 | 3'x2' | w/mag10.8 4568 (4.6'x2') the Siamese Twins |
| 5 ! | 4569, M90 | G | 12 | 36.8 | +13 | 10 | VIR | 9 | 7'x3' | dust lanes |
| 5 ! | 4579, M58 | G | 12 | 37.7 | +11 | 49 | VIR | 9 | 4'x3' | Tai fighter - SBa |
| 4 !! | 4594, M104 | G | 12 | 40.0 | -11 | 37 | VIR | 8 | 6'x2' | Sombrero Galaxy |
| 5 | Gamma | DBL | 12 | 41.7 | -01 | 27 | VIR | 3.5 | 1" | B-m3.5, closing to 0.3" in 2007 (171 year orbit), Porrima |
| 5 | 4649, M60 | G | 12 | 43.7 | +11 | 33 | VIR | 9 | 3' | w/Mag 11 Galaxy N4647, M59 25' same direction as N4647 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5 | 4654 | G | 12 | 44.0 | +13 | 08 | VIR | 10.5 | 4'x2' | Sc |
| 5 ! | 4666 | G | 12 | 45.1 | -00 | 28 | VIR | 10.8 | 3.8'x0.8' | Like M104, w/faint companions NGC4668, N4653 20' west |
| 5 ! | 4698 | G | 12 | 48.4 | +08 | 29 | VIR | 10.5 | 3'x1.1' | Easy, elongated, bright core w/dark lane? |
| 5 | 4697 | G | 12 | 48.6 | -05 | 48 | VIR | 9.3 | 2.2'x1.4' | Bright, elongated, and easy - roundish |
| 5 ! | 4699 | G | 12 | 49.0 | -08 | 40 | VIR | 9.3 | 3'x2' | elongated spiral, brighter center with faint structure |
| 5 | 4753 | G | 12 | 52.4 | -01 | 12 | VIR | 9.9 | 3.3'x1.1' | Big irregular galaxy, diffuse, mottled, brighter core |
| 5 ! | 4762 | G | 12 | 52.9 | +11 | 14 | VIR | 10.2 | 3.7'x0.4' | Mini version of NGC4565, NGC4754 in same field |
| 5 | 4866 | G | 12 | 59.5 | +14 | 10 | VIR | 11.2 | 6.8'x0.8' | Elongated spiral with brighter nucleus and embedded field star |
| 5 | 5054 | G | 13 | 17.0 | -16 | 38 | VIR | 11.5 | 3.8'x2.2' | Big distorted face-on spiral with nucleus and suspect spiral arms |
| 5 ! | 5247 | G | 13 | 38.1 | -17 | 53 | VIR | 10.5 | 5'x4' | Sb - backward S |
| 5 | 5364 | G | 13 | 56.2 | +05 | 01 | VIR | 10.4 | 6.2'x3' | Face-on spiral with faint spiral structure, with mag 10.2 N5363 |
| 5 ! | 5566 | G | 14 | 20.3 | +03 | 56 | VIR | 10.4 | 5.6'x1.1' | Tilted edge-on galaxy with brighter core and suspect spiral |
|  |  |  |  |  |  |  |  |  |  | structure, with NGC5574 and 5576 |
| 5 ! | 5746 | G | 14 | 44.9 | +01 | 57 | VIR | 10.1 | 6.2'x0.8' | Faint, large, edge-on galaxy with squarish nucleus and dark lane!! |
| 6 | 5846 | G | 15 | 06.4 | +01 | 36 | VIR | 10.2 | 3' | w/5846A, 5839, 45, and 50(SBb) - all others ellipticals |
| 5 | 5248 | G | 13 | 37.5 | +08 | 53 | BOO | 10.2 | 6.1'x4.4' | Diffuse Sc galaxy with brighter core and broad spiral arms |
| 5 | 5676 | G | 14 | 32.8 | +49 | 28 | BOO | 11.2 | 3'x1' | Sc - easy, elongated, even brightness, with spiral structure |
| 4 | Pi | DBL | 14 | 40.7 | +16 | 25 | BOO | 4.9 | 5.7" | B-m5.8 |
| 4 ! | Epsilon | CDBL | 14 | 45.0 | +27 | 04 | BOO | 2.5 | 2.8" | B-m5.0, orange, white, Izar |
| 4 ! | Xi | DBL | 14 | 51.4 | +19 | 05 | BOO | 4.7 | 7.2" | B-m6.9, orange, blue? |
| 6 ! | IC4406 | PN | 14 | 22.4 | -44 | 09 | LUP | 10.6 | 100"x37" | elliptical |
| 6 | 6026 | PN | 16 | 01.4 | -34 | 32 | LUP | 12.5 | 50" | ring-shape |
| 4 !! | 5904, M5 | GC | 15 | 18.6 | +02 | 05 | SER | 6 | 12' | Spectacular, numerous chains of stars |
| 5 | 5921 | G | 15 | 21.9 | +05 | 04 | SER | 10.8 | 4' | SBb - face-on |
| 4 | Delta | DBL | 15 | 34.8 | +10 | 32 | SER | 4.1 | 3.9" | B-m5.2, widening |
| 6 | 6027 | G | 15 | 59.2 | +20 | 45 | SER | 12.4 | 2.2' | Seyfert's Sextet, mag14.5 - 17 (Hickson 79) |
| 5 ! | 6611, M16 | DN | 18 | 18.8 | -13 | 47 | SER | 8 | 30' | Eagle Nebula |
| 6 | 3735 | G | 11 | 36.0 | +70 | 32 | DRA | 12 | 4.2' | Hickson 55 25' northwest |
| 5 ! | 5866, M102 | G | 15 | 06.5 | +55 | 46 | DRA | 10.0 | 3'x1' | E6p lenticular |
| 5 ! | 5907 | G | 15 | 15.9 | +56 | 19 | DRA | 11.3 | 11.1'x0.7' | Elongated, no nucleus, dark lane suspect |
| 5 | 6503 | G | 17 | 49.4 | +70 | 09 | DRA | 10.2 | 4'x1' | Sb lenticular - mottled |
| 4 !! | 6543 | PN | 17 | 58.6 | +66 | 38 | DRA | 8.8 | 22" | The Cat's Eye, vivid green planetary nebula with helical structure |
|  |  |  |  |  |  |  |  |  |  | and white or golden central star |
| 4 ! | Epsilon | CDBL | 19 | 48.2 | +70 | 15 | DRA | 3.9 | 3.3" | B-m7.0, yellow, blue, Tyl |
| 4 | Xi | MULT | 16 | 01.6 | -11 | 14 | SCO | 4.9 | .5" | B-m4.9, C-m7.2 orange dwarf, 7" |
|  |  |  |  |  |  |  |  |  |  | in the same field, Struve1999 AB-12" |
| 4 | Beta | DBL | 16 | 05.4 | -19 | 48 | SCO | 2.7 | 13.7" | B-m4.9, primary has m10 companion within 1", Acrab |
| 4 ! | Nu | MULT | 16 | 09.1 | -19 | 21 | SCO | 4.6 | 1.5" | the Southern Double Double |
|  |  |  |  |  |  |  |  |  |  | B-m5.6, C-m6.8, D-m7.8 CD-2.3", AC - 41.4" |
| 4 !! | 6093, M80 | GC | 16 | 17.1 | -22 | 59 | SCO | 7.2 | 9' | Very condensed |
| 4 !! | 6121, M4 | GC | 16 | 23.6 | -26 | 32 | SCO | 6 | 14' | Nicely resolved, chains of stars cross face of cluster |
| 4 | Alpha | DBL | 16 | 29.5 | -26 | 25 | SCO | 0.9 | 2.6" | B-m5.5, red, greenish, Antares |
| 6 | 6153 | PN | 16 | 31.5 | -40 | 15 | SCO | 10.9 | 28"x21" | ring-shape |
| 4 | 6231 | OC | 16 | 54.0 | -41 | 48 | SCO | 2.6 | 15' | 100 stars, mags 7 - 13, nebulosity involved, mag8.6 OC Tr24, 1 |
|  |  |  |  |  |  |  |  |  |  | degree north, 200 stars, 40' |
| 5 ! | 6302 | PN | 17 | 13.7 | -37 | 06 | SCO | 10 | 2'x1' | Bug Nebula |
| 5 | 6337 | PN | 17 | 22.3 | -38 | 29 | SCO | 10 | 38"x28" | the Cheerio, m14.8 central star |
| 5 | 6451 | OC | 17 | 50.7 | -30 | 13 | SCO | 8.5 | 6' | W-shaped cluster of 50 stars |
| 4 !! | 6205, M13 | GC | 16 | 41.7 | +36 | 28 | HER | 6 | 23' | Hercules Cluster |
| 5 | 6207 | G | 16 | 43.1 | +36 | 50 | HER | 11.3 | 2'x1.1' | Small, elongated spiral near M13, IC4617 in between, very faint |
| 4 ! | 6210 | PN | 16 | 44.5 | +23 | 49 | HER | 9.7 | .4' | mag 11.7 central star |
| 4 | 6229 | GC | 16 | 47.0 | +47 | 32 | HER | 9.4 | 4' | Looks like a planetary nebula at low power |
| 4 ! | Alpha | CDBL | 17 | 14.7 | +14 | 23 | HER | 3-4 | 4.7" | B-m5.4, red, yellow, Rasalgeti |
| 4 ! | 6341, M92 | GC | 17 | 17.1 | +43 | 08 | HER | 7 | 12' | Resolves nicely |
| 4 | Rho | DBL | 17 | 23.7 | +37 | 08 | HER | 4.6 | 4.0" | B-m5.5 |
| 4 ! | 95 | CDBL | 18 | 01.5 | +21 | 35 | HER | 5.1 | 6.5" | B-m5.2, yellow, reddish |
| 4 ! | 6218, M12 | GC | 16 | 47.2 | -01 | 57 | OPH | 7 | 8' | Loosely concentrated |
| 4 | 6254, M10 | GC | 16 | 57.1 | -04 | 06 | OPH | 7 | 8' | Nicely condensed |
| 4 | 6266, M62 | GC | 17 | 01.2 | -30 | 07 | OPH | 7 | 6' | Mag 14-16 stars, compact core |
| 4 | 6273, M19 | GC | 17 | 02.6 | -26 | 16 | OPH | 7 | 5' | Mag 16 stars, delicate |
| 5 ! | 6309 | PN | 17 | 14.1 | -12 | 55 | OPH | 11.5 | 20"x10" | the Box Nebula, m14 central star |
| 4 ! | 36 | DBL | 17 | 15.4 | -26 | 35 | OPH | 5.1 | 5.0" | B-m5.1, orange pair |
| 4 ! | Omicron (39) | CDBL | 17 | 18.0 | -24 | 17 | OPH | 5.4 | 10.8" | B-m6.9, yellow, blue |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5 ! | 6333, M9 | GC | 17 | 19.2 | -18 | 31 | OPH | 7.9 | 2.4' | w/B64 |
| 5 !! | 6369 | PN | 17 | 29.3 | +16 | 12 | OPH | 9.9 | 28" | Round, annular nebula, blue-green disk - the Little Ghost |
| 6 | 6384 | G | 17 | 32.4 | +07 | 04 | OPH | 10.6 | 5'x3' | Sb - elongated, faint spiral structure |
| 4 ! | 70 | CDBL | 18 | 02.9 | +02 | 32 | OPH | 4.2 | 3" | B-m6.0, yellow, red |
| 5 | 6572 | PN | 18 | 12.1 | +06 | 51 | OPH | 8.1 | 15"x12" | Blue-green disk, m12 central star |
| 5 | 6541 | GC | 18 | 08.0 | -43 | 42 | CRA | 6.6 | 6' | mag 13 stars |
| 5 ! | 6440 | GC | 17 | 48.9 | -20 | 22 | SGR | 10.4 | 0.7' | Small resolved globular cluster with NGC6445 |
| 5 ! | 6445 | PN | 17 | 49.2 | -20 | 01 | SGR | 11.0 | 38"x29" | Small, greenish? disk in same field with NGC6440 |
| 4 !! | 6514, M20 | DN | 18 | 02.3 | -23 | 02 | SGR | 7 | 29'x27' | Trifid Nebula |
| 5 !! | 6520 | OC | 18 | 03.4 | -27 | 54 | SGR | 8.1 | 5' | B86 dark nebula adjacent and easy |
| 4 !! | 6523, M8 | DN | 18 | 03.8 | -24 | 23 | SGR | 6 | 60'x35' | Lagoon Nebula |
| 6 | 6563 | PN | 18 | 12.0 | -33 | 52 | SGR | 11 | 1' | annular? - faint |
| 4 !! | 6618, M17 | DN | 18 | 20.8 | -16 | 11 | SGR | 7 | 24' | Swan Nebula |
| 4 ! | 6626, M28 | GC | 18 | 24.5 | -24 | 52 | SGR | 7 | 15' | Mag 14-16 stars, compact core, well resolved |
| 4 !! | 6656, M22 | GC | 18 | 36.4 | -23 | 54 | SGR | 6 | 33' | Massive, mag 11-15 stars |
| 4 ! | 6809, M55 | GC | 19 | 40.0 | -30 | 58 | SGR | 6 | 15' | Well resolved, mag 12-15 stars |
| 4 !! | 6818 | PN | 19 | 44.0 | -14 | 09 | SGR | 9.3 | 22"x15" | The Little Gem, annular? blue-green planetary, near NGC6822, |
|  |  |  |  |  |  |  |  |  |  | Barnard's Galaxy (.5° south) |
| 4 ! | 6705, M11 | OC | 18 | 51.1 | -06 | 16 | SCT | 7 | 12' | Flying Duck |
| 5 ! | 6712 | GC | 18 | 53.1 | -08 | 42 | SCT | 10.0 | 2.1' | Some resolution, faint planetary IC1295 nearby |
| 6 | IC1295 | PN | 18 | 54.6 | -08 | 50 | SCT | 12.7 | 1.5' | annular, owl eyes |
| 5 ! | T | Carbon | 18 | 32.3 | +37 | 00 | LYR | 8-10 |  | N6 Carbon Star, irregular |
| 4 ! | Epsilon | MULT | 18 | 44.3 | +39 | 40 | LYR | 5,6 | 2.7" | 5,5 - 2.3", Double Double |
| 4 !! | 6720, M57 | PN | 18 | 53.6 | +33 | 02 | LYR | 9 | 1' | Ring Nebula |
| 5 | 6791 | OC | 19 | 20.7 | +37 | 51 | LYR | 9.5 | 16' | 300 stars, fainter version of N7789 |
| 4 ! | V | Carbon | 19 | 01.7 | -05 | 46 | AQL | 6.5-8 |  | N6 Carbon Star, 350 days |
| 6 | Sh2-071 | PN | 19 | 02.0 | +02 | 09 | AQL | 13 | 2' | faint, large, elongated w/detail - use filter |
| 6 | 6772 | PN | 19 | 14.6 | -02 | 42 | AQL | 12.7 | 84" | faint |
| 5 ! | 6781 | PN | 19 | 18.4 | +06 | 33 | AQL | 11.0 | 106" | Mini version of the Dumbbell Nebula |
| 6 | 6804 | PN | 19 | 31.6 | +09 | 13 | AQL | 12 | 1' | embedded stars, mag 11 N6803 (5" diameter) 50' north |
| 5 | 6802 | OC | 19 | 30.6 | +20 | 16 | VUL | 11.0 | 3.5' | Numerous dim stars, moth shaped |
| 6 | 6842 | PN | 19 | 55.0 | +29 | 17 | VUL | 13 | 1' | annular? |
| 4 !! | 6853, M27 | PN | 19 | 59.6 | +22 | 43 | VUL | 8 | 8' | Dumbbell Nebula |
| 4 ! | 6940 | OC | 20 | 34.6 | +28 | 18 | VUL | 6.3 | 31' | 100+ stars, FG Vulpecula involved red star |
| 5 ! | 6838, M71 | GC | 19 | 53.8 | +18 | 47 | SGE | 8.5 | 6' | Small well resolved globular in rich star field |
| 5 ! | 6905 | PN | 20 | 22.4 | +20 | 07 | DEL | 11.1 | 44"x37" | The Blue Flash Nebula |
| 4 ! | Gamma | CDBL | 20 | 46.7 | +16 | 07 | DEL | 4.3 | 9.8" | B-m5.2, yellow, blue |
| 4 !! | Beta | CDBL | 19 | 30.7 | +27 | 57 | CYG | 3.2 | 34.8" | B-m5.4, yellow, blue, Albireo |
| 5 ! | 6819 | OC | 19 | 41.3 | +40 | 11 | CYG | 7.3 | 10' | 900 stars - the Foxhead |
| 4 !! | 6826 | PN | 19 | 44.8 | +50 | 31 | CYG | 8.8 | 27"x24" | The Blinking Planetary, blue nebula with yellow central star |
| 5 ! | 6888 | SNR | 20 | 12.0 | +38 | 21 | CYG | 10 | 18'x12' | the Crescent Nebula |
| 6 | 6894 | PN | 20 | 16.4 | +30 | 34 | CYG | 11.5 | 55" | annular |
| 5 ! | 6960 | SNR | 20 | 45.7 | +30 | 43 | CYG | 9 | 70'x6' | Veil Nebula (W) |
| 5 ! | 6992 | SNR | 20 | 56.4 | +31 | 43 | CYG | 8 | 78'x8' | Veil Nebula (E) "Network" |
| 5 | 7000 | DN | 20 | 58.8 | +44 | 20 | CYG |  | 120x100' | North American Nebula, best with UHC - wide field, |
|  |  |  |  |  |  |  |  |  |  | Pelican visible also |
| 5 ! | 7008 | PN | 21 | 00.6 | +54 | 33 | CYG | 10.7 | 1.5' | Oval nebula with embedded stars, detail - the Fetus |
| 4 | 61 | DBL | 21 | 06.3 | +38 | 39 | CYG | 5.2 | 30" | B-m6.0, 11.2LY distant |
| 6 ! | 7026 | PN | 21 | 06.3 | +47 | 51 | CYG | 12 | 24" | miniature M27, mag15 central star |
| 6 !? | 7027 | PN | 21 | 07.1 | +42 | 14 | CYG | 8.5 | 18" | proto-planetary, deep turquoise color |
| 6 | 7048 | PN | 21 | 14.2 | +46 | 16 | CYG | 12 | 1' | annular, owl eyes |
| 4 | RV | Carbon | 21 | 41.2 | +37 | 47 | CYG | 7-9.5 |  | N5 Carbon Star, 300 days |
| 5 ! | 7099, M30 | GC | 21 | 40.4 | -23 | 11 | CAP | 8.1 | 6' | Condensed nucleus |
| 5 ! | 7009 | PN | 21 | 04.2 | -11 | 22 | AQR | 8.4 | 44"x24" | The Saturn Nebula, bright blue elongated disk, central star, ansae |
| 4 !! | 7089, M2 | GC | 21 | 33.5 | -00 | 49 | AQR | 7 | 12' | Very condensed, impressive |
| 4 | Zeta | DBL | 22 | 28.7 | -00 | 01 | AQR | 4.3 | 2" | B-m4.5, yellowish, bluish? |
| 5 !! | 7293 | PN | 22 | 39.6 | -20 | 48 | AQR | 6.5 | 12' | Helix |
| 6 | 7606 | G | 23 | 19.1 | -08 | 29 | AQR | 10.8 | 6'x2' | dark lanes? |
| 4 ! | 7078, M15 | GC | 21 | 30.0 | +12 | 10 | PEG | 7 | 12' | Tight, condensed cluster |
| 5 | 7320 | G | 22 | 36.1 | +33 | 57 | PEG | 12.7 | 2'x1' | brightest member of Stephan's Quintet, also N7318A/B |
|  |  |  |  |  |  |  |  |  |  | (Hickson 92) |
| 5 ! | 7331 | G | 22 | 37.1 | +34 | 25 | PEG | 9.7 | 10'x2' | Edge on spiral with brighter core, |
|  |  |  |  |  |  |  |  |  |  | 0.5° north of Stephan's Quintet |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6 ? |  | Q | 22 | 40.5 | +03 | 21 | PEG | 17.4 |  | Einstein's Cross, 2 m17.4 components, 2 m18.4 |
| 5 | 7448 | G | 23 | 00.1 | +15 | 59 | PEG | 11.2 | 2'x1' | Easy, distorted, edge-on, tilted about 30° |
| 5 | 7479 | G | 23 | 04.9 | +12 | 19 | PEG | 11.0 | 3.4'x2.6' | Dim, big, SBb galaxy, bar visible, backwards S |
| 6 | Jones1 | PN | 23 | 35.9 | +30 | 27 | PEG | 12.1 | 5.2' | Horseshoe shaped |
| 5 ! | 7814 | G | 00 | 03.3 | +16 | 09 | PEG | 10.5 | 5'x1' | Sb - mini M104 |
| 6 | 7172 | G | 22 | 02.0 | -31 | 52 | PSA | 11.9 | 1.6'x0.6' | Sa, edge-on, distorted w/dark lane - w/compact trio of elliptical |
|  |  |  |  |  |  |  |  |  |  | galaxies 7173-4-6, 7' south (Hickson 90) |
| 5 ! | 6939 | OC | 20 | 31.4 | +60 | 38 | CEP | 7.8 | 8' | Nice thinly scattered stars (300), galaxy in field NGC6946 |
| 5 ! | 6946 | G | 20 | 34.8 | +60 | 09 | CEP | 8.8 | 9.0'x7.5' | Mini M101, definite spiral structure |
| 6 | 7023 | DN | 21 | 02.0 | +68 | 09 | CEP | 6.8 | 18' | Nebula (mag10?) surrounds 7th magnitude star |
| 5 ! | S | Carbon | 21 | 35.9 | +78 | 24 | CEP | 7.5-13 |  | N8 Carbon Star, 487 days |
| 6 ! | 7354 | PN | 22 | 40.4 | +61 | 17 | CEP | 12.2 | 30" | smaller version of M57 |
| 6 | 7538 | DN | 23 | 13.5 | +61 | 31 | CEP |  | 9'x6' | similar to M27, faint |
| 4 !! | 40 | PN | 00 | 13.0 | +72 | 32 | CEP | 10.2 | 60" | Bright nebula with central star |
| 6 | IC5148 | PN | 21 | 59.5 | -39 | 23 | GRU | 12.9 | 1.9' | annular |
| 6 | 7410 | G | 22 | 55.0 | -39 | 40 | GRU | 10.4 | 4'x1' | SB, nearly edge-on, no structure |
| 5 | 7582 | G | 23 | 18.4 | -42 | 22 | GRU | 10.6 | 3'x2' | SBb, Grus Quartet w/m10.7 NGC7552 (SBa), m11.6 NGC7590 |

(Sb), and m11.4 NGC7599 (SBc - pec)