



“Trainsitioning”

Adapting to the Spring Deep Sky

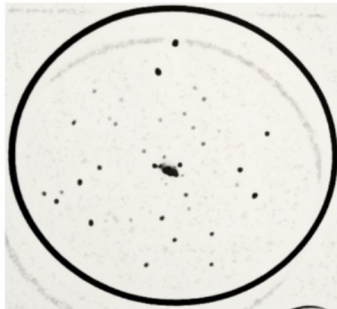
By Brad Young

Spring is a time of transition, on Earth as well as in the sky. It may not be obvious at first but the type of objects we usually look at in the winter are galactic such as open clusters and reflection nebula. But as the year rolls on, we leave the Milky Way and look beyond it at other galaxies in the Virgo Cluster and the other clumps and associations throughout the spring sky. So, as we acclimate to warmer weather, we change our view to faint fuzzies millions of light years away. This requires not only transitioning in selecting magnification, filters, etc., but training our eyes to see faint, low contrast objects more effectively. Or the portmanteau trainsitioning.

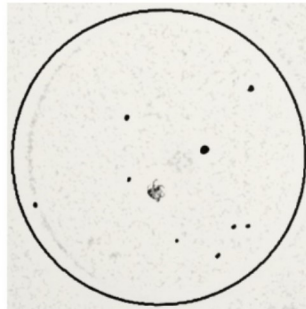
Winter Fence

If I am more fortunate than others, I need to build a longer table not a taller fence - Tamlyn Tomita

There is not a winter fence in the sky, but a traditional line of transition from winter to spring stars. This imaginary line runs from Camelopardalis in the far north, drops between Auriga and Lynx, then Cancer, Monoceros and down to the southern horizon in Pyxis and Puppis. These constellations are considered the most easterly and contain the “suburbs” of the Milky Way and its galactic objects. Groups to the east such as Leo and Hydra are more prevalent in springtime and bring with them the galaxies that will be many people’s targets on observing nights. Let’s look at the edge of the winter sky and the edge of the winter Milky Way.



Caldwell 7 (NGC 2403)



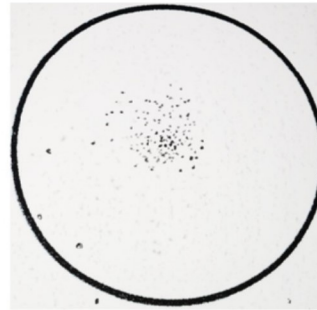
Caldwell 25 (NGC 2419)

Note: equipment used and other data at end of article

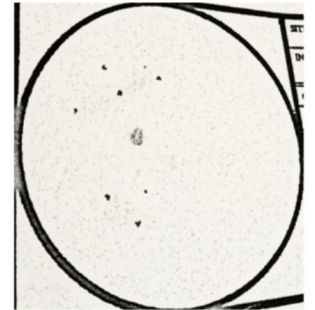
The northernmost object is a galaxy to set the mood for extra-galactic views. NGC 2403 (Caldwell 7) is a big spiral galaxy in Camelopardalis. If you star hop, begin with Muscida (omicron Ursa Majoris). Small scopes will see a large, even glow, but maybe not much detail. For moderate to large telescopes in dark skies, you’ll find a magnificent spiral, with knots strewn across the field. Though missed by Messier, Caldwell added it to his list of 109 deep sky wonders.

Sir Patrick Moore also added an example of a galactic object that also has a little “intergalactic wanderer” to it - our next target in Lynx. In fact, that is the nickname of NGC 2419, as it is the globular cluster furthest from the galactic center.

It is not difficult to find, requiring only a short star hop 7 deg north from Castor. However, it is not as bright as the summer globular clusters and may require a 6-in telescope for a good view.



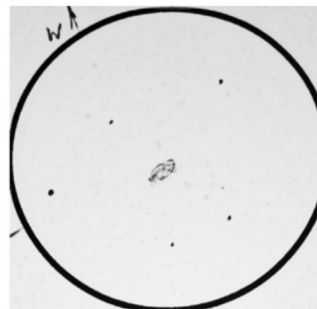
Messier 37



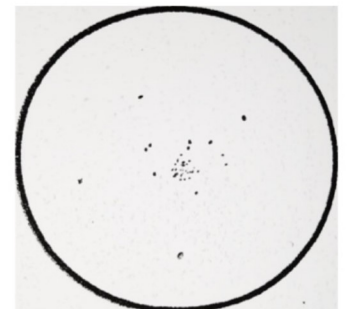
NGC 2387

The open clusters and nebula near Capella are captivating; M 37 is my favorite. Robert Burnham Jr. shared my opinion, writing in his *Celestial Handbook* “usually considered the finest of the three Messier open clusters in Auriga.” The sketch above was made for the Urban Club, using binoculars, and I wrote “awesome, especially with averted vision and patient viewing.”

Finding a galaxy in Auriga is tough, but there are a few, and I have seen NGC 2387. It is “small, medium size and magnitude and no detail.”



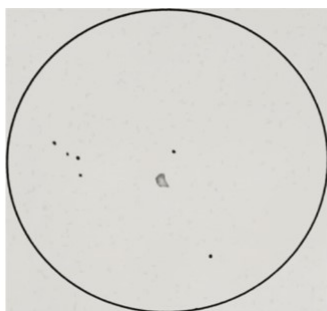
Caldwell 48 (NGC 2775)



Messier 44

You might think Cancer would be another constellation that would be difficult to find a galaxy in and you would be right. NGC 2775 (Caldwell 48) is in the southeast corner and is easier to star hop to from the head of Hydra. This is a moderate target at magnitude 10. I saw it as slightly elongated with some mottling on the edges in my ETX-125 @153x. David Levy listed it as a “round galaxy” in his *Deep Sky Objects*.

I would suggest M44 (the Beehive or Praesepe), to represent a galactic (winter) object. This showpiece will give your eyes a rest from the hard work ahead this spring with dim galaxies. With dark skies, you may see it naked eye.



Caldwell 46 (NGC 2261)

Moving south, Hydra is bordered on the west by both Canis Minor and Monoceros. Canis Minor is singularly lacking in available deep sky objects for small telescopes. So, I'll use Monoceros and the complex field surrounding the variable star S Mon, which lights Hubble's Variable Nebula NGC 2261. The nebula has a "sweeping fan" that becomes faint north of S Mon, and "curves away gently as if fanned by a light breeze." I noted a "comet like glow"; this reiterates that the surfaces of different objects can have a unique look and feel or resemble other kinds. Use as high power as conditions allow for C 46. Before leaving, switch to a low power field, and sweep nearby to visit the Christmas Tree Cluster and the Cone Nebula nearby for more amazing sights.

Finally, look at the Winter Milky Way, whatever dim glow remains for you to see. How is observing our own galaxy different than observing other galaxies? For this part, pick a portion that does not have any discrete objects, just star fields. The Milky Way is a galaxy, but we see it so much closer and from such a different vantage point that we must see it in another way. That's good - I give you the Orion Nebula and Pleiades as proof that being close to stunning objects is best.

New Ways Will Bear Fruit

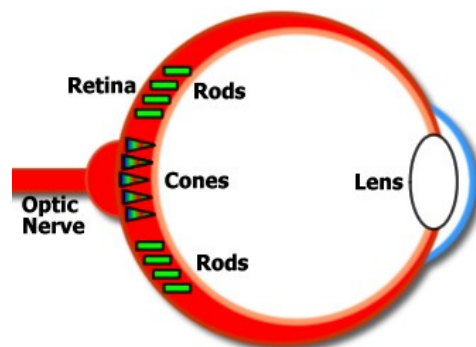
Everything that's cold and gray is gone - John Denver

That should be enough list; as you observe a few, you may start to see that as we begin looking at galaxies, our method of observing may change in subtle ways. Galactic objects like those we see in the winter Milky Way on this list tend to be clusters and nebula. Clusters, whether open or globular can often be resolved to stars. Except for monster telescopes, no amateur resolves galaxies into their individual stars. Occasionally, a supernova will erupt in one. Galactic nebula, such as reflection, emission, or planetary nebula, will not resolve but have a different type of appearance compared to a galaxy. With the subtle differences, comes different ways to observe.

Galactic clusters are often large and bright enough to use low power eyepieces. Unless they are involved in a nebula (e.g. the Pleiades), filters are rarely used. Depending on their size, bright nebula may require low or high power and

certain filters such as H- β may be helpful in teasing out the details. Planetary nebula often benefit from high power and some are easier to see using an OIII filter.

Usually, galaxies usually benefit from higher power to increase contrast. Because they are such low contrast objects, filters offer little help. Dark skies are much more essential, as is the aperture of your telescope. The reason why large Dobsonians (nicknamed light buckets) are popular is because they provide the most photons for the dollar.



Rods and Cones

Jerry, my rods and cones are all screwed up! - Kramer Cosmo

In addition to your equipment, your method of observing may change with different types of objects. Averted vision is often a must for dim galaxies. But it's usually unnecessary with an open cluster. With bright clusters or nebulae, we may stare directly at the scene, using the six million cones in our eyes, which are sensitive to color. But with dim galaxies and nebulae, we rely on our 120 million rods.

In short, rods are responsible for scotopic vision and cones are responsible for photopic vision. Scotopic vision is also colloquially referred to as night vision. This type of vision is performed with the rods in the eye. As these are mainly located in the peripheral areas of the retina, visual acuity is low. In contrast to cone-based photopic (bright) vision during the day, no colors are perceived. Think of averted vision in this way: go back to when you printed this article. If you think it is bright and colorful, you use high quality colorful ink and stand at the printer, staring as if to hurry it to come out. However, if you see this story, or the author, as dim, you print in greyscale and glance sideways to see if it's done printing.

It's time to transition from nebulae and clusters to galaxies. Exchange your hand warmers for bug spray, your Carhartt's for T-shirts and put away thermos bottles while you clean out the ice chests. Get ready for the hordes of galaxies in Leo, Ursa Major, Coma Berenices, not to mention Virgo. And get out and see Orion, or the Eskimo, or M35 one more time before the sun overwhelms them in the evening sky.

Objects Discussed

You can't have discussion without cussin'

OBJECT	CONSTELLATION	My Sketch	TYPE	AL PROGRAM	MIN EQUIP
NGC 2419 (C25)	Lynx	ETX-125 153x	Glob Cluster	Glob Clusters	4 in scope
NGC 2403 (C7)	Camelopardalis	ETX-125 47x see note below	Galaxy	Caldwell Silver	4 in scope
Messier 37	Auriga	ETX-125 47x	Open Cluster	Urban Club	8x40 binoculars
NGC 2387	Auriga	22" Dob 240x	Galaxy	Herschel Society	10 in scope
NGC 2775	Cancer	ETX-125 153x	Galaxy	Herschel 1	4 in scope
Messier 44	Cancer	8x25 finder scope	Open Cluster	Urban Club	Eye
Milky Way	Many	Eye	Galaxy	?	Eye
NGC 2261	Monoceros	ETX-125 153x	Bright Nebula	Caldwell Silver	10 in scope

Note: NGC 2403 (C7) best seen that night in ETX-125 at 153x, w/o filter

Unless noted, all images and sketches are by the Author

Bibliography

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Webb Society Deep-Sky Observer's Handbook, Vol. 2, 3, 4, edited by Kenneth Glyn Jones

Celestial Objects for Common Telescopes, Vol. 2: The Stars, Rev. T. W. Webb

Deep Sky Objects, David Levy

Deep Sky Companions: The Caldwell Objects, Stephen James O'Meara

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