



OBJECT #360	Alpha Centauri C
Constellation	Centaurus
Right ascension	14h30m
Declination	-62°41'
Magnitude	11.0
Type	Star
Other name	Proxima Centauri

Our next target is the closest star to the Sun, Proxima Centauri (Alpha [α] Centauri C). As such, I think it easily makes our list of the sky's top 1,001 objects, despite its faintness. To find this star, first center its brilliant companion, magnitude -0.1 Rigil Kentaurus (Alpha Centauri A-B). Alpha Cen C lies a bit more than 2° south-southeast. At a distance of 4.22 light-years, C lies 0.17 light-year closer to us than its neighbor. However, it glows meekly at magnitude 11.05, so it's easy to miss.

"Proxima" comes from the Latin word for near. It's the same root that gives us our word "proximity."

OBJECT #361	NGC 5634
Constellation	Virgo
Right ascension	14h30m
Declination	-5°59'
Magnitude	9.5
Size	5.5'
Type	Globular cluster

Our next target is globular cluster NGC 5634 in Virgo. It lies halfway between magnitude 3.9 Mu (μ) Virginis and magnitude 4.1 Syrma (Iota (i) Virginis).

Let's be honest. Virgo is known for its galaxies. The constellation contains some 200 deep-sky objects brighter than 13th magnitude. Only one — NGC 5634 — is a globular cluster.

Point a 4-inch telescope at this object, and you'll see lots of faint stars and one bright orange one — magnitude 8.0 SAO 139967, which sits a bit more than 1' east-southeast of the cluster's center. The star isn't part of NGC 5634. It just happens to lie in the same direction from our viewpoint.

The cluster's stars are condensed, meaning you won't easily resolve them into individual points. But the back-and-forth visibility battle you'll encounter between the star and the cluster makes for a fascinating observation.

OBJECT #362	NGC 5643
Constellation	Lupus
Right ascension	14h33m
Declination	-44°10'
Magnitude	10.4
Size	5.1' by 4.3'
Type	Spiral galaxy

To find our next object, look 2.1° south-southwest of magnitude 2.3 Eta (η) Centauri. This bright galaxy is visible through a 4-inch telescope as a round, evenly illuminated disk. Through a 12-inch scope at 300 \times , the northern half of the galaxy outshines the southern half. The bar, which runs east-west isn't faint, but it has to compete with the equally bright tightly wound spiral arms. The galaxy's eastern arm, which turns sharply to the north, is brighter than its western counterpart. Adding to the scene are several faint foreground stars superimposed on the galaxy's face.

OBJECT #363	NGC 5676
Constellation	Boötes
Right ascension	14h33m
Declination	49°28'
Magnitude	11.2
Size	3.7' by 1.6'
Type	Spiral galaxy

The next target sits 2.7° south-southeast of magnitude 4.0 Theta (θ) Boötis. NGC 5676 is a high-surface-brightness galaxy that looks like a gray rectangle through a 6-inch telescope. If you double that aperture and increase the magnification past 200 \times , you'll see that NGC 5676 has an uneven distribution of brightness because of this galaxy's tilt and the way it presents its spiral arms to us. The northeastern half shines more brightly than the southwestern side.

OBJECT #364	NGC 5694
Constellation	Hydra
Right ascension	14h40m
Declination	-26°32'
Magnitude	9.2
Size	3.6'
Type	Globular cluster
Other name	Caldwell 66

Our next target is globular cluster NGC 5694 in Hydra. English astronomer Sir William Herschel discovered it in 1784, but it wasn't until 1932 that astronomers identified it as a globular cluster.

To find NGC 5694, look about 2° west-southwest of a line of three 5th-magnitude stars. The stars carry the designations 55, 56, and 57 Hydrae and lie in the far eastern end of the sky's largest

constellation. The roughly equal brightnesses and equal spacings between the stars makes me think of this grouping as a small, faint version of Orion's Belt.

NGC 5694 glows at magnitude 9.2, so even a 2.4-inch telescope will reveal it. The cluster's not huge, and its individual stars are faint, so it won't resolve into points of light well.

Most of NGC 5694's brightness comes from its compact core, which takes up more than 50% of this object's diameter. At magnifications above 150, you'll see several foreground stars superimposed on the cluster.

OBJECT #365	Pi (π) Boötis
Constellation	Boötes
Right ascension	14h41m
Declination	16°25'
Magnitudes	4.9/5.8
Separation	5.6''
Type	Double star

You'll find this nice binary 6.5° east-southeast of brilliant Arcturus (Alpha [α] Boötis). The primary is white (or blue-white), and the secondary is yellow (or yellow-white).

OBJECT #366	NGC 5728
Constellation	Libra
Right ascension	14h42m
Declination	-17°15'
Magnitude	11.5
Size	3.7' by 2.6'
Type	Barred spiral galaxy

You'll find NGC 5728 2.4° west-southwest of Zubenelgenubi (Alpha [α] Librae). This barred spiral has an exceptionally bright nucleus. Such a feature classifies it as a Seyfert galaxy. Seyferts are a type of active galaxy that emit prodigious amounts of visible and infrared radiation from tiny regions in their core.

Through a 10-inch telescope, NGC 5728 appears as a faint halo with a much brighter, but tiny, nucleus. Don't confuse the core with a foreground star just 20'' to the northeast. Together, the star and the core give the impression of a double nucleus.

OBJECT #367	Epsilon (ϵ) Boötis
Constellation	Boötes
Right ascension	14h45m
Declination	27°04'
Magnitudes	2.7/5.1
Separation	2.8''
Type	Double star
Common names	Izar; Pulcherrima

This star's given proper name is Izar, which means "the girdle." The name "Pulcherrima" came to it much later. That's a Latin term meaning "most beautiful," and, indeed this is a gorgeous binary star. The two components do sit closely together, so you'll need a magnification above 150 \times to get a clean split. The primary is an orange giant star. Its companion resembles the Sun in evolution, but shines with a blue-white light.

OBJECT #368	NGC 5749
Constellation	Lupus
Right ascension	14h49m

(continued)	
Declination	-54°31'
Magnitude	8.8
Size	7'
Type	Open cluster

You'll find our next object along the southern border of Lupus, 4.2° southwest of magnitude 3.4 Zeta (ζ) Lupi. Through a 4-inch telescope, you'll spot a dozen stars, the brightest of which is magnitude 9.6 SAO 242013, which sits near the cluster's western edge. Larger apertures help make visible another level of faint background stars.

OBJECT #369	Alpha (α) Librae
Constellation	Libra
Right ascension	14h51m
Declination	-16°02'
Magnitudes	2.8/5.2
Separation	231''
Type	Double star
Other name	Zubenelgenubi

This binary has such a wide separation that binoculars or a finder scope will split it. I think a magnification of about 50× works well. The primary is pale blue, and the secondary is orange or orange-white.

The name "Zubenelgenubi" is from the Arabic "Al Zuban al Janubiyah," which means the "southern claw."

OBJECT #370	Xi (ξ) Boötis
Constellation	Boötes
Right ascension	14h51m
Declination	19°06'
Magnitudes	4.7/7.0
Separation	6.9''
Type	Double star
Yellow and orange	

You'll have no trouble locating this nicely colored binary. It sits 8.5° due east of Arcturus (Alpha [α] Boötis). The separation is reasonably close, so crank the power above 100×. The A component shines white, although many observers see it as yellow. Almost everyone sees the B star as orange, however.



Object #371 NGC 5792 Brad Ehrhorn/Adam Block/NOAO/AURA/NSF

OBJECT #371	NGC 5792
Constellation	Libra
Right ascension	14h58m
Declination	-1°05'
Magnitude	11.2
Size	7.3' by 1.9'
Type	Barred spiral galaxy

Our next target is a galaxy some observers think is the finest galaxy in Libra. NGC 5792 lies nearly edge-on to our line of sight, so it appears quite elongated. An 11-inch telescope shows a stellar nucleus with faint wings extending a total of nearly 5'. You won't actually see spiral structure, but the spiral arms do produce mottling near the core that's visible through larger scopes. Unfortunately, the magnitude 9.6 star GSC 4987:827 on the galaxy's northwestern edge hinders the view of faint detail.

OBJECT #372	IC 4499
Constellation	Apus
Right ascension	15h00m
Declination	-82°13'
Magnitude	9.4
Size	7.6'
Type	Globular cluster

Look for this cluster near the South Celestial Pole 0.8° north of magnitude 5.7 π^2 (π^2) Octantis. This cluster lies more than 60,000 light-years away, so its brightest stars glow feebly at 15th magnitude. Through an 8-inch telescope at 200×, the central region appears compact and condensed and the halo seems irregular. The magnitude 10.3 star GSC 9440:489 lies 2' south of the cluster's center.

OBJECT #373	NGC 5812
Constellation	Libra
Right ascension	15h01m
Declination	-7°27'
Magnitude	11.2
Size	2.3' by 1.9'
Type	Elliptical galaxy

Our next object lies 1° due north of Delta (δ) Librae. Through an 8-inch telescope, NGC 5812 looks perfectly round. Some observers liken its appearance to a planetary nebula. A 14-inch telescope will bring out a much fainter outer halo, and it may show the magnitude 14.9 galaxy IC 1084 about 5' to the east.

OBJECT #374	44 Boötis
Constellation	Boötes
Right ascension	15h04m
Declination	47°39'
Magnitudes	5.3/6.2
Separation	2.1''
Type	Double star

You'll find 44 Boö in the far northern part of the constellation 7.3° due north of Nekkar (Beta [β] Boötis). The primary and secondary are yellow-white and yellow-orange, respectively. The secondary is also a type of binary star astronomers call a contact binary. As the name implies, the two stars are so close that gravity distorts their surfaces, which touch. You won't be splitting that pair of the system. In fact, you'll need to crank the magnification above 150× just to split the A-B pair.

OBJECT #375	NGC 5822
Constellation	Lupus
Right ascension	15h04m
Declination	-54°25'
Magnitude	6.5
Size	35'
Type	Open cluster

Our next treat lies 2.6° south-southwest of magnitude 3.4 Zeta (ζ) Lupi. Easily visible to the naked eye from a dark site, this cluster explodes with detail through binoculars or any telescope. A 4-inch instrument at 100× shows 50 stars. Don't look for a center because the stars are evenly distributed across an area larger than the Full Moon. Larger apertures add to the star count.

OBJECT #376	NGC 5823
Constellation	Circinus
Right ascension	15h06m
Declination	-55°36'
Magnitude	7.9
Size	10'
Type	Open cluster
Other name	Caldwell 88

You'll find this nice open cluster 3.6° west-northwest of magnitude 4.1 Beta (β) Circini, right on that constellation's northern border with Lupus. I'm not certain why this cluster is Caldwell 88 rather than NGC 5822 (Object #375), but Patrick Moore must have had his reasons. Through an 8-inch telescope

at 150×, you'll see some three dozen mainly 10th- and 11th-magnitude stars. Many of them arrange in a long, winding, backward S-shape. The cluster's boundary is irregular.

OBJECT #377	NGC 5824
Constellation	Lupus
Right ascension	15h04m
Declination	-33°04'
Magnitude	9.1
Size	7.4'
Type	Irregular galaxy

To find our next target, look 4.9° northwest of magnitude 3.6 Phi¹ (ϕ^1) Lupi. Through an 8-inch telescope, this globular has a dense center, a ragged edge, and few stars glowing meekly in the incredibly faint halo. One, magnitude 12.0 GSC 7315:514, lies 4' north of the cluster's center.

OBJECT #378	M102 (NGC 5866)
Constellation	Draco
Right ascension	15h07m
Declination	55°46'
Magnitude	9.9
Size	6.6' by 3.2'
Type	Spiral galaxy
Other name	The Fool's Gold Galaxy

Is M102 the galaxy NGC 5866? That depends on who you ask. Some astronomical historians argue that M102 is a duplicate observation of M101. Others say the evidence points to the galaxy NGC 5866.

Well, whether or not Messier meant NGC 5866 to be his 102nd entry, this lenticular shows up nicely through a 4-inch telescope as a bright streak with a brilliant center. On the best nights, a 10-inch scope reveals a thin dust lane extending almost as long as the galaxy.

To judge for yourself, point your scope 4.1° south-southwest of magnitude 3.3 Iota (*i*) Draconis.

Astronomy magazine Contributing Editor Stephen James O'Meara makes a good case that M102 is simply a more refined observation of M101 (Object #351). He therefore calls M102 the Fool's Gold Galaxy because, if you think you've found it when you're observing NGC 5866, the joke's on you.

OBJECT #379	UGC 9749
Constellation	Ursa Minor
Right ascension	15h09m
Declination	67°12'
Magnitude	10.9
Size	41' by 26'
Type	Dwarf elliptical galaxy
Other name	The Ursa Minor Dwarf

Our next object lies in the southernmost part of the northernmost constellation. The Ursa Minor dwarf is a dwarf elliptical galaxy whose name comes from its home constellation, Ursa Minor. It lies 4.7° south-southwest of magnitude 3.0 Pherkad (Gamma [γ] Ursae Minoris).

I suggest you use at least an 11-inch telescope, but don't crank the power up. In fact, you'll want to use the lowest-magnification, widest-field eyepiece you own.

That's because this galaxy covers one and a half times more area than the Full Moon. It measures 41' by 26'.

It has a respectable magnitude, 10.9, but because that light is so spread out, the Ursa Minor Dwarf has a miserably low surface brightness.

The best approach for viewing this object is to head to the darkest observing site you can get to. Then, disengage your telescope's drive and slowly sweep the Dwarf's region of sky. What you're looking for is an ever-so-slight increase in the background glow of your eyepiece's field of view. Good luck.

OBJECT #380	NGC 5846
Constellation	Virgo
Right ascension	15h06m
Declination	1°36'
Magnitude	10.1
Size	4' by 3.7'
Type	Elliptical galaxy

Head to the easternmost edge of Virgo for our next object, which lies 1° east-southeast of the magnitude 4.4 star 110 Virginis. Through a 10-inch telescope, this object appears round with a broad bright central region and a wide halo. Crank up the power past 300×, and look for the magnitude 13.8 galaxy NGC 5846A buried in the southeast part of the halo.

NGC 5846 is the brightest in an east-west oriented slightly curved line of four galaxies. The westernmost, magnitude 12.7 NGC 5839, lies 15' east of NGC 5846. Between those two sits magnitude 12.5 NGC 5845. Finally, the nice magnitude 10.8 spiral NGC 5850 lies 10' east-southeast of NGC 5846.

OBJECT #381	NGC 5885
Constellation	Libra
Right ascension	15h15m
Declination	-10°05'
Magnitude	11.8
Size	3.2' by 2.6'
Type	Barred spiral galaxy

NGC 5885 lies 0.8° south-southwest of Zubeneshamali (Beta [β] Librae). A 10-inch telescope shows this galaxy as a nearly uniform, faint haze. Unfortunately, not even the largest amateur telescope shows the elusive spiral structure that appears only after long-exposure imaging. Just 98'' northeast of the galaxy lies SAO 140412, a magnitude 10.1 foreground star.

OBJECT #382	NGC 5905
Constellation	Draco
Right ascension	15h15m
Declination	55°31'
Magnitude	11.7
Size	4.3' by 3.3'
Type	Barred spiral galaxy

Our next target sits 3.7° south-southwest of magnitude 3.3 Iota (ι) Draconis. It lies less than 1° south of the more spectacular NGC 5907. Through a 10-inch telescope, NGC 5905 presents a circular halo that extends 3' across. Although it may appear small and unspectacular to the eye, NGC 5905 measures 400,000 light-years across, making it one of the largest spiral galaxies known.

OBJECT #383	Delta (δ) Boötis
Constellation	Boötes
Right ascension	15h16m
Declination	33°19'
Magnitudes	3.5/8.7

(continued)

Separation	105''
Type	Double star

Although you can separate this wide binary through binoculars or a finder scope, use a telescope at $50\times$ to bring out the stars' colors. The primary is yellow, while the fainter secondary shines white, or perhaps yellow-white.



Object #384 NGC 5907 Adam Block/Mount Lemmon SkyCenter/University of Arizona

OBJECT #384	NGC 5907
Constellation	Draco
Right ascension	15h16m
Declination	56°20'

(continued)	
Magnitude	10.3
Size	11.5' by 1.7'
Type	Spiral galaxy

Our next target is another “needle” in the deep-sky sewing kit. You’ll find NGC 5907 not quite 3° south-southwest of magnitude 3.3 Iota (*i*) Draconis. This wonderful object lies 35 million light-years away and travels through space with M102.

The plane of NGC 5907 tilts only 3.5° from our line of sight. Through a 4-inch telescope, you’ll see the long, narrow center. Larger scopes won’t reveal a lot more detail, but each increase in aperture will extend NGC 5907’s apparent length.

OBJECT #385	Palomar 5
Constellation	Serpens (Caput)
Right ascension	15h16m
Declination	-0°07'
Magnitude	11.8
Size	6.9'
Type	Globular cluster

This faint object lies 9° west-northwest of magnitude 3.5 Mu (μ) Serpentis. Alternatively, you can start at the bright globular cluster M5 (Object #389), and move 2.3° to the south-southwest.

Palomar 5 is the 5th entry on a list of only 15 mostly difficult-to-see globular clusters. German-born American astronomer Walter Baade discovered it in 1950, but it was American astronomer George Abell who gave them their “Palomar” designations. Astronomers discovered them on photographic plates taken during the first Palomar Observatory Sky Survey.

Seeing Palomar 5 isn’t easy because the object has a low surface brightness. Through a 12-inch telescope use an eyepiece that magnifies 75×. Look for a subtle brightening of the sky brightness.

OBJECT #386	Beta Librae
Constellation	Libra
Right ascension	15h17m
Declination	-9°23'
Magnitude	126
Type	Colored star
Other name	Zubeneschamali

Our next object is the brightest star in Libra, Zubeneschamali. The star’s name comes from the Arabic for “the northern claw.” That was long ago, when Libra didn’t exist. Instead, its brightest stars represented the claws of Scorpius. Zubeneschamali was the northern claw, and Zubenelgenubi (Alpha [α] Librae) was the southern claw. You’ll find Zubenelgenubi about 9° southwest of Zubeneschamali.

Libra is a case where the normal Alpha, Beta, Gamma, etc., rule for denoting a constellation’s brightest stars — in order — breaks down. Early celestial mapmaker Johannes Bayer rated Zubeneschamali as Libra’s second-brightest star. We know today, however, that it’s actually the brightest. It shines at magnitude 2.6, while Alpha’s magnitude is 2.75, about 15% fainter.

Ok, you’ve now found two stars with funny names. But there’s more. Go out some night, and locate Zubeneschamali. Don’t use a telescope or even binoculars. Just look at it with your eyes. What color does it appear to you?

Since the mid-1970s, I've had an ongoing debate with some of my closest observing friends about the color of this star. I see it as green, and so have many others I've asked. But some amateur astronomers whose opinions I value and who I agree with about the majority of star colors think I'm crazy. Their take on Zubeneshamali is that it's either white or light-blue.

So please help me settle this debate. Cast your gaze on Zubeneshamali, and decide for yourself if it is indeed the only naked-eye star with a greenish tint. Then, e-mail me at mbakich@Astronomy.com with your conclusion.

OBJECT #387	NGC 5882
Constellation	Lupus
Right ascension	15h17m
Declination	-45°39'
Magnitude	9.4
Size	7"
Type	Planetary nebula

If you head 1.4° southwest from magnitude 3.4 Epsilon (ϵ) Lupi, you'll find a planetary nebula that is bright enough to exhibit impressive blue-green color. Through a 10-inch telescope at 250 \times , you'll see this object's shell, which appears circular. Larger scopes and higher magnifications show an inner tilted oval.

OBJECT #388	NGC 5897
Constellation	Libra
Right ascension	15h17m
Declination	-21°01'
Magnitude	8.6
Size	12.6'
Type	Globular cluster
Other name	The Ghost Globular

NGC 5897 is the best deep-sky object in Libra. To find it, travel exactly 8° southeast of Zubenelgenubi (Alpha [α] Librae). Because this object lies 40,000 light-years away, its brightest stars glow at only magnitude 13. Still, enough stars group together here that the cluster is easy to spot through 11 \times 80 binoculars. The most striking aspect of NGC 5897 is how loosely its stars concentrate toward the center.

Through an 8-inch telescope at a dark site, you'll see only the brightest dozen or so stars against a faint, comet-like glow. Through a 13-inch scope, the star count rises to 50. If you're lucky enough to view NGC 5897 through a 20-inch scope crank the power past 200 \times . You'll see stars scatter widely across the cluster's center with little apparent concentration.

Astronomy magazine Contributing Editor Stephen James O'Meara called it the Ghost Globular because it resembles a ghost image of the globular M55 (Object #597).



Object #389 M5 Sally and Curt King/Adam Block/NOAO/AURA/NSF

OBJECT #389	M5 (NGC 5904)
Constellation	Serpens (Caput)
Right ascension	15h19m
Declination	2°05'
Magnitude	5.7
Size	17.4'
Type	Globular cluster

Our next target is the great globular cluster M5 in Serpens — the brightest globular in the northern half of the sky. You can find it by starting at Zubeneshamali (Beta [β] Librae).

From that star, move 11.5° due north. If you have sharp eyes, and if your observing site is dark enough, you can spot M5 as a fuzzy magnitude 5.7 star without optical aid. Don't confuse it with 5 Serpentis, a magnitude 5.0 star 22' to the southeast. To confirm your observation of M5, you should see both it and 5 Serpentis.

Through a 4-inch telescope, this cluster is full of detail. When you crank up the magnification to 150× or more, you'll see that M5 has a grainy structure. You'll spot several dozen stars around the core, which accounts for about one-quarter of the cluster's diameter.

Through an 11-inch scope, more than a hundred stars pop into view. Streamers of stars fill M5's outer regions. They provide a nice contrast to the relatively sparse background.

OBJECT #390	NGC 5899
Constellation	Boötes
Right ascension	15h15m
Declination	42°03'
Magnitude	11.8
Size	3.3' by 1.4'
Type	Spiral galaxy

You'll find this object, and three other galaxies, 3° northeast of magnitude 3.5 Nekkar (Beta [β] Boötis). The orange magnitude 6.1 star SAO 45445 lies 0.2° to the northwest. Through an 8-inch telescope, you'll see a disk-shaped object more than twice as long as it is wide oriented north-northeast to south-southwest. The galaxy's northern half glows a bit more brightly than the southern portion.

Through at least a 14-inch scope from a dark site, you can search for a trio of faint galaxies near NGC 5899. Look 9' north for magnitude 14.1 NGC 5900. Magnitude 14.3 NGC 5895 lies 14' west-southwest, and magnitude 13.2 NGC 5893 sits 4' southwest of NGC 5895.



Object #391 NGC 5921 Adam Block/NOAO/AURA/NSF

OBJECT #391	NGC 5921
Constellation	Serpens (Caput)
Right ascension	15h22m
Declination	5°04'
Magnitude	10.8
Size	4.9' by 4.2'
Type	Barred spiral galaxy

To find NGC 5921, move 5.7° west-southwest from magnitude 2.7 Unuk al Hai (Alpha [α] Serpentis). Through a 10-inch telescope, the galaxy shows a bright center. You may spot its bar, probably with some difficulty, as a faint oval ring that hints at spiral structure.

NGC 5921 lies 75 million light-years from Earth, far beyond the magnitude 11.6 foreground star GSC 344:738, which appears on the southwestern edge of the galaxy's halo. UGC 9830, a magnitude 16.5 satellite galaxy to NGC 5921, lies 36' to the south-southeast. Good luck seeing that one.

OBJECT #392	Abell 2065
Constellation	Corona Borealis
Right ascension	15h23m

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Declination	27°43'
Size	30.5'
Type	Galaxy cluster

Do you have access to a large telescope? Abell galaxy cluster 2065 is a fine challenge object for a 16-inch scope. Within the half-degree field that encompasses this cluster you'll see half a dozen galaxies.

I observed this object through a 30-inch scope under a pristine sky. Although I counted some three dozen galaxies, I judged the sighting moderately difficult because the individual members appear faint. You'll find this group 2° southwest of Nusukan (Beta [β] Coronae Borealis).

OBJECT #393	Mu (μ) Boötis
Constellation	Boötes
Right ascension	15h25m
Declination	37°23'
Magnitudes	4.4/6.5
Separation	108'' and 2''
Type	Double star

This triple star system has a wide A-B separation. The two stars appear light-yellow and deep-yellow. When you have observed the pair at low magnification, crank up the power and target the fainter component. You'll discover it also is a close binary.

OBJECT #394	NGC 5925
Constellation	Norma
Right ascension	15h28m
Declination	-54°31'
Magnitude	8.4
Size	14'
Type	Open cluster

Norma, because of its proximity to the galactic plane, contains a large number of open clusters. This one lies 3.3° southeast of magnitude 3.4 Zeta (ζ) Lupi. This cluster's individual stars scatter randomly across its face. The brighter tier of about three dozen stars ranges from 10th to 12th magnitude, and you can spot them through a 6-inch telescope. Larger scopes bring into view 50 additional stars that glow more faintly.

OBJECT #395	NGC 5927
Constellation	Lupus
Right ascension	15h28m
Declination	-50°40'
Magnitude	8.0
Size	12.0'
Type	Globular cluster

Our next target lies 2.9° east-northeast of magnitude 3.4 Zeta (ζ) Lupi. An 8-inch telescope shows a dense core with a ragged outer edge. A 20-inch scope at 300 \times will resolve some 50 stars, but the core will appear just as dense as through the smaller instrument.

Look for a similarly difficult-to-resolve globular, magnitude 8.4 NGC 5946 (Object #398), 1.2° due east.

OBJECT #396	Delta (δ) Serpentis
Constellation	Serpens
Right ascension	15h35m

(continued)	
Declination	10°32'
Magnitudes	4.2/5.2
Separation	4''
Type	Double star

This “star” actually is a pair of binary stars separated by 66''. The set you'll be observing is the A–B pair, which have a separation of 4''. The C–D pair is just a bit wider at 4.4'', but the stars glow dimly at magnitudes 14.7 and 15.2. You can try for them if you have a 16-inch telescope at your disposal.

OBJECT #397	NGC 5938
Constellation	Triangulum Australe
Right ascension	15h36m
Declination	–66°52'
Magnitude	11.7
Size	2.7' by 2.4'
Type	Barred spiral galaxy

Look 0.5° south of magnitude 4.1 Epsilon (ϵ) Trianguli Australis for this distant galaxy. Indeed, it lies some 300 million light-years away. Through a 16-inch telescope at 300 \times , this face-on galaxy appears ragged with a small bright central region. A 12th magnitude star sits just south of the core.

OBJECT #398	NGC 5946
Constellation	Norma
Right ascension	15h35m
Declination	–50°40'
Magnitude	8.4
Size	3'
Type	Globular cluster

Our next target lies 3.9° east-northeast of magnitude 3.4 Zeta (ζ) Lupi. Through 8-inch and smaller telescopes, this cluster appears small with a central concentration and little resolution. A magnitude 11.8 star lies 30'' to the southwest of the core.

OBJECT #399	NGC 5962
Constellation	Serpens (Caput)
Right ascension	15h37m
Declination	16°37'
Magnitude	11.3
Size	2.6' by 1.8'
Type	Spiral galaxy

NGC 5962 lies in northern Serpens Caput, just west of the three stars (Beta [β], Gamma [γ], and Kappa [κ] Serpentis) that form the Serpent's head. This galaxy exhibits “flocculent” spiral structure, meaning its arms appear to be broken up into many small pieces in contrast to the “grand design” spirals with well-developed arms. At 150 \times and higher, you'll notice NGC 5962's broad central concentration. A sharp, bright nucleus some 15'' in diameter lies at its very center.

OBJECT #400	NGC 5965
Constellation	Draco
Right ascension	15h34m
Declination	56°41'

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Magnitude	11.9
Size	5.2' by 0.7'
Type	Spiral galaxy

Our next object sits 2.6° south-southeast of magnitude 3.3 Iota (ι) Draconis. Through a 12-inch telescope at $200\times$, this galaxy appears as a classic edge-on spiral, and it appears more than 4 times as long as it is wide oriented northeast to southwest. Smaller scopes don't show this length-to-width disparity as well because the spiral arms fade rapidly as they taper away from the core. The north-eastern arm outshines the other by quite a bit.

OBJECT #401	Struve 1962
Constellation	Libra
Right ascension	15h39m
Declination	$-8^\circ 47'$
Magnitudes	6.5/6.6
Separation	11.9"
Type	Double star

This pair of equally bright stars aligns along a rough north-south line, and both stars are white or blue-white. Struve 1962 lies 5.4° east of magnitude 2.6 Zubeneshamali (Beta [β] Librae).

OBJECT #402	Zeta (ζ) Coronae Borealis
Constellation	Corona Borealis
Right ascension	15h39m
Declination	$36^\circ 38'$
Magnitudes	5.1/6.0
Separation	6.3"
Type	Double star

Zeta CrB lies in the northern part of the constellation, about a "crown's width" north of the Northern Crown asterism. Most observers peg the colors of these two stars as blue-white or white.

OBJECT #403	NGC 5985
Constellation	Draco
Right ascension	15h40m
Declination	$59^\circ 20'$
Magnitude	11.1
Size	5.3' by 2.9'
Type	Spiral galaxy

NGC 5985 is a nice spiral galaxy on its own, but it teams up with the magnitude 12.0 elliptical galaxy NGC 5982 and the magnitude 13.2 spiral galaxy NGC 5981 for one remarkable view. These three objects lie in an east-west line less than 14' apart. You'll find this trio 1.8° east-northeast of magnitude 3.3 Iota (ι) Draconis.

You'll need at least a 12-inch telescope to spot any detail in the spiral arms of NGC 5985. The other two galaxies won't reveal any details, although NGC 5981 is another of the universe's "needle" galaxies. To see the entire trio, use a magnification around $100\times$.

OBJECT #404	NGC 5986
Constellation	Lupus
Right ascension	15h46m

(continued)	
Declination	-37°47'
Magnitude	7.5
Size	9.8'
Type	Globular cluster

Our next target lies 2.8° west of magnitude 3.6 Eta (η) Lupi. Through a 6-inch telescope at 200 \times , this cluster appears irregular, mottled, and unresolved near its center except for one star 1' northeast of the core. That's magnitude 11.2 GSC 7837:1334. Through a 12-inch scope, several dozen stars resolve into points. NGC 5986 lies 35,000 light-years from Earth and 15,000 light-years from the Milky Way's center.

OBJECT #405	R Coronae Borealis
Constellation	Corona Borealis
Right ascension	15h49m
Declination	28°09'
Magnitude	5.7
Period	irregular
Type	Variable star

Our next lies 3.4° east-northeast of magnitude 2.2 Alphecca (Alpha [α] Coronae Borealis). R Coronae Borealis also makes an isosceles triangle with magnitude 4.2 Gamma (γ) and magnitude 4.6 Delta (δ) Coronae Borealis.

But whether or not you see the star . . . well, that's up to the star. Most of the time, R Coronae Borealis shines around magnitude 6. But at irregular intervals ranging from several months to many years, the star's brightness plunges.

How far its light dips also is irregular, but astronomers have observed R as faint as magnitude 14. That means at its maximum magnitude, the star is nearly 1,600 times as bright as when it's at minimum.

Although astronomers don't know when R Coronae Borealis' brightness will decrease, they have proposed two ideas as to why it drops. The first theory states that, intermittently, the star puffs out clouds of dust that cause it to dim. Because R also emits particles akin to the Sun's solar wind, the dust clouds disperse over time.

The second, less popular theory proposes that a huge cloud of dusty material orbits R Coronae Borealis. We observe R's variability as the cloud blocks out the star's light.

This, then, may be a recurring observation. Find R Coronae Borealis on the next clear night. Then return to the star to see if anything has changed. Odds are that you'll see the star disappear. I just can't say when.



Object #406 NGC 6015 Paul and Dan Koblas/Adam Block/NOAO/AURA/NSF

OBJECT #406	NGC 6015
Constellation	Draco
Right ascension	15h51m
Declination	62°19'
Magnitude	11.1
Size	6.4' by 2.2'
Type	Spiral galaxy

You'll find our next target not quite 4° west-northwest of magnitude 2.7 Eta (η) Draconis. Through an 8-inch telescope you'll see a large, oval haze with central brightening that spans roughly 30% of the galaxy's diameter. Through larger aperture scopes, you may catch a glimpse of NGC 6015's structure, which appears peppered with faint knots.

OBJECT #407	NGC 6025
Constellation	Triangulum Australe
Right ascension	16h04m
Declination	-60°30'
Magnitude	5.1
Size	12'
Type	Open cluster
Other name	Caldwell 95

Our next object lies at the northern edge of Triangulum Australe, right at that constellation's border with Norma. You can find it 3.1° north-northeast of magnitude 2.8 Beta (β) Trianguli Australis. Under a dark sky, most observers can spot NGC 6025 without optical aid. Through a 6-inch telescope, you'll count roughly 40 stars between magnitudes 7 and 11. Through a 14-inch or larger scope, crank up the magnification, and look 20' south-southeast of the cluster's center for the magnitude 14.6 spiral galaxy PGC 56940.

OBJECT #408	NGC 6027
Constellation	Serpens
Right ascension	15h59m
Declination	20°45'
Magnitude	14.0
Size	2' by 1'
Type	Galaxy group
Other name	Seyfert's Sextet

Our next celestial treat is a group of six galaxies — three faint and three ultra-faint — that occupy a tiny area of sky. Seyfert's Sextet is made up of magnitude 13.8 NGC 6027, magnitude 13.9 NGC 6027a, magnitude 13.4 NGC 6027b, magnitude 16.5 NGC 6027c, magnitude 16.5 NGC 6027d, and magnitude 15.5 NGC 6027e.

French astronomers Édouard Jean-Marie Stephan discovered this object in 1882, but he didn't know what it was. American astronomer Carl Keenan Seyfert determined its true nature in 1951.

The Sextet also carries the designation Hickson 79 — the 79th entry in a catalog of compact groups of galaxies compiled in 1982 by Paul Hickson. Look for Seyfert's Sextet 1.9° east of magnitude 4.7 Rho (ρ) Serpentis.

To see Seyfert's Sextet you'll need at least a 16-inch telescope and terrific sky conditions. Even through such an instrument, at magnifications below 200× it's easy to mistake this group for a single object. On transparent and steady nights, you'll have the best luck spotting NGC 6027, NGC 6027a, and NGC 6027b. None of the galaxies shows any real structure, however, and at best appear barely non-stellar through any size scope. Merely detecting all six group members ranks as a major accomplishment.

OBJECT #409	Xi (ξ) Scorpii
Constellation	Scorpius
Right ascension	16h04m
Declination	-11°22'
Magnitudes	4.8/7.3
Separation	7.6''
Type	Double star

To find Xi Sco, you'll have to search the extreme northern part of Scorpius. The star lies more than 16° west-northwest of Antares. A better star-hop originates at magnitude 2.5 Zeta (ζ) Ophiuchi. Xi Sco lies only 8° west of that star. The primary is white, and the secondary is orange. Oh, and if you notice another binary in the same field of view as Xi, go on to the next entry.

OBJECT #410	Struve 1999
Constellation	Scorpius
Right ascension	16h04m
Declination	-11°27'
Magnitudes	7.4/8.1
Separation	11.6''
Type	Double star

Our previous target, Xi (ξ) Scorpii, has another designation — Struve 1998. Well, this binary, Struve 1999, lies less than 5' south of it. The eyepiece field, therefore, will capture both doubles at once. This star is a slightly easier split than Xi. The most often-reported colors for the two components are pale yellow and orange.

OBJECT #411	NGC 6058
Constellation	Hercules
Right ascension	16h04m

(continued)	
Declination	40°41'
Magnitude	12.9
Size	42"
Type	Planetary nebula

Our next target lies 2.8° southeast of magnitude 4.6 Chi (χ) Herculis. Through small telescopes, you'll see the triangle of stars that surrounds NGC 6058 before you see the planetary. Magnitude 9.0 SAO 45881 lies 6' northeast. Magnitude 9.3 SAO 45874 sits 5' northwest. And you'll see magnitude 10.7 GSC 3064:1181 less than 4' south.

Through an 8-inch scope, the planetary appears faint and evenly illuminated. The tiny central region appears a bit brighter. A 14-inch instrument will reveal the 13th-magnitude central star surrounded by a small halo. A nebula filter (especially an Oxygen-III) helps a lot.

OBJECT #412	Beta (β) Scorpii
Constellation	Scorpius
Right ascension	16h05m
Declination	-19°48'
Magnitudes	2.6/4.9
Separation	14"
Type	Double star
Other name	Graffias

Both components of Graffias are hot spectral type B stars. As such, they should appear quite blue. Perhaps because of the difference in brightness, amateur astronomers often describe the fainter component as yellowish or even orange! Spend some time observing this pair, and see what colors you detect.

Or, try this: Crank the magnification past 200 \times , and move the brighter component just outside your eyepiece's field of view. Do you detect a different color when you view the star by itself?

Richard Hinckley Allen in *Star-Names and Their Meanings* (1899) stated that the name "Graffias generally is said to be of unknown derivation." He goes on to say, however, "but since *Γραψαίος* signifies "Crab," it may be that here lies the origin of the title, for it is well known that the ideas and words for crab and scorpion were almost interchangeable in early days."

OBJECT #413	Abell 2151
Constellation	Hercules
Right ascension	16h05m
Declination	17°45'
Size	68'
Type	Galaxy cluster
Other name	The Hercules Galaxy Cluster

All of the selections in this book qualify as "deep-sky" objects, but galaxy cluster Abell 2151 in Hercules takes that term to a whole new level. It lies at the astounding distance of 650 million light-years from Earth. Imagine that. The light that you glimpse from one of its galaxies started on its journey toward Earth several hundred million years before the first dinosaurs existed.

If your scope has a go-to drive, its database may not contain Abell galaxy clusters. That's not a problem here. Just target this cluster's brightest member, elliptical galaxy NGC 6041, which glows at magnitude 13.4. Without go-to, just find magnitude 5.0 Kappa (κ) Herculis. From that star, move 1° to the northwest, and your field of view will capture hundreds of galaxies, most of which glow too faintly to see. That still leaves several dozen within the range of moderate amateur instruments.

Success observing this galaxy cluster requires at least a 12-inch telescope and eyepieces that give powers in excess of 250×. High magnifications increase the contrast between extended objects like galaxies and the background sky. Abell 2151 spans more than 1°, so move your scope around a bit to see the maximum number of galaxies.

OBJECT #414	Kappa (κ) Herculis
Constellation	Hercules
Right ascension	16h08m
Declination	17°03'
Magnitudes	5.3/6.5
Separation	2.8"
Type	Double star

You'll find Kappa Her 3.9° west-southwest of magnitude 3.7 Gamma Herculis. The primary of this close binary appears yellow or yellow-white, and the secondary is orange. Use a magnification around 150×.



Object #415 Nu Scorpii and IC 4592 Adam Block/NOAO/AURA/NSF

OBJECT #415	Nu (ν) Scorpii
Constellation	Scorpius
Right ascension	16h12m
Declination	-19°28'
Magnitudes	4.3/6.4
Separation	41"
Type	Double star
Other name	Jabbah

Through 4-inch and larger telescopes, and with magnifications above 150×, you'll see Nu Scorpii (whose common name, "Jabbah," means "forehead") as a double-double star.

Separations are 1.3'' for the A-B pair and 2.4'' for the C-D pair. The brightest component glows with a yellow light, and the other three appear white. The A component sheds its light on the blue reflection nebula IC 4592, which, in turn, reflects that light in our direction. You can spot the nebula through a 4-inch scope, but be warned: It's huge. Use the lowest magnification and no filter.

OBJECT #416	IC 4593
Constellation	Hercules
Right ascension	16h12m
Declination	12°04'
Magnitude	10.7
Size	42''
Type	Planetary nebula
Other name	The White-Eyed Pea

Our next treat lies 3.9° west-southwest of magnitude 4.6 Omega (ω) Herculis. Although this object has a common name, you'll need more than just a common telescope to see much detail here. Small instruments show only the magnitude 11.1 central star.

Through a 16-inch scope, the small halo that encases the central star appears, and it's blue. Magnifications above 350 \times show the halo has a slight oval shape, in a northwest to southeast orientation. For the best view through any scope, be sure to place magnitude 7.7 SAO 101998, which lies 11' to the south-southeast, outside your eyepiece's field of view.

OBJECT #417	NGC 6067
Constellation	Norma
Right ascension	16h13m
Declination	-54°13'
Magnitude	5.6
Size	12'
Type	Open cluster

Our next treat — and it is a treat — lies 0.4° north of magnitude 5.0 Kappa (κ) Normae. This spectacular object is an observing prize through any size telescope. At its listed brightness, you might think you could see it without optical aid. Normally, that would be true, but NGC 6067 lies in such a rich star field that you'll spend valuable observing time trying to pick it out from the background.

Unless you're looking to find interesting patterns or double stars, use low-power eyepieces on this cluster. Even a 4-inch scope reveals more than 50 stars, while a 12-inch will show you more stars than you'll want to count. (I estimated more than 250.)

While you're in the area, check out two other open clusters. NGC 6031, which shines at magnitude 8.5, lies 0.8° to the west-northwest of NGC 6067. Then, 1.2° southeast of our first target, you'll find Collinder 299 (also known as Harvard 10), a cluster one-third of a degree in diameter with a listed magnitude of 6.9.

OBJECT #418	NGC 6072
Constellation	Scorpius
Right ascension	16h13m
Declination	-36°14'
Magnitude	11.7
Size	40''
Type	Planetary nebula

This bright planetary nebula sits 1.4° east-northeast of magnitude 4.2 Theta (θ) Lupi. Through a 6-inch telescope, it appears as a featureless, circular disk. A 12-inch scope, an eyepiece that magnifies about $250\times$, and a nebula filter reveals a moderately dark rift splitting NGC 6072 into northern and southern halves. Note also how the edge appears irregularly bright.

OBJECT #419	Sigma (σ) Coronae Borealis
Constellation	Corona Borealis
Right ascension	16h15m
Declination	$33^\circ 52'$
Magnitudes	5.6/6.6
Separation	6.2''
Type	Double star

The quadruple star system Sigma CrB sits in the far-eastern part of this small constellation. Its two main components (A and B) are light-yellow and blue-white. A magnitude 13 C component lies $21''$ to the east of the brighter pair. There's also a D component $87''$ east of the A–B pair.

OBJECT #420	NGC 6087
Constellation	Norma
Right ascension	16h19m
Declination	$-57^\circ 54'$
Magnitude	5.4
Size	12.5'
Type	Open cluster
Other names	The S Normae Cluster, Caldwell 89

Our next target lies in Norma 4.2° west-northwest of magnitude 3.8 Eta (η) Arae. Alternatively, you can find it 1.3° east of the much fainter star magnitude 5.6 Iota² (i^2) Normae. If you saw this cluster in a different part of the sky, it would be easy to see without optical aid. However, the richness of the star field coupled with the magnitude 5.6 star SAO 243509 just 0.4° to the west makes NGC 6087 a tough naked-eye catch.

Through a 4-inch telescope at $150\times$, you'll see some three dozen stars, the brightest of which shine at 8th magnitude. Note the cluster's rough triangular shape. A nice line of stars trending north-south sits at the southwest edge. You may see four, five, or six, depending on your scope's aperture.

Near the center, the brightest star in NGC 6087 is the Cepheid variable star S Normae, which was only recently proven to be a member. It glows with an orange hue and varies between magnitudes 6.12 and 6.77 over a period of 9.75 days. You'll easily identify this star by its color through binoculars or a finder scope.



Object #421 M80 Gene Katz/Adam Block/NOAO/AURA/NSF

OBJECT #421	M80 (NGC 6093)
Constellation	Scorpius
Right ascension	16h17m
Declination	-22°59'
Magnitude	7.3
Size	8.9'
Type	Globular cluster

Our next object is a fine small telescope target. M80 is easy to find. First, locate the 1st-magnitude luminary Antares (Alpha [α] Scorpii). Then, move 4.5° northwest. M80 sits midway between Antares and magnitude 2.6 Graffias (Beta [β] Scorpii). Charles Messier discovered this object in January 1781. He later added it to his catalog as number 80.

At magnitude 7.3, you'll easily sweep up this globular through a 3-inch telescope. Its stars appear tightly packed, so a small scope won't let you resolve the ones near M80's bright core. When you observe this cluster, you'll notice the magnitude 8.5 star SAO 184288. It sits only 4' to the northeast of M80's center. That star sits much closer to us than M80 and has nothing to do with the cluster.

In *Cycle of Celestial Objects*, Smyth writes about an interesting, but now outdated, concept: "This is a very important object when nebulae are considered in their relations to the surrounding spaces, which spaces, Sir William Herschel found, generally contain very few stars: so much so, that whenever it happened, after a short lapse of time, that no star came into the field of his instrument, he was accustomed to say to his assistant, 'Make ready to write, Nebulae are just approaching.'"

OBJECT #422	NGC 6101
Constellation	Apus
Right ascension	16h26m
Declination	-72°12'
Magnitude	9.2

(continued)

Size	5'
Type	Globular cluster
Other name	Caldwell 107

The next object on our list lies 3.7° south-southwest of magnitude 1.9 Atria (Alpha [α] Trianguli Australis). Through small telescopes, you'll see that this cluster appears small and faint, with a gradual concentration of light toward its center. Through a 14-inch scope at $300\times$, you'll begin to resolve a couple dozen of the cluster's brightest halo stars, which, unfortunately, aren't all that bright. Also through this aperture, you may notice the central region no longer appears uniform.

OBJECT #423	NGC 6118
Constellation	Serpens (Caput)
Right ascension	16h22m
Declination	$-2^\circ 17'$
Magnitude	11.7
Size	4.6' by 1.9'
Type	Spiral galaxy

You'll need at least a medium size telescope to observe NGC 6118. Through a 10-inch scope you'll see only a faint, uniform haze. A larger telescope at a good observing site reveals a tiny, bright core and weak hints of spiral structure on the galaxy's eastern end. You'll also spot three 14th-magnitude stars embedded in the glow. To find NGC 6118, look 2.6° northeast of magnitude 2.7 Delta (δ) Ophiuchi.



Object #424 M4 George Seitz/Adam Block/NOAO/AURA/NSF

OBJECT #424	M4 (NGC 6121)
Constellation	Scorpius
Right ascension	16h24m
Declination	-26°32'
Magnitude	5.8
Size	26.3'
Type	Globular cluster

Globular cluster M4 ranks as one of the lucky objects on our list because it lies near a first-magnitude star that serves as a guide to it. Just center Antares (Alpha [α] Scorpii) in your field of view, and M4 lies just to its west.

Swiss astronomer Jean-Philippe Loys de Cheseaux (1718–1751) discovered M4 in 1746. He described it as, “Close to Antares . . . It is white, round and smaller than the preceding ones. I do not think it has been found before.” Messier, who added it to his catalog May 8, 1764, was the first to resolve it into a cluster of stars.

Astronomers classify M4 as a loose globular cluster of class IX. Globulars fall into classifications designated I to XII. A globular with a classification of I has the highest stellar density at its core. XII represents a homogenous globular with no increase in star concentration toward the center.

Point a 6-inch telescope toward M4, and you’ll see dozens of stars scattered loosely across its diameter. A prominent chain of stars runs north-south through the cluster’s center. A 12-inch or larger scope at 200 \times will reveal several hundred stars between 11th and 15th magnitude. At this magnification, many other star patterns mask the central chain of stars. Amateur scopes can resolve all but the central 10% of this cluster.

OBJECT #425	NGC 6124
Constellation	Scorpius
Right ascension	16h26m
Declination	-40°40'
Magnitude	5.8
Size	29'
Type	Open cluster
Other name	Caldwell 75

Our next target forms the western tip of an isosceles triangle with two bright double stars, magnitude 3.0 Mu^{1,2} ($\mu^{1,2}$) Scorpii and magnitude 3.6 Zeta^{1,2} ($\zeta^{1,2}$) Scorpii, both of which lies in the Scorpion’s tail.

At magnitude 5.8, sharp-eyed observers will pick out this cluster without optical aid from a dark site. You’ll resolve a few of the object’s outlying stars through binoculars or a finder scope.

Point a 4-inch telescope in NGC 6124’s direction, and insert an eyepiece that gives a magnification around 75 \times , and 50 similarly bright stars will pop into view. Two dozen of them group near the center, with several nice double stars visible.

Now, back down the power to 35 \times or less, and take another look at the cluster. It has a distinct wedge shape pointing roughly to the southeast.

Although this cluster does lie within the nighttime band of our galaxy, its position places it in front of one of the many rifts composed of dark nebulae. Because of this, NGC 6124 sits in front of a sparse stellar background.



Object #426 The Rho Ophiuchi region Jay Ballauer/Adam Block/NOAO/AURA/NSF

OBJECT #426	Rho Ophiuchi region
Constellation	Ophiuchus
Right ascension	16h27m
Declination	-25°30'
Size	4°
Type	Emission and reflection nebulae

Astronomers named the Rho Ophiuchi region for the magnitude 4.6 star Rho (ρ) Oph, but to begin searching this area, center on brilliant Antares (Alpha [α] Scorpii). Stifle your natural urge to observe globular clusters M4 and NGC 6144 — you're here to hunt nebulae.

Start by scanning the area above (north) and to the left (east) of Antares through binoculars or the lowest-power, widest field of view your telescope will allow. For this initial hunt, look for the absence of stars caused by dark nebula Barnard 44 (B44). This dark, sharply defined lane starts at 22 Scorpii and runs eastward an incredible 6.5° , ending at 24 Ophiuchi.

Rho Oph is a double star, with yellow components of magnitudes 5.1 and 5.7 separated by $3''$. Reflection nebula IC 4604 surrounds Rho. Look for the nebula's ribbed structure. Unfortunately, a nebula filter won't help with this type of object because such filters block the blue light from reflection nebulae. Some observers report more of the nebula visible through a light- or medium-blue filter.

Head back to 22 Sco, and examine the nebula IC 4605 around it. Because IC 4605 is an emission nebula, it responds well to a nebula filter. American astronomer Edward Emerson Barnard, who cataloged many of the sky's dark nebulae, described this nebulosity: "The star 22 Scorpii strikingly resembles a human eye, the lids being formed by two strips of nebulosity, one above it and one below."

OBJECT #427	NGC 6134
Constellation	Norma
Right ascension	16h28m
Declination	$-49^\circ 09'$
Magnitude	7.2
Size	8'
Type	Open cluster

You'll find our next target 1.6° northeast of magnitude 4.1 Gamma² (γ^2) Normae. Through an 8-inch telescope at $150\times$, you'll count 50 stars between magnitudes 11 and 14. The cluster shows no concentration but perhaps a general east-west trending of stars. NGC 6134's brightest star, magnitude 9.3 SAO 226781, sits at the southeastern edge.

OBJECT #428	NGC 6139
Constellation	Scorpius
Right ascension	16h28m
Declination	$-38^\circ 51'$
Magnitude	9.1
Size	8.2'
Type	Globular cluster

The next object sits 4.8° west-southwest of magnitude 3.0 Mu (μ) Scorpii. A 4-inch telescope easily reveals NGC 6139 against a reasonably rich background. But simply seeing this cluster and seeing detail in it are two different things. You'll need at least a 14-inch telescope and a magnification above $300\times$ to resolve even a few stars in this compact object. What you will see is a concentrated core surrounded by an unevenly lit halo.

OBJECT #429	NGC 6144
Constellation	Scorpius
Right ascension	16h27m
Declination	$-26^\circ 02'$
Magnitude	9.0
Size	9.3'
Type	Globular cluster

Our next object is incredibly easy to find. Just look 0.6° northwest of magnitude 1.1 Antares (Alpha [α] Scorpii). In most low-power eyepieces, you'll capture both Antares and the cluster in the same field of view.

But that's definitely not how to observe it because Antares' glare will overwhelm everything else. So move Antares out of view to the southeast, crank up the power, and don't be diverted by the much brighter globular M4, which sits 1° west-southwest of NGC 6144.

An 8-inch telescope at $200\times$ will begin to resolve the cluster's stars farthest from the center. Individual stars here are difficult to see because of the cluster's distance — it lies some 30,000 light-years from Earth. A better approach would be to view through a 16-inch scope, but I could say that about most celestial objects.

As with our small-telescope target NGC 6124, NGC 6144 sits at the edge of a vast array of dark nebulosity. Scan the region around it, especially northward. Pretty sparse, eh?

OBJECT #430	The Mini Coathanger
Constellation	Ursa Minor
Right ascension	16h29m
Declination	$80^\circ 18'$
Type	Asterism

Our next target looks best through small telescopes. It's the Mini Coathanger asterism way up north in Ursa Minor the Bear Cub. Amateur astronomer and *Astronomy* magazine Contributing Editor Phil Harrington named this asterism because of its resemblance to the more famous Coathanger, also known as Collinder 399, which lies in Vulpecula.

To find the Mini Coathanger, look 1.9° south-southwest of magnitude 4.2 Epsilon (ε) Ursae Minoris in the Little Dipper's handle. The Mini Coathanger is made up of 10 stars. They range in brightness from magnitude 9.2 SAO 2721 to magnitude 10.8 GSC 4574:802. From its hook to its base, the Mini Coathanger measures $9'$. The base, at $17'$, is nearly twice that length.

OBJECT #431	Alpha (α) Scorpii
Constellation	Scorpius
Right ascension	16h29m
Declination	$-26^\circ 26'$
Magnitudes	1.1/5.4
Separation	$2.6''$
Type	Double star
Other name	Antares

Normally, a magnitude 5.4 star isn't hard to find. In this case, however, it sits only $2.6''$ from magnitude 1.1 Antares A, so you'll need an 8-inch telescope and high power to split the two cleanly. When you do, the contrast effect will present a bright orange primary with an olive-green companion. I love this pair!

This brilliant star's name comes from the pairing of two Greek words, literally "anti" and the Greek god "Ares." Put together, they refer to a star that is the "rival of Mars" in color.