MONTHLY OBSERVER'S CHALLENGE

Compiled by:

Roger Ivester, North Carolina

&

Sue French, New York

January 2023

Report #168

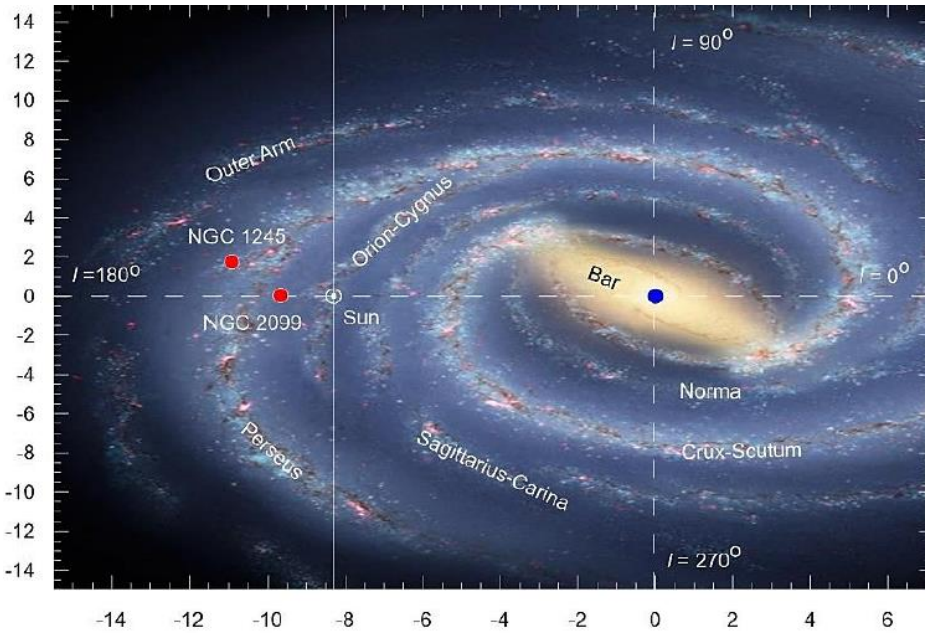
NGC 1245, Open Cluster in Perseus

Sharing Observations and Bringing Amateur Astronomers Together

Introduction

The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It's open to everyone who's interested, and if you're able to contribute notes and/or drawings, we'll be happy to include them in our monthly summary. Visual astronomy depends on what's seen through the eyepiece. Not only does it satisfy an innate curiosity, but it allows the visual observer to discover the beauty and the wonderment of the night sky. Before photography, all observations depended on what astronomers saw in the eyepiece, and how they recorded their observations. This was done through notes and drawings, and that's the tradition we're stressing in the Observer's Challenge. And for folks with an interest in astrophotography, your digital images and notes are just as welcome. The hope is that you'll read through these reports and become inspired to take more time at the eyepiece, study each object, and look for those subtle details that you might never have noticed before.

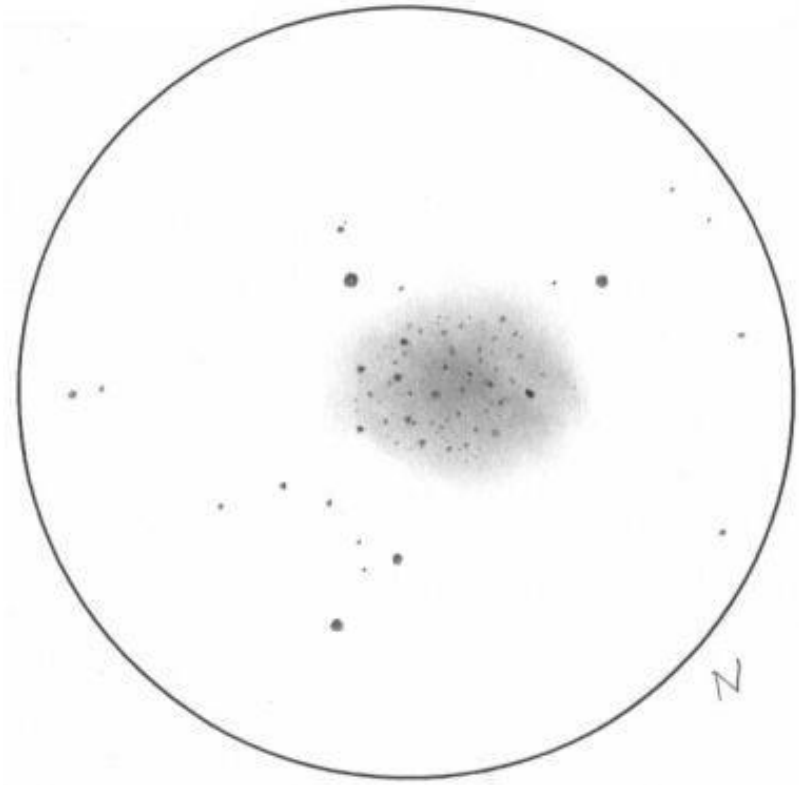
This month's target:



A 2020 paper by Hikmet Çakmak and colleagues in the *ESKİŞEHİR Technical University Journal of Science and Technology A- Applied Sciences and Engineering* shows NGC 1245 in the Perseus arm of our galaxy. The background image was adapted from the image credit by Robert Hurt, IPAC; Bill Saxton, NRAO/AUI/NSF.

The authors proffer an age of 1.5-billion years and place the cluster at a distance of 3400 ± 500 parsecs. 577 stars are considered probable members.

Jaakko Saloranta: Observer from Finland



Object:	**NGC 1245**
Observer:	Jaakko Saloranta
Location:	Kasiniemi, Padasjoki, Finland
Instrument:	Newton 203/1200
Magnification:	96
Filter:	-
Field:	30
Sqm:	
Lim. Mag.:	6.2
BB:	2
Seeing:	2
Visuality:	3
Height:	
Weather:	Nasty, weird and random clouds
Description:	Very beautiful, somewhat compressed and rich open cluster. The cluster has a square shape with total of 50* with a couple of 11th magnitude stars in the both sides.

Larry McHenry: Observer from Pittsburgh, Pennsylvania

http://stellar-journeys.org

Open Cluster **NGC 1245** is located in the fall constellation of Perseus – "The Hero".

The cluster is about 9,800 light-years light years distant, and is about 27 light-years in size, and estimated to be about 1 billion years old.

NGC 1245 was discovered on the night of December 11th 1786 by William Herschel using his 20-ft reflector, (18.5-inch speculum-metal mirror), at his home in Slough, near Windsor Castle. Herschel described the object as: "*A beautiful compressed rich cluster of small and large stars. The stars arranged in lines like interwoven letters*".

Video-Capture/EAA:

On 11/21/2022, from Calhoun County Park in West Virginia.

Using an 8-inch SCT optical tube @ f/6.3 on a GEM mount, with a CMOS color camera and broadband filter, 15-second guided exposure, live-stacked for 5 minutes.

Using EAA techniques, the moderate rich 8th mag open star cluster NGC 1245 is located next to 7.9-mag star SAO 38671. The cluster's stars are all of similar brightness, with several star-chains visible.

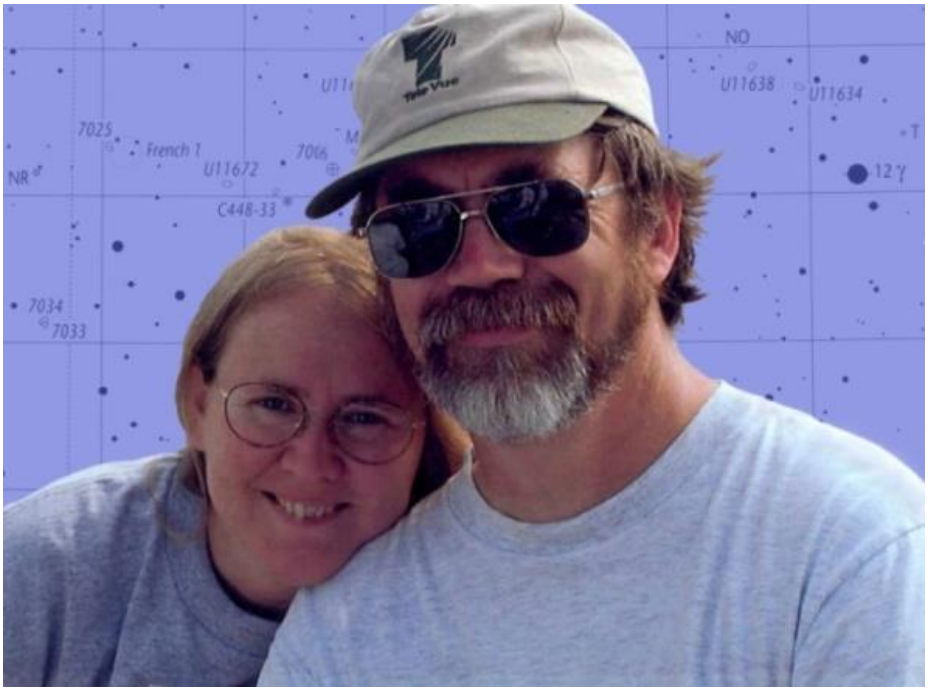
Image follows.

Phil Orbanes: Observer from Massachusetts

This open cluster was discovered by William Herschel in 1786. It is 27 light years across, contains about 200 stars of 12th magnitude or dimmer, and lies about a billion light years from earth.

My RBG photo includes 8 hours of imaging, with my 14-inch Planewave reflector and FLI 16803 CCD camera, evenly divided among the three color channels.

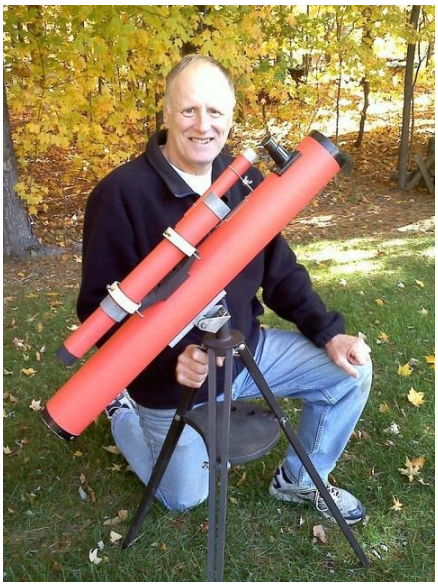
Sue French: Observer from New York



Through my **105mm refractor** at 17×, NGC 1245 is a very granular fuzzball with an 8th-magnitude star on its south-southeastern edge, and a 9th-magnitude star a bit beyond its east-northeast edge. A magnification of 47**×** reveals three faint stars arcing across the northern reaches of the cluster, while several extremely faint stars sparkle in the haze. At 87×, I counted 18 stars, the dimmest popping in and out of view. 122× shows me 25 stars over a faint, patchy haze about 8′ across.

The cluster looks very pretty in my **10-inch reflector** at 43×. A few faint stars and many extremely faint stars rest on a bright, dappled haze. NGC 1245 becomes a rich group at 115×, with about 40 stars, mainly in a 7′×9′ ENE-WSW group. Some remaining mist suggests unresolved stars. Boosting the power to 166× shows about 60 stars. 213× increases the star count to 70.

Glenn Chaple: Observer from Massachusetts



NGC 1245 Open Cluster in Perseus (Magnitude 8.4, Size 2.9)

The 2nd magnitude star Mirfak, alpha (α) Persei, is the centerpiece of the sprawling naked eye cluster Melotte 20. It dominates the field of the accompanying WIKI image that serves as the finder chart for this month's Observer's Challenge. But Mel 20 isn't the Challenge object. It's the open cluster NGC 1245, which appears as a tiny smudge in the lower right-hand corner of the image.

NGC 1245 was discovered by William Herschel on the night of December 11, 1786. He cataloged it as a Class VI object (Very compressed and rich clusters of stars) and described it as "A beautiful and rich cluster of small and large stars 7′ or 8′ in diameter. The large stars are arranged in lines like interwoven letters." Modern studies show that the cluster is home to some 200 stars, the brightest of which shine at 12th magnitude.

Owners of GoTo scopes can home in on NGC 1245 by punching in its 2000.0 coordinates, RA $3^h14^m48^s$ and Dec $+47^o15'11''$. For the star-hopper, NGC 1245 is a 3-degree trek southwest of Mirfak. I chose the latter method when I tackled NGC 1245 with a 10-inch f/5 reflecting telescope on the evening of December 13, 2022. A slight haze and resulting magnitude limit of 4.5 made for less-than-ideal conditions. At 141×, I was able to make out about a dozen cluster members. Averted vision hinted at a dozen or so more. There was no sign of the hazy mist that the fainter cluster members would have produced had skies been darker. The cluster was hardly identifiable in a 4.5-inch f/8 reflector, with just 4 stars visible.

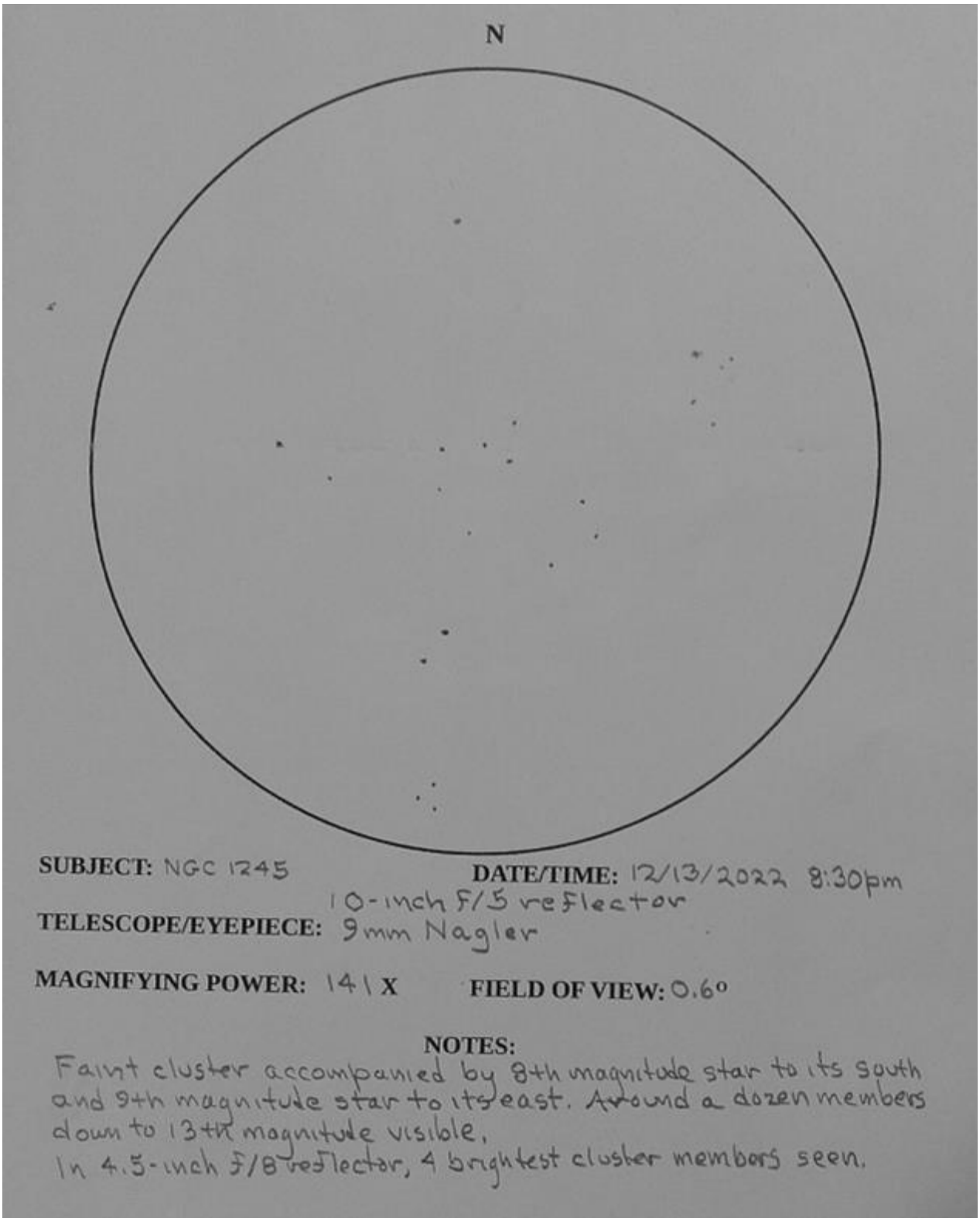
NGC 1245 is located some 9800 light-years away and is approximately 27 light-years in diameter. It has an estimated age of one billion years, Compare that to Mel 20, which is similar in size but 16 times closer and cosmically young at an age of 50 to 70 million years.

NGC 1245 Finder Chart

Wikipedia image by Martin Gembec (astrofotky.cz) The bright star is alpha (α) Persei. NGC 1245 is located at the extreme bottom right. North is up in this 4 degree square field.

NGC 1245 Sketch

Glenn Chaple (ATMoB)



Mario Motta: Observer from Massachusetts

NGC 1245 reminds me of M11, similar in appearance.

A new deconvolution technique developed by Russell Cromen for PixInsight was just released (December 14th 2022) and this is what I used. It promises much better deconvolution and sharpening of images than anything done before. I was intrigued, so downloaded and tried it out on NGC 1245.

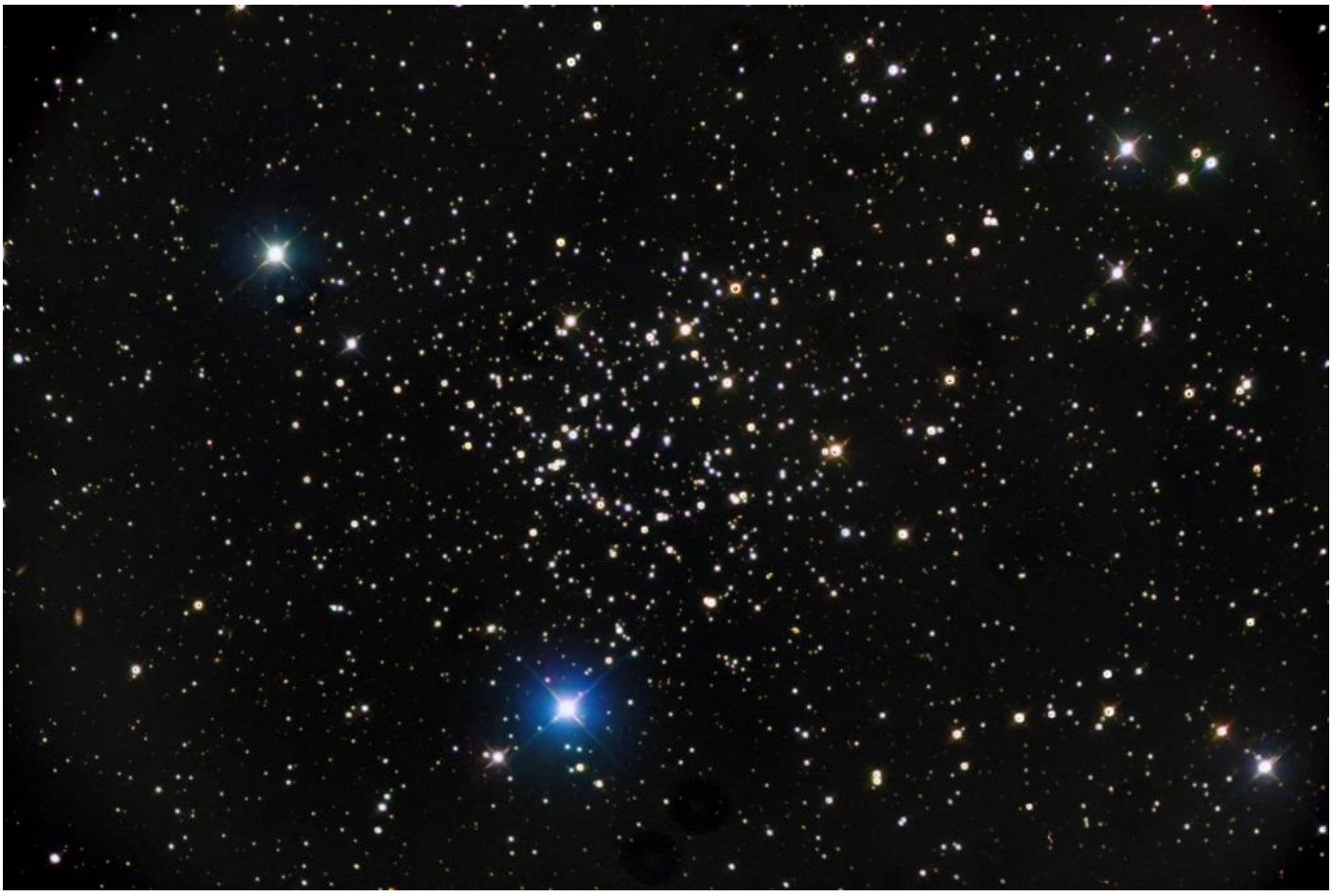
I am including an image of NGC 1245 with BlurX and a previous image for comparison.

This is an AI subroutine that works in pixinsight and corrects star deformity differentially across the field, and sharpens better than before. It is being touted as a “game changer” already by the pixinsight crowd….and so far, I have to agree.

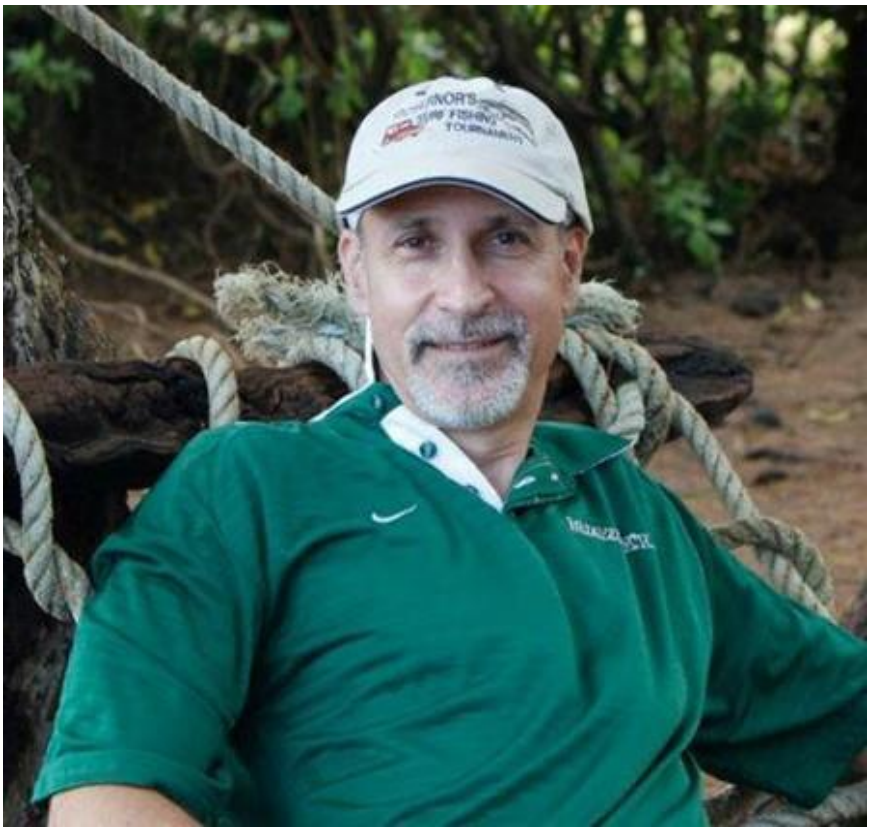
On the BlurX version (first image) note stars are pinpoint actress the field, and some double stars are now cleanly separated. Also note that on the eastern edge (left side) two galaxies have popped into view not seen on original processing. Wow!

Images taken with my 32-inch f/6.5 telescope, R,G.G, and Lum filters, about 2 hours total imaging time, with ZWO ASI6200 camera.

Again….(first image) processed in pixInsight using the new BlurXtermintor plug-In.



James Dire: Observer from Illinois



The double cluster (NGC 869 and 884) in the constellation Perseus might be the most famous set of open star clusters in the sky. The pair is visible naked-eye in dark skies and even in some moderately light pollution suburban skies. All of us have seen the stars Mirfak (Alpha Persei) and Algol (Beta Persei), one of the most watched and among the best eclipsing binary stars in the sky. Between Mirfak and Algol is another of Perseus' galactic star clusters, NGC 1245. Not quite bright enough to see naked-eye, NGC 1245 can be seen in 7×50 binoculars from dark sites.

To find NGC 1245, look for the 3rd magnitude star Misam, four degrees north of Algol. NGC 1245 is half way between Misam and Mirfak.

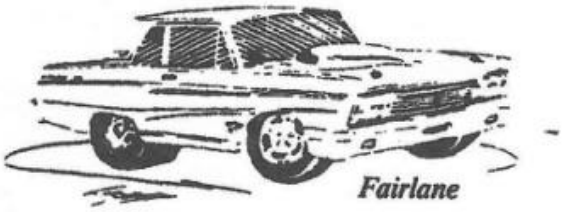
NGC 1245 is relatively large. It has a diameter of 32 arcminutes. The cluster shines at magnitude 8.39. A magnitude 7.94 star (HD20023) lies at the south edge of the cluster, which aids in finding the cluster. But HD20023 is not a member of the cluster. Most of the brighter 30-40 members are between magnitudes 9 and 11. The cluster lies 9200 light years away and has a true diameter of 86 light years.

My picture of NGC 1245 was taken with an Askar FRA 400 Quad Apo refractor. It has a 72mm f/5.6 objective with a 400mm focal length. I used a Celestron CGEM II mount and an SBIG ST-8300C CCD camera. Guiding was done with an Explore Scientific Evoguide 50ED with a ZWO ASI 120MC camera. The exposure was one hour using an Orion SkyGlow Broadband Light Pollution Filter. In my 10-inch f/12 classical Cassegrain, the cluster looked very similar to my image of it.

Image follows

Mike McCabe: Observer from Massachusetts

Observation and sketch follow



Observer's Challenge, January 2023

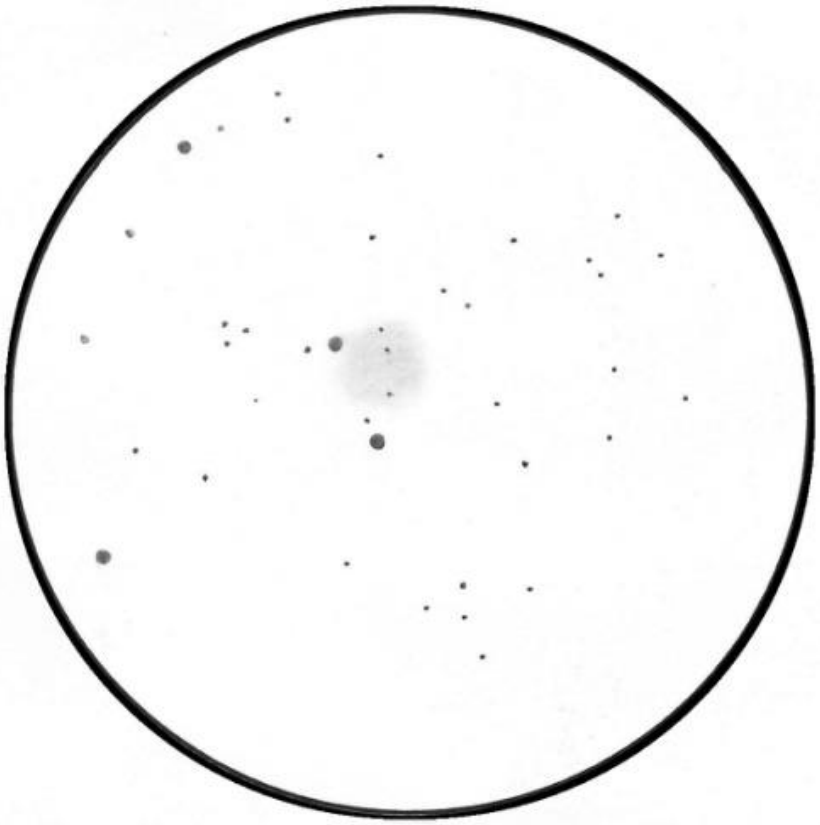
NGC 1245, Open Cluster in Perseus

January 9th, 4" F/11 Refractor
January 18th, 10" F/5 Newtonian

In the 4" telescope the cluster was readily evident as a distinct haze next to a pair of relatively bright stars in the field. Careful investigation with averted vision drew out three to four stars in the cluster itself, but it was the haziness of the unresolved stars that was most attractive. The best view was rendered at a power of 46x, while powers both above and below that only detracted from the quality of the image.

In the 10" scope the cluster revealed many more faint stars, but still retained the haziness that made this target attractive in the eyepiece. Higher powers pulled out more stars than in the 4", but the view was still prettier at low power in my opinion.

The cluster has the nickname 'Patrick Starfish', the origins of which I'm not familiar with. More pertinent facts include its discovery in December of 1786 by Sir. William Herschel, and that is is quite old for an open cluster at an estimated age of 1 billion years. Astronomers have also found evidence of mass segregation in the cluster.



41.98n, -70.90w

M.T.M.

Joseph Rothchild: Observer from Massachusetts

I observed NGC 1245 on January 9th with relatively dark skies on January 9, 2023. This is a faint open cluster in Perseus. It was easy to locate among bright stars in Perseus, but in my 10″ reflector it was not visible at 53×. At higher power the cluster was seen at 102× and 179×.

The cluster was round and consisted of approximately 25 faint stars of nearly equal magnitude. There were 2 brighter stars near the cluster, at 1/4 diameter and 1 diameter away.

Roger Ivester: Observer from North Carolina

NGC 1245 – Open Cluster – Perseus

Telescope: 10-inch f/4.5 Newtonian

Eyepiece: 11mm

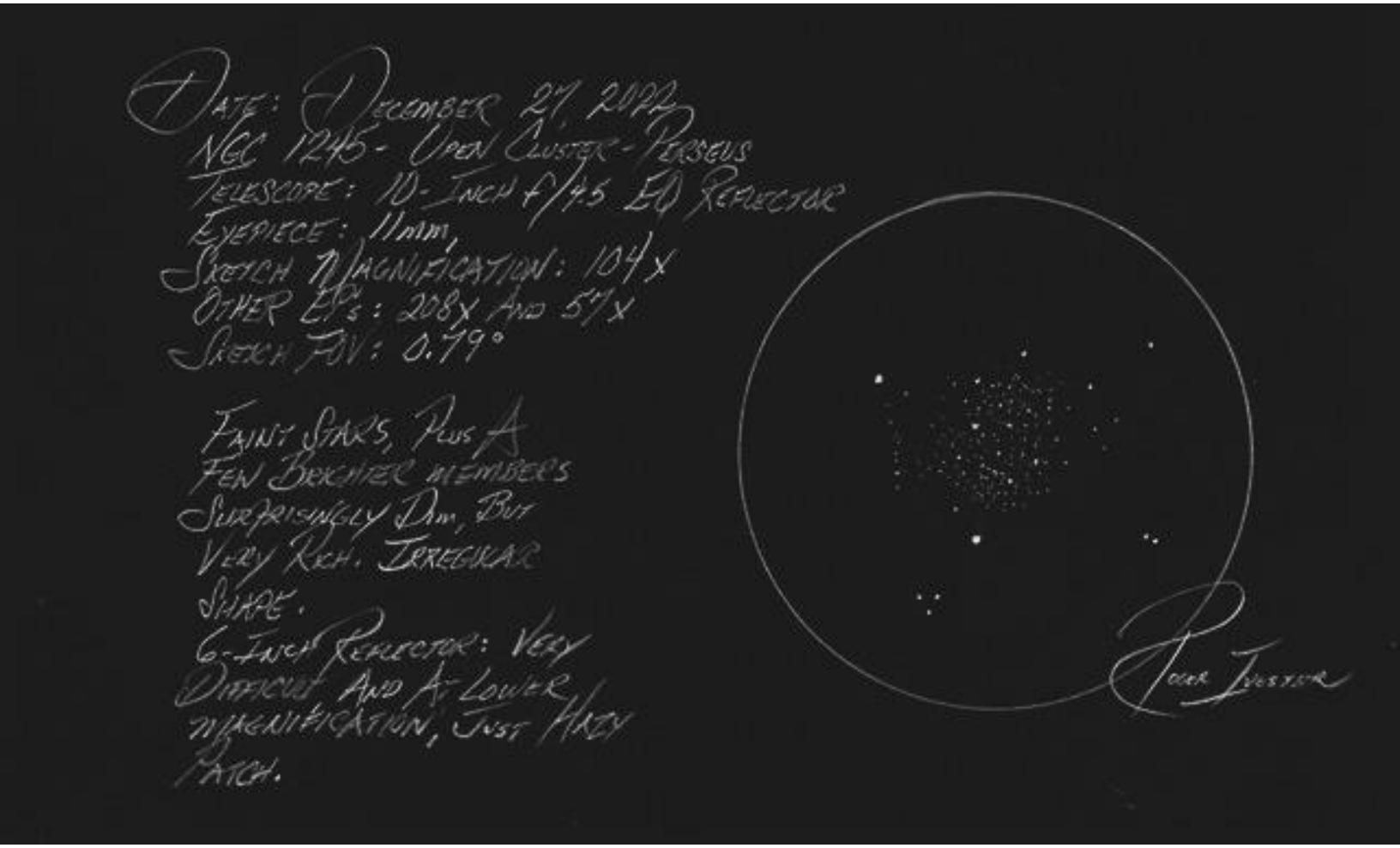
Sketch Magnification: 104

Field-of-View: 0.79º

A surprisingly faint cluster, especially from my 4.8 NELM back yard. My first observation was using a 6-inch f/6 Newtonian, with little to no resolution, just a hazy spot, with a few brighter members.

With my 10-inch, the cluster is much brighter as expected, when compared to the 6-inch, and with many faint members visible, but only when using a magnification greater than 100×. The shape of the cluster is mostly irregular, with a few chains of stars being noted. Mostly dim stars, but very rich.

Sketch Follows



The following is the complete listing of all Observer's Challenge reports to-date.

https://rogerivester.com/category/observers-challenge-reports-complete/