

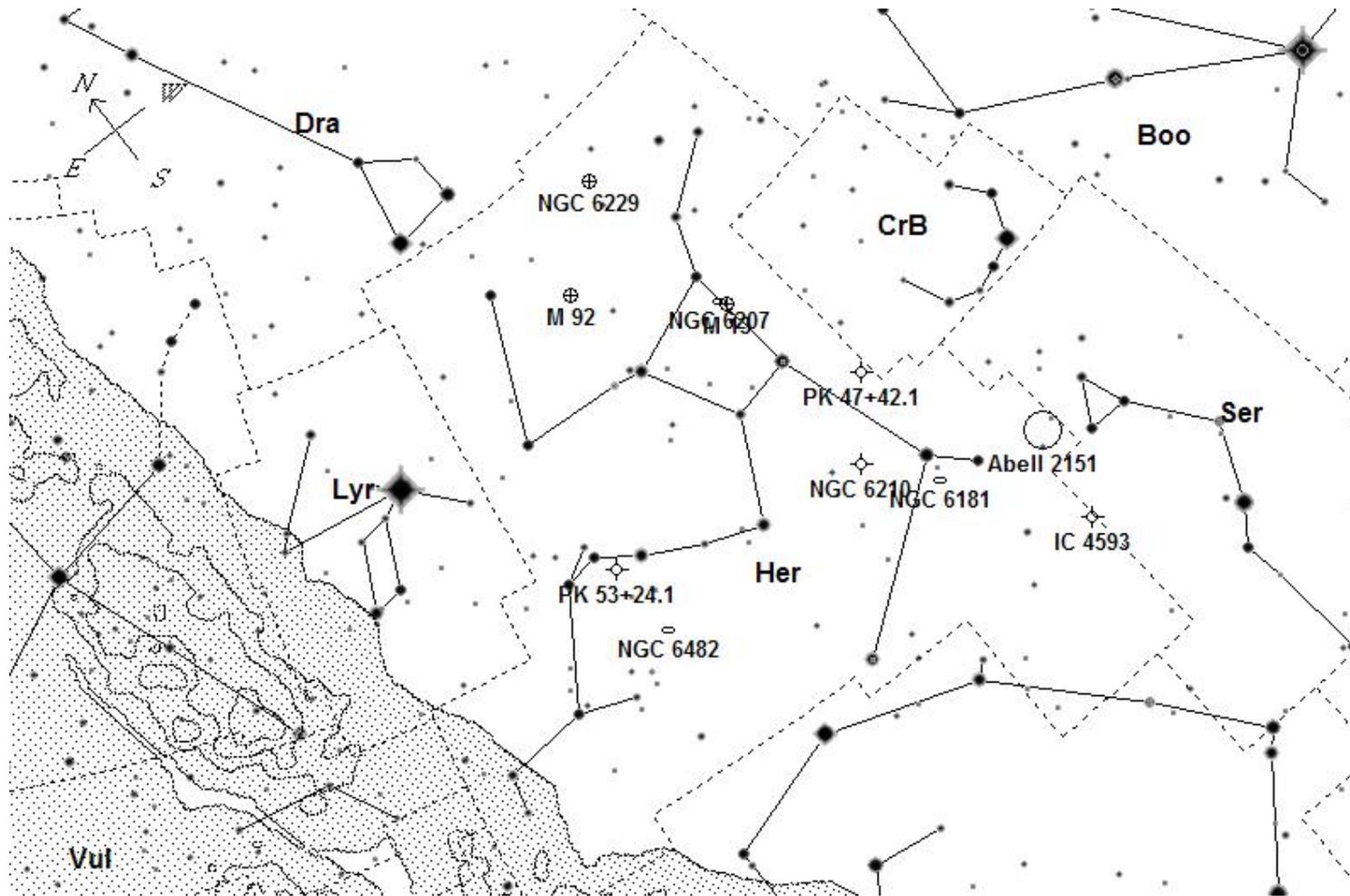
Small Wonders: Hercules

A monthly sky guide for the beginning to intermediate amateur astronomer

Tom Trusock - 7/09



Dragging forth the summer Milky Way, legendary strongman Hercules is yet another boundary constellation for the summer season. His toes are dipped in the stream of our galaxy, his head is firm in the depths of space. Hercules is populated by a dizzying array of targets, many extra-galactic in nature. Galaxy clusters abound and there are three Hickson objects for the aficionado. There are a smattering of nice galaxies, some planetary nebulae and of course a few very nice globular clusters.



Widefield Finder Chart - Looking high and south, early July.

For those inclined to the straightforward list approach, here's ours for the evening:

Globular Clusters

M13

M92

NGC 6229

Planetary Nebulae

IC 4593

NGC 6210

Vy 1-2

Galaxies

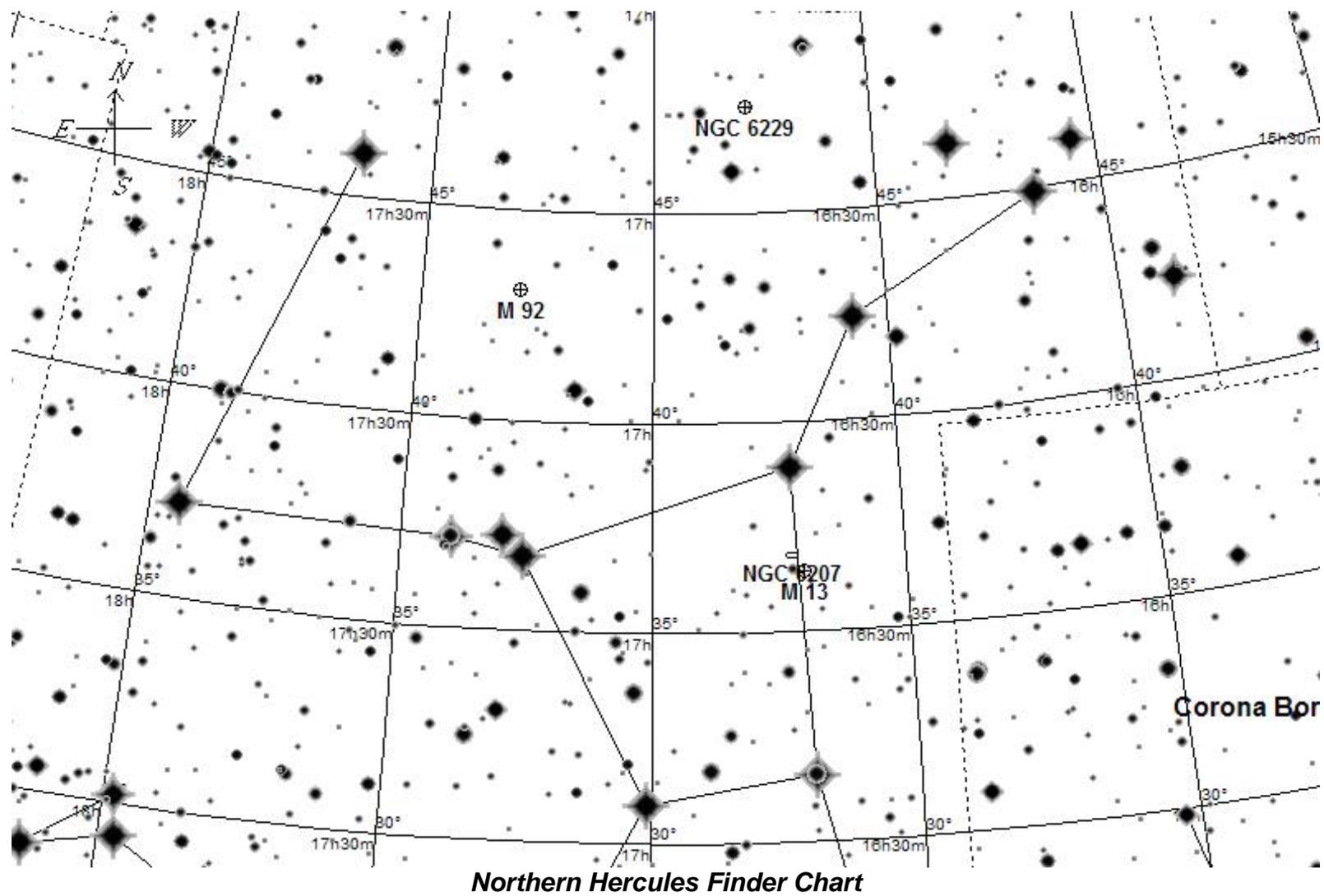
NGC 6207

NGC 6482

NGC 6181

Galaxy Groups / Clusters

AGC 2151 (Hercules Cluster)

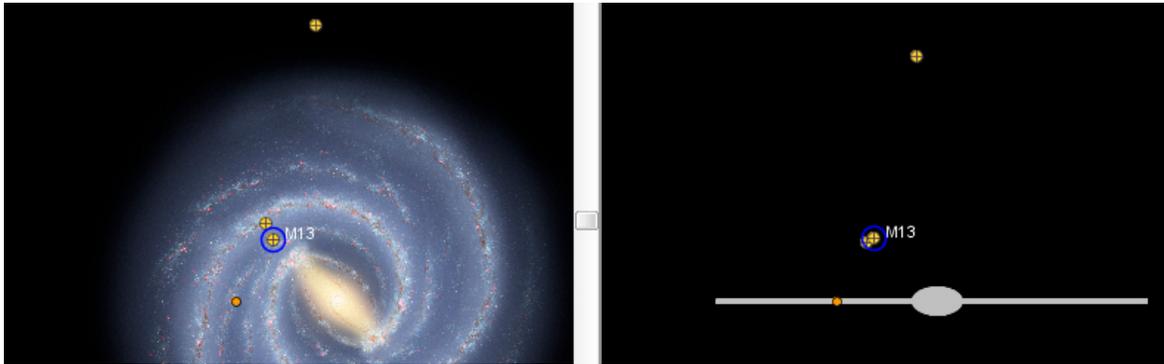




M13 and NGC 6207 contributed by Emanuele Colonnato

Let's start off with the masterpiece and work our way out from there. Ask any longtime amateur the first thing they think of when one mentions the constellation Hercules, and I'd lay dollars to donuts, you'll be answered with the globular cluster Messier 13. M13 is one of the easiest objects in the constellation to locate. M13 lying about 1/3 of the way from eta to zeta, the two stars that define the westernmost side of the keystone. Over the course of the years I've heard M13 referred to by many names; the jewel of the northern crown, the keystone (although from those of us who grew up with the Rey drawings may argue that M92 tends to make a better keystone), the Hercules Cluster and of course the great globular in Hercules. It's also been called the finest globular in the northern sky, and here I may disagree a bit. I think it's excellent placement for northern observers may have given it something of an unfair advantage.

We'll hit three globulars in Hercules this evening, and M13 is the closest of the three. Next furthest is M92, and way out on the boundaries of intergalactic space lies NGC 6229 - but more on those later.



Respective Locations of M13, M92 and NGC 6229

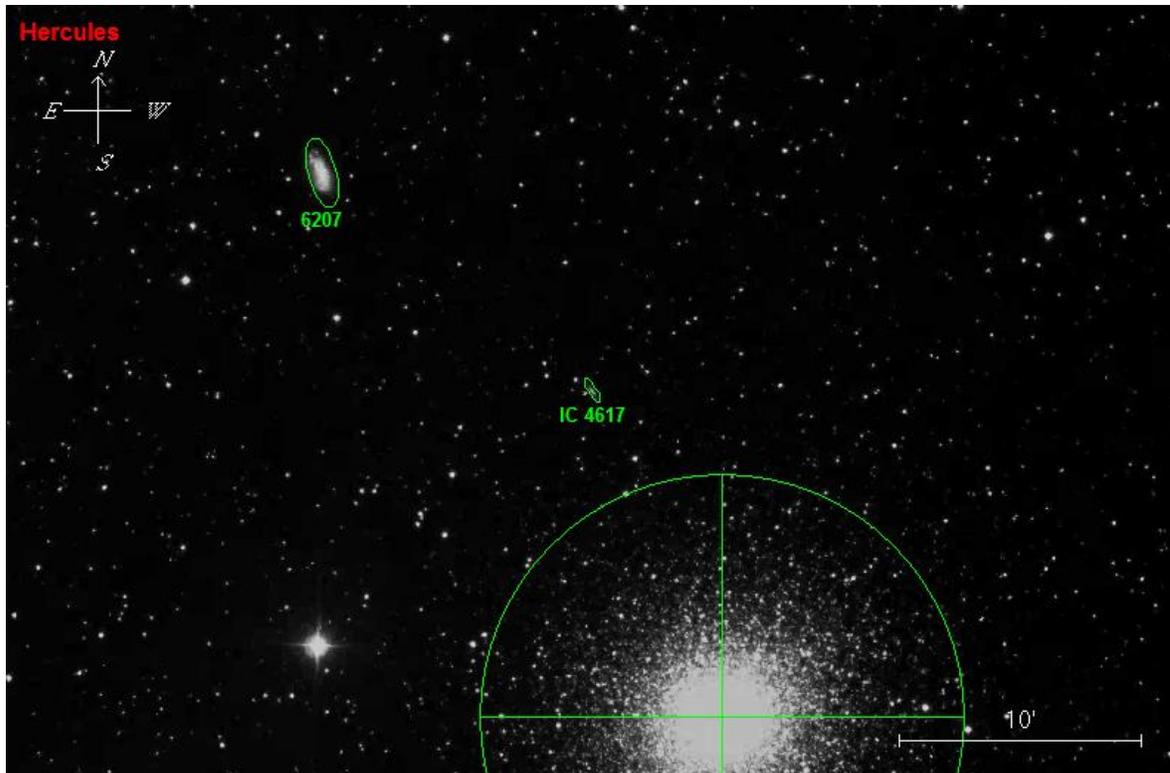
M13 lies a "mere" 25k light years from us and has a reported magnitude of 5.9. It shines with the light of nearly $\frac{1}{4}$ million suns, and covers a sphere of space with a 146 light year true diameter. It's easily visible naked eye from a semi-dark rural site, and easily pops out as a very fat, fuzzy star at a real dark one.

I've observed M13 for decades, using telescopes up to 30" in size. I've looked at it in image amplification devices, and small refractors. I've used binoculars and the naked eye. The smallest (naturally aspirated - ie without a photon multiplier) aperture I've ever seen any resolution in is probably around 85mm. A 4" telescope on a good night will give you resolution of stars clear across the face. Interestingly enough, it's not resolution that's the limiting factor here, it's light gathering ability. Using a photon multiplier like the BIPH or Collins I3 results in pretty complete resolution even in small apertures.



M13 contributed by Hunter Wilson

Inside the globular itself, many observers have reported a Y or propeller shaped dark feature. Historically, this was probably first spotted by Lord William Parsons of Rosse with his 72 inch reflecting telescope. I've seen it numerous times, but have found it's typically easier to pick out with smaller aperture. If this is correct, then - what or why? The idea of seeing it more easily with small aperture seems to go against the old (and typically correct) adage aperture rules. Maybe it's an area of reduced stellar population within the globular, or perhaps thin dust lanes slightly masking our view. It's possible that larger apertures collect enough light to simply overpower whatever is going on in this area. And yet, it's clearly visible in both Emmanuel Colognatos and Hunter Wilsons excellent photos.



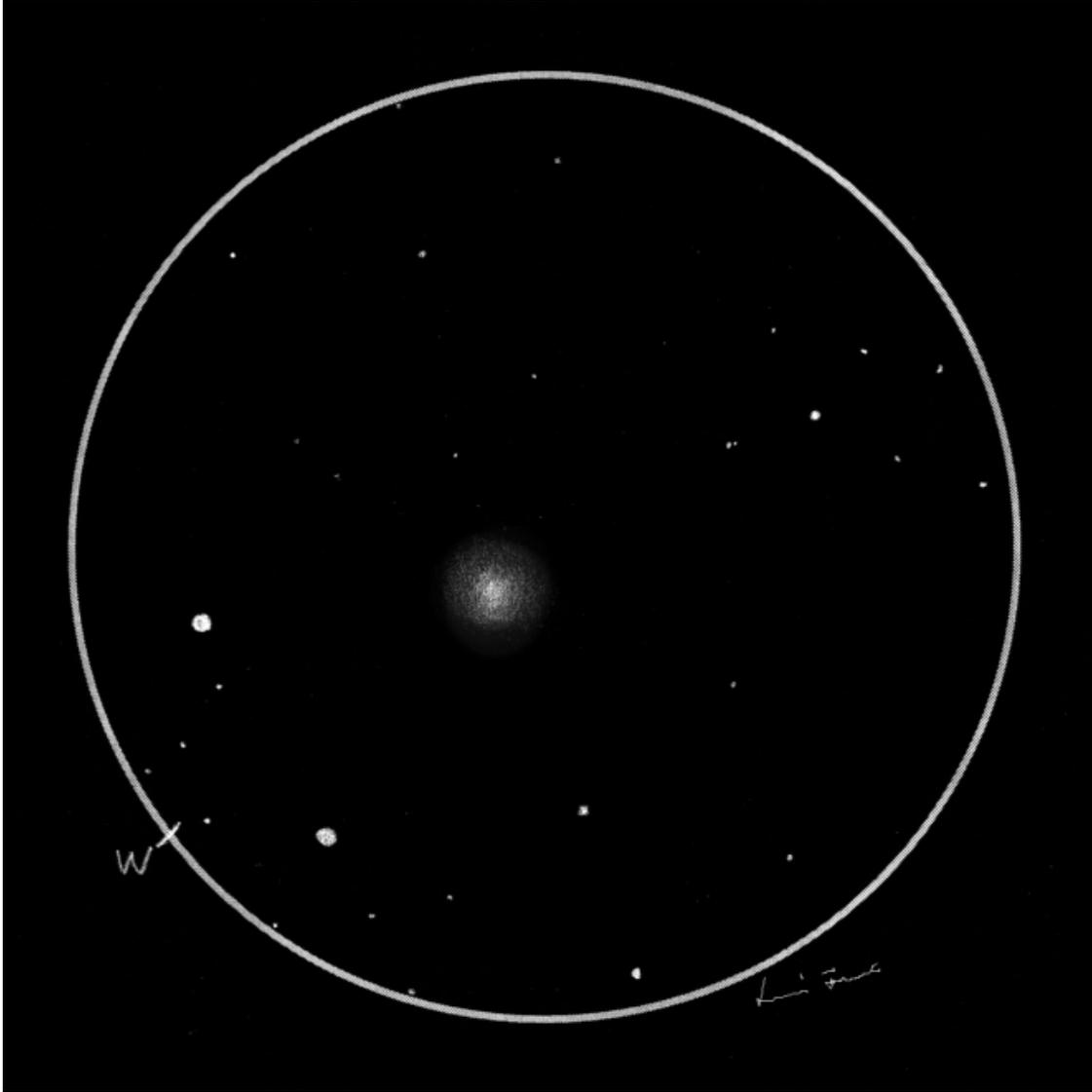
While you're in the area, be certain to look for the companion galaxy that lies about $\frac{1}{2}$ degree to the NE - NGC 6207. It's fairly obvious in pictures (hit my on the head obvious in Emmanuele Colognato's magnificent photo above), and indeed isn't all that difficult to pick up even in moderate sized telescopes. In larger apertures 18" and up, it's something of a showpiece in it's own right, although nearly everything in this area gets overshadowed by M13. My own notes from a session with my 18" record that I saw 6207 as a nearly stellar nucleus, a condensed halo, with faint twin spiral arms. My best views came through a 13 Ethos, at a magnification of around 190x. Observers looking for a challenge should search for IC 4617. This magnitude 15 galaxy lies between 6207 and M13. It also is visible in Emmanuelle's photo above. What's the smallest aperture you can catch it in?



M92 Sketch contributed by Taras Wertelecki

Hopping up to Hercules head, I use pi and eta to form a triangle when star hopping to M92. This beautiful object is around the same distance as M13, and in any other constellation would probably rule the roost - or at least be one of the head chickens anyway. Here, as with everything else, it winds up playing second fiddle. But what a beautiful sound it makes!

M92 lies around 27k light years, is around 109 light years in diameter and shines with the light of around 145000 suns. My 18" easily resolves it clear across the face at moderate magnifications, but I've never managed to do much with it using a 4" telescope. It's about a half magnitude dimmer than its big brother. I've looked for it naked eye from dark sites, but haven't managed to catch it yet. You'll need a darker site, higher altitude and/or younger eyes than mine, but I suspect it's do able.



Globular Cluster NGC 6229 - Sketch Contributed by Lovro Ferenc

Move 7 degrees SW to find the last globular on our list for the evening, NGC 6229. Talk about a completely overshadowed object! Is it any surprise that with M13 and M92 on the list 6229 does not even want to come to the party? 6229 knocks in at mag 9.4 and 99k light years away. In true size, it's about 130 light years in diameter and shines with the light of nearly 140,000 suns. It's a neat target for large telescopes. A quick peek with my 18"□ at 200x notes that 2/3 or so of the outer portion was resolved.

Lets go out the eastern most leg now and visit a galaxy and an object that will challenge your finding skills, planetary nebula PK 53+24.1. The planetary, also known as Vy 1-2. The Vy is for Vyssotsky. Alexander Vyssotsky (1888-1973) was born in Moscow and received his masters from Moscow State University. He spent 35 years with the University of Virginia and McCormick Observatory working with (among other things) using spectra to classify dwarf M stars. Visually, VY 1-2, the challenge lies in finding it. It's fairly bright, but the disk is so small that it's stellar at low to moderate powers. You can use an OIII filter between your eye and the eyepiece to compare the field filtered and unfiltered. When you find a star that does not dim significantly - that's it.

David Knisely contributes the following:

(9.25" f/10 SCT, no filter and OIII): Tiny nearly stellar 12th magnitude dot that blinks with the OIII filter. Fairly easy to see. 235x shows a small disk. 587x shows the disk plainly, but with no additional detail.

Next up, lets head south 5 degrees to NGC 6482. With my 18"□ telescope this little blip has a starlike nucleus, and a fainter outer halo. My observations were at 200x with a 13t6 on a clear moonless night of good transparency.



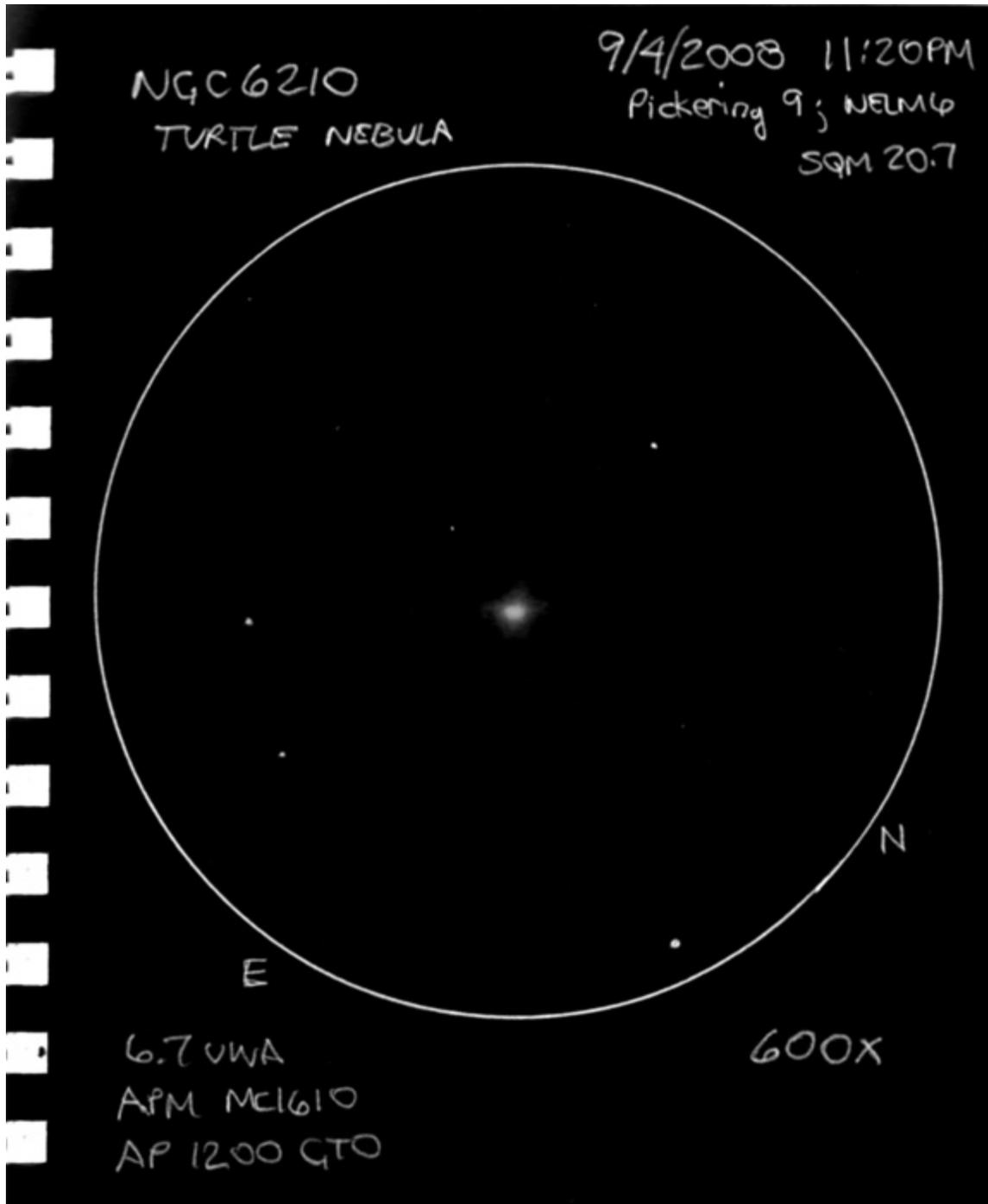
Abell 39 - Contributed by Hunter Wilson

Moving down the other leg the first stop is a real toughie, and probably falls under a challenge object for most visual observers, but Hunter Wilson sent me such a beautiful photo, I just had to include it. Abell 39 (also known as PK 47+42.1), has a listed magnitude of a fairly bright mag 12.9 - however, it's also fairly large at 3 arc minutes in size, which tends to knock down the surface brightness. On the DSS photos, it's an extremely faint yet perfect bubble. If you're into observing these faint bubtacular fuzzies, check out Alvin Hueys Abel Planetary Nebulae Observer's Guide. His website can be found at the end of the article. He also offers Hickson and Arp observing guides.



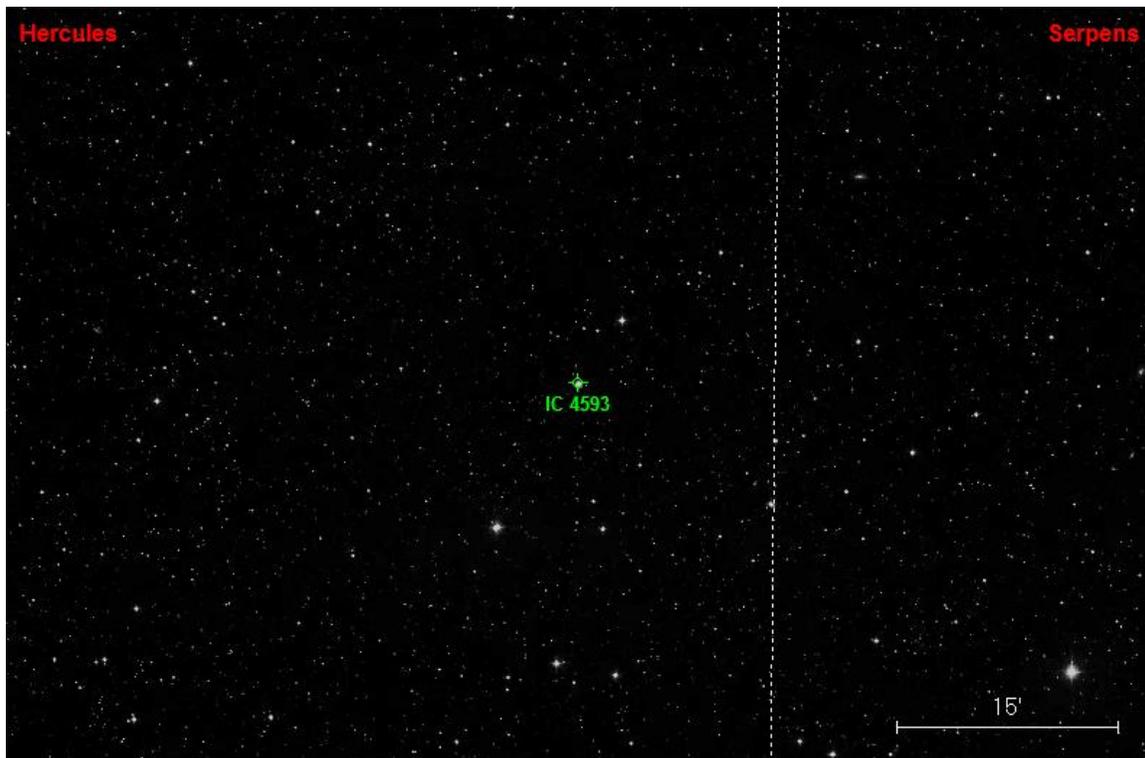
NGC 6210 - Contributed by Bill W

Five and a half degrees to the SE, we run into NGC 6210. This small and bright planetary is easily observed in a small scope - if you knew exactly where you were looking you could probably spot it in a large set of binoculars. The smallest scope that I've seen it in is one of the popular 66mm apos that fill the marketplace today. At low powers, it's stellar, but once you identify the field, pump up the magnification and that little disk pops right out. To me, this object is a brilliant blue green in a larger telescope, and in my 18"□ shows some irregularity in it's outer extensions at high power. I've not noted any sign of the central star, but perhaps I simply haven't used enough power.



Sketch Contributed by Jeff Young

Continuing on down the leg, we'll pause at NGC 6181. In my 18", 6181 does not show a stellar core, instead I note that it has a dense, semitight nucleus, a moderately bright inner halo and hints of an outer halo with perhaps two faint arms. The longer I study, the more I seem to see here.

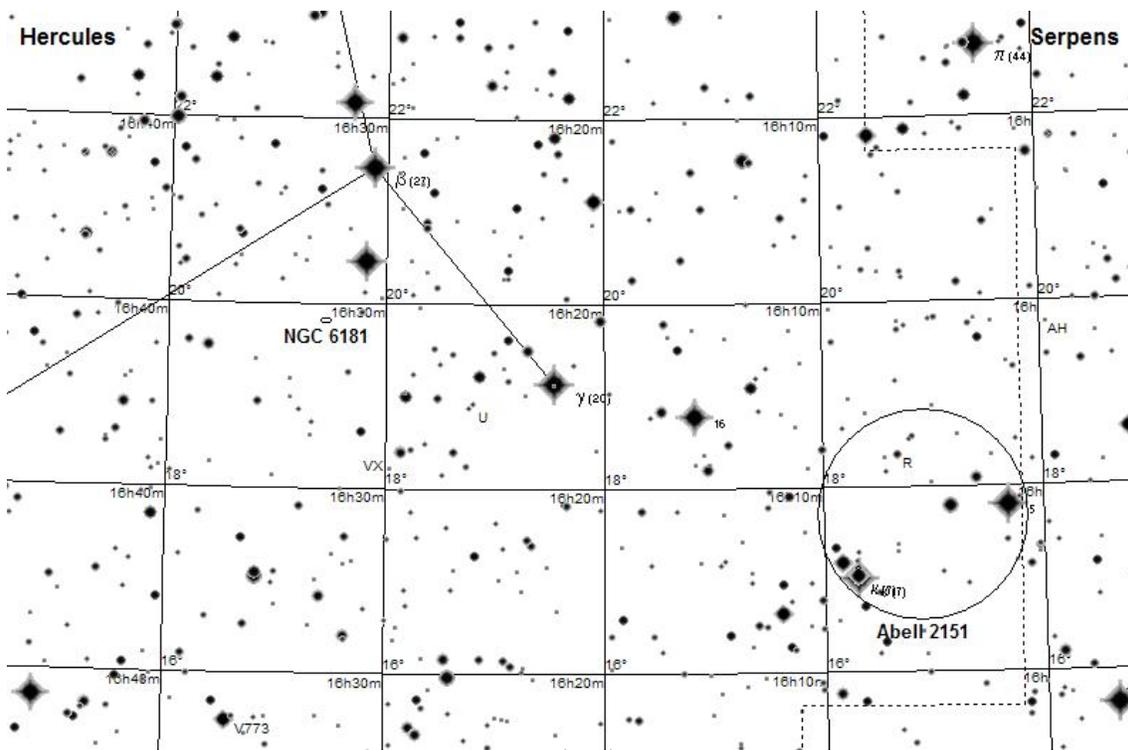


IC 4593 Finder Photo

Next we'll head south west 9 degrees to take a peek at IC4593. This is a pretty bright, albeit small planetary nebula. At low powers, again you'll find this one seems stellar against the black background.

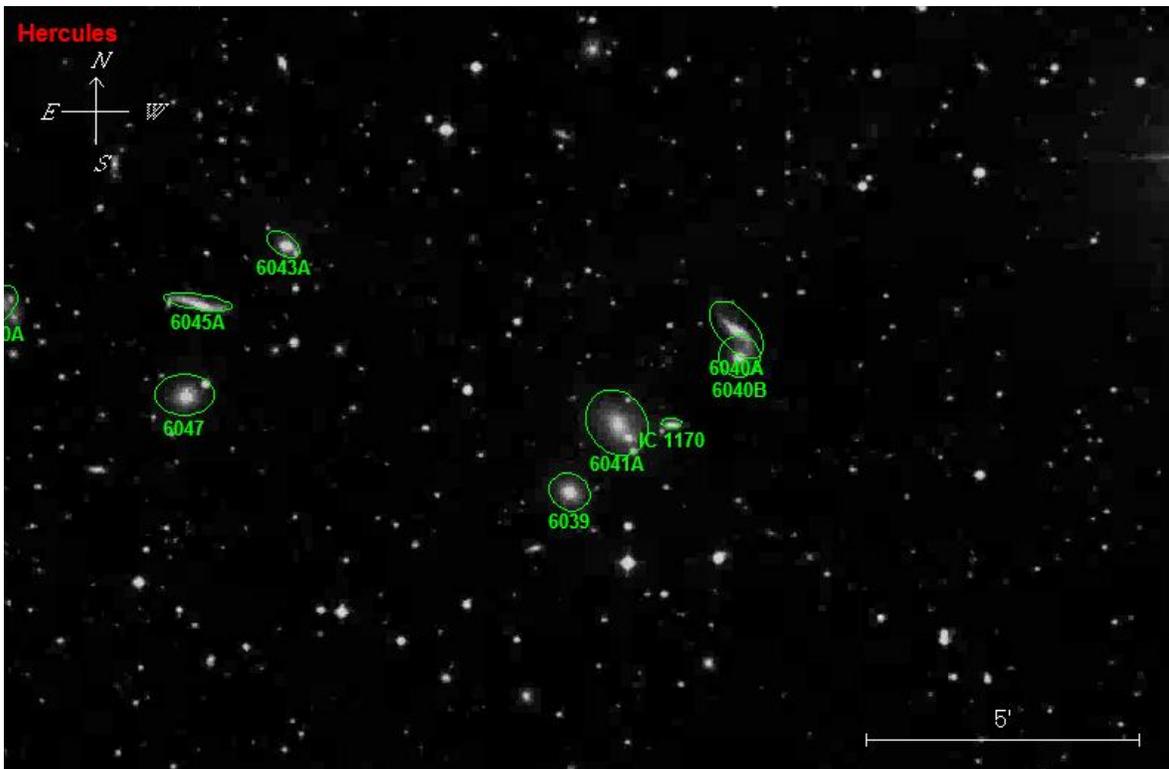
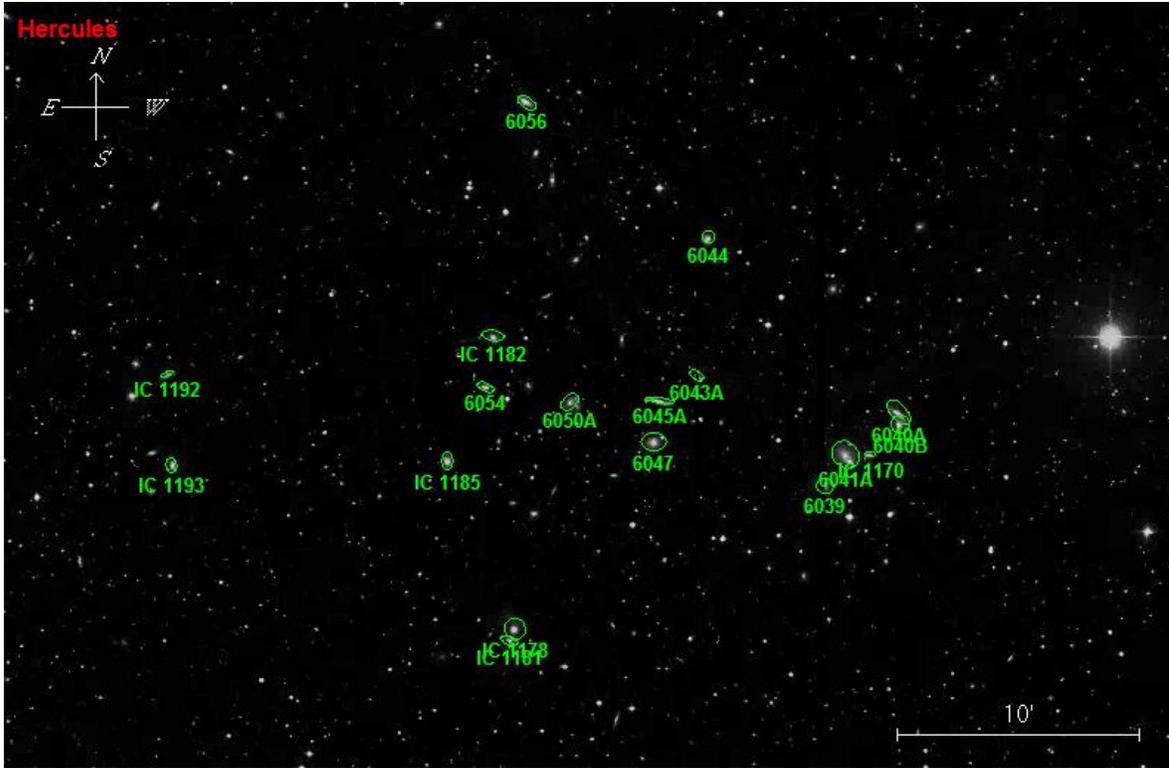
David Knisely contributes the following observation:

(9.25" f/10 SCT, no filter or OIII for blinking): 98x, small, nearly stellar bluish-green dot. 297x shows diffuse disk with brighter core and fairly bright central star (11th mag.?). 479x shows disk with possible shell structure with hints of an annular inner shell superimposed on a diffuse outer haze. OIII filter dims the central star but brighter spot remains at its location.



Our final target for the evening is the richest most densely populated galactic cluster in the Hercules Supercluster (which is itself part of a larger structure called the Great Wall) - Abell 2151. 2151 is also known as the Hercules cluster. Scattered over some two degrees of sky, the cluster contains more than 100 members and lies some 650 million light years distant. With a large scope, you could spend hours here. I noted, some 5-7 at ~200x easily visible in one field of view of one of the richest sections alone. One of our forum members sent me a very nice write up concerning this cluster. I've asked him if we can reproduce it as it's own article. If he's agreeable, I'll edit this document and provide a link to that one.

For those looking for more information on Abell 2151, you may wish to check out the book *Galaxies and the Universe*, specifically the section - *A Trio of Springtime Galaxy Groups* by Jeff Corder, edited by David Eicher and published by Kalmbach. This article also appears in the old *Deep Sky Monthly*, but unfortunately I have no idea which issue. Maybe a reader could let me know?



Also of note for those interested in galaxies: three hickson groups can be found in the borders of Hercules. Probably the easiest of these is Hickson 82. But the details, I'll leave for the motivated observer.

And with that, that's it for this one. Once again, thanks to the readers who submitted observations, sketches and photos. Your contributions greatly enrich these articles. I want to take a moment and thank everyone who submitted this month - there were a ton of images - all excellent - that unfortunately did not get used. I sincerely wish I could have posted them all, we have some excellent photographers, sketchers and observers amongst the forum members. Thank you very much for all of your help, it is greatly appreciated. In my opinion, it's your contributions that make these articles what they are.

As always, I'm gratified if folks find my meanderings useful.

Till next time -

-Tom T.

Additional Resources / References / Just Plain Cool Stuff

The Earl of Rosse and the Leviathan of Parsonstown

<http://labbey.com/Telescopes/Parsonstown.html>

The Great Wall and Beyond - Geller, M. J.

<http://adsabs.harvard.edu/full/1997RvMA...10..159G>

The Hercules Superclusters

<http://www.atlasoftheuniverse.com/superc/her.html>

If you liked this article, you may want to check out the rest of the series.

http://www.cloudynights.com/category.php?category_id=170

I'd love to hear of your experiences under the night sky - please feel free to e-mail me or send any observing reports to: tomt@cloudynights.com

(Please contact me via Forum PM if I don't respond.

I've been having some issues with spam lately, and probably didn't receive your e-mail.)

Please indicate if I can cite your observations in future columns.

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Special Thanks to all those who take the time to read and contribute to this series.

