

MONTHLY OBSERVER'S CHALLENGE

Compiled by:

Roger Ivester, North Carolina

&

Sue French, New York

December 2023

Report #179

**IC 1848, Star Cluster in Cassiopeia embedded in LBN 667 (Lynds Bright Nebula)
and nicknamed the Soul Nebula**

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.

Courtesy of Courtney Seligman <https://cseligman.com/text/atlas/ic18.htm#ic1848>

IC 1848 (= OCL 364, plus part of the Soul Nebula)

(= "PGC 3518517" plus various designations for whatever part of the Nebula is part of IC 1848)

Discovered (late 1890's?) by [Edward Barnard](#)

A magnitude 6.5 open cluster (type IV3pn) in [Cassiopeia](#) (RA 02 51 18.0, Dec +60 24 30)

Historical Identification: Per Dreyer, IC 1848 (Barnard, 1860 RA 02 40 30, NPD 30 09) is "a cluster, stars faint, extends 8 minutes of time following (to the east), in faint nebulosity."

Identification Note: As in the case of [IC 1805](#) (which see), the IC object is the open cluster which illuminates the nebula surrounding it, plus the eastern part of the nebula. The general public (and the media devoted to them) tends to think of the entire nebula as IC 1848, while professional astronomers have tended to think of only the cluster as IC 1805. However, Barnard's description makes it clear that although his position is for the cluster, what he observed included at least the eastern part of the nebula; so the actual IC 1848 is somewhere in-between the two very different definitions.

Uwe Glahn: Observer from Germany



Object: IC 1848 (Sh 2-199, "Soul Nebula")

Telescope: 4" Bino

Magnification: 23×

Filter: [OIII] Conditions: fst 6m5+

Seeing: IV

Location: Sudelfeld

Sketch Follows



IC 1848

You can see more of Uwe's sketches at <http://www.deepsky-visuell.de/>

Bertrand Laville: Observer from France



N
E Cas

IC 1805 & 1848
L100 x 20 / OIII
2019 09 04 00h15 UT
Obs des Baronnies
Provençales (05)

15'

Object information

<i>Object name:</i>	IC 1795 + 1805 + 1848
<i>Type of object:</i>	Diffuse Nebulae
<i>Magnitude:</i>	IC 1805: 6.50
<i>Right ascension:</i>	02h 34m 12s
<i>Variation:</i>	61° 32' 18" N
<i>Constellation:</i>	CAS

Observations Details

<i>Date of observation:</i>	03 Sep 2019 21:55 UT
<i>Duration of observation:</i>	85 mins
<i>Object position:</i>	Alt: 41.6°, Az: 39.0°
<i>Weather conditions :</i>	4 p.m.: D+++/- V3-4 t29° hu? N+++/-: 24h00 V2 t18° hu45% S5.0"
<i>Observation conditions:</i>	SQM(60S)(MW++)21.45 SQML(60N)21.53 mvlon(UMi)6.4/VI4 6.6/nv S4" T2 P1.5 S1/20
<i>Observation location:</i>	Baronnies Provençales Observatory
<i>Instrument :</i>	LC 100/500 Medas-OBP
<i>Main eyepiece:</i>	ES 25mm 100°
<i>Barlow:</i>	None
<i>Magnification:</i>	20x

Notes

x20 ES25/100 – OIII-12nm

All observation was done with this configuration.

IC 1805

To locate the NB, we start from Epsilon Cas, we go towards SAO 12076, then SAO 12097, and we slide 5° towards the S, in the direction of the 2 SAOs. You have to stay in the field for a long time for the cloudiness to appear, with the exception of the central area of IC 1805, which is L4, and which is seen first.

Then, the entire area located between this center and NGC 1027 appears wide. Then, the area appears which makes a right angle with the previous one, to form a “V” flared towards the SE. The two branches of the V are well identified.+The nebulosities to the N of Markarian 6 are perceived in the form of a +/- rectilinear bar, 70' x 10', oriented exactly N/S. The rounded part which joins it to the “V”, and the area to the N of the “V” are also clearly seen, but after having recognized them on the DSS image. On the other hand, IC 1795 remains difficult and weak.

The clusters that are in the field were seen without removing the OIII filter:

- NGC 1027: an easy star, and many only suspected
- Mkr 6: 4 stars well seen, and not much behind
- Mel 15: 5 or 6 stars scattered in and around the dense luminosity.

To draw the entire field, without filter, and with suitable magnifications, especially for the clusters, it would take an hour, it is so dense! Ultimately, the whole field is difficult, but with patience, you can draw it as a whole. Note: I did not perceive any colors.

IC 1848

After spending almost an hour on IC 1805, I continue on IC 1848 which is in the same 5° field with L100 x 20.

IC 1848 is brighter than IC 1805, and therefore observation is easier. The shape of the NB is clearly seen, L1-L2. Two L3 zones, with L4 reinforcements are easy, with attention.

Lots of reference stars, even with the OIII. No colors perceived.

You'll find further details and more of Bertrand's sketches at: <http://www.deepsky-drawings.com/>
You can select what language you want to read, and see what the abbreviations mean.

John Bishop: Observer from Massachusetts



On December 13, 2023 and January 1, 2024, I observed IC 1848, an open cluster embedded in an emission nebula called (among other names) Westerhout 5. The object, which was new to me, is situated in Cassiopeia. Observations were made with binoculars at the ATMob Clubhouse in Westford, Massachusetts. On December 13, I used my own 10×42 image stabilized binoculars. On January 1, I used a borrowed pair of very fine 10×42 Leica center-focus binoculars. I was curious to see what view binoculars would give of the fairly large, diffuse nebula. No filters were used.

IC 1848 sits in a rich field in the Milky Way running overhead. The area is well populated with stars, clusters, and nebulae. To locate IC 1848, I found Eta Persei (barely visible by eye), and dropped down slightly. IC 1848 and IC 1805 (the “Soul” and “Heart” nebulae, respectively) naturally showed as a pair in the FOV, with the Double Cluster at the edge of the field. In this FOV, the Interstellarum Deep Sky Atlas shows at least 17 catalogued open clusters.

IC 1848 showed as a small, loose concentration of stars. There was a very small bright “core”, not well resolved, which hinted at stars in nebulosity.

IC 1805 was nearby. It was a slightly brighter, small cluster. The small bright core was not well resolved, but showed more nebulosity than IC 1848. On the second night, there was a conspicuous small, bright, fan-shaped haze extending SE from the core.

The binoculars gave pleasing views of IC 1848 and its neighbors, against a background of pinpoint stars. I didn’t see the broader, extended nebulosity shown in many astro images, with the following possible exception: on the first night, IC 1848 and IC 1805 looked “connected” to me, i.e., it looked as if they and their immediate neighbors were associated, although the clusters are some distance apart (both are roughly

the same distance from Earth). I did not see this the second night. Later, I wondered if, without realizing it, I had picked up on very faint nebulosity extending around and between the two clusters. If I did, it was very subtle.

This Challenge reminded me that, while binoculars do not have the deep reach and magnifying power that telescopes do (at the cost of a narrow FOV), binoculars get away from the “soda straw” view, and give more dramatic “big picture” images, in real time, with a minimum of equipment.

Supplemental information comparing the use of standard binoculars versus stabilizer versions:

Most all amateurs know, anything beyond 8x can be very difficult to handhold, especially at 10x. However, I handheld both binoculars during my observations of this nebulae rich region.

This was my first experience with the Leica, which were lighter, smaller and a little more user-friendly. I noticed immediately how super-sharp the image was. The limitation for me with these binoculars, or any non-stabilizer models is that 10x creates too much hand movement, which is distracting and tiring.

The Canon 10x42s are larger, heavier and a little fussier to adjust for eye separation. The adjustment for eye separation is made to each eyepiece module, rather than via the binocular body, producing an excellent view.

Final:

The Canon image stabilized, despite being heavier, allows for...just that a stabilized view, and extended views without hand and arm fatigue.

Jaakko Saloranta: Observer from Finland



I had this faint memory that I've written an article about the IC 1848 & IC 1805 complex but looking at my old columns – I think I'm remembering wrong. I do have a sketch of neighboring IC 1805 and I remember doing it was a nightmare.

I agree with Mike's notes – this is best for small apertures. I remember seeing IC 1848 without difficulty using my toy 3-inch telescope + UHC filter under rural skies. I don't think I tried to see it with the telescopes aperture stopped down to 1.5 inches. Beautiful object, but it would take me hours so sketch it very accurately.

I might give this one a shot from my front yard but as we already have a snow covered ground, cloudy skies and first quarter moon the conditions won't be optimal at least to spot the nebulosity.

/Jaakko

Larry McHenry: Observer from Pittsburgh, Pennsylvania

<http://stellar-journeys.org>



Open Cluster and Emission Nebula IC 1848, (SH2-199) nicknamed the “Soul Nebula,” is located in the Fall constellation of **Cassiopeia**, The Queen. And is located about 5° away from the “Double Cluster” close to the borders of Perseus and Camelopardalis.

The IC 1828 star-forming region (cluster & nebula) is about 6,500 light years distant, and with the nebula having a diameter of about 150 light-years across. The open cluster is estimated to be only about one million years old. Several Collinder clusters are also embedded within the nebula: CR33 and CR34.

EAA-Capture: 10/11/2023, from the ORAS Observatory dark-sky site in Western Pennsylvania.

Using a 50mm refractor @ f/4.2 on a Gem mount, with a CMOS color camera and narrowband filter,

180 second exposure, live-stacked for 30 minutes. (Image is rotated 180°)

Using EAA techniques, the emission nebula is a large, bright oblong shape, somewhat eerily resembling a human fetus. The bright cluster IC 1848 is located in the “lower body” while the CR clusters are in the “head” region.

A portion of the nearby “Heart Nebula” – IC 1805, containing open cluster NGC 1027, is also visible in the lower right corner.

Image follows.



Mark C. Helton: Observer from Massachusetts

December Challenge Object: Sh2-199 (NGC 1848 Soul Nebula)

Telescope: Stellarvue 102T-Raptor 535mm with 0.63 focal reducer

Mount : Ioptron HEM 44EC

Camera: OGMA AP26CC IMX571 color camera

Guide Scope: Orion 60mm

Guide Camera: ZWO 174 MC

Software used for camera and mount control: N.I.N.A

Software for processing: Using new GraXpert plugin for Pixinsight.

Surprising....but with my new camera I have a much wider field of view. This is the first time I've been able to image this target as a whole! Very little cropping.

Mark C. Helton

Great Neck Observatory on Astrobin



Sameer S. Bharadwaj: Observers from Massachusetts

The first image as following is with the RC10 in Spain and it's a zoom-in on the central part and the second is a wide field with a Sharpstar 130/f2.8 in Boston. SHO filters and lots of hours of data on both. Processed in Astro Pixel Processor, Pixinsight and Lightroom.





Sue French: Observer from New York



I first noticed this rather bright nebula while scanning this area of the sky with my 105mm refractor at 17 \times , which gives an true field of 218 arcminutes. The nebula appears about 1 $\frac{1}{2}^{\circ}$ long and $\frac{3}{4}^{\circ}$ wide and it's best seen with a low-power, wide-angle eyepiece. It is visible through my little refractor at 17 \times and 28 \times even without a filter. A narrowband light pollution filter improves the view a bit, while both OIII and H-beta filters give better results. Your results may vary depending on the size of your scope and the darkness of your sky. The nebula is patchy and brightest in wide bands along the north, east, and west sides, while the south-central region is dimmer.

The nebula enshrouds two open clusters, neither particularly obvious. The western one is designated IC 1848 and surrounds the widely spaced bright double Σ 306 AG. At 68 \times , I see many very faint stars scattered across 18' with the densest areas lying south and east. To the east, **Collinder 34** is larger and centered on a magnitude 8 and 9 pair with radial arms of stars proceeding outward from it.

Through my old Canon 15 \times 45 image-stabilized binoculars, the nebula was faintly visible with several stars involved in two bunches

Mario Motta: Observer from Massachusetts



Images Follow

I have always thought IC 1848 to be a fascinating object, due to the complex weaving of gas, eroding gas pillars, and Bok globules on its periphery, also with a clear zone to the interior created by hot young stars. I made a wide-field image with my hyperstar, as this is a very large object, but then explored a number of subsections, and imaged with my 32-inch telescope.

First: A wide-field image to see the entire object, taken with my 8-inch scope working at F2, (using hyperstar). This was taken with a ZWO ASI 071 color camera with a Hutech filter, then processed in PixInsight.

It's called the "Soul Nebula" but has always appeared as a human fetus in appearance, with the head toward the left (east). This was about 90 minutes imaging

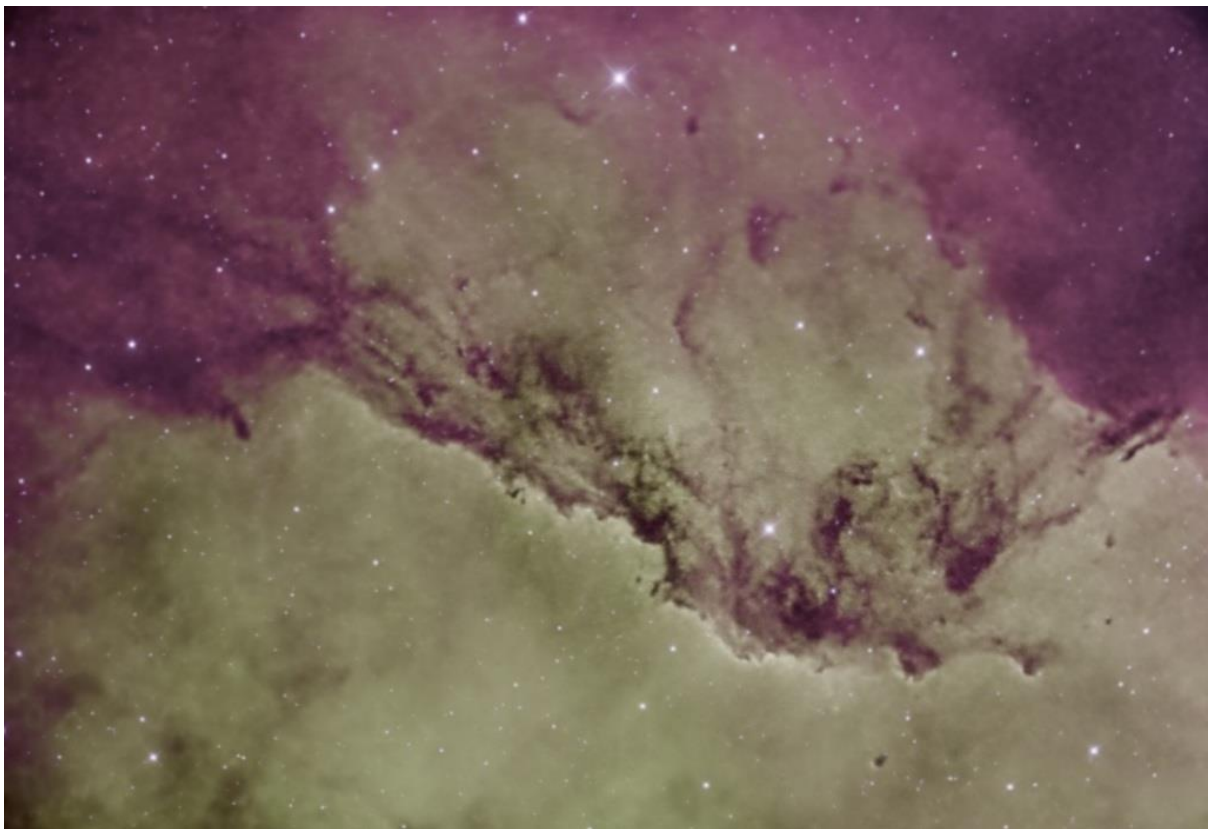
Second: I decided to zoom in by using my 32-inch scope, and "test imaged" a few spots, and found the areas on the upper left (east) where the "chin meets the body" to be most interesting.

This area has a jumble of gas, eroding dark gas, and turbulent gas areas, from new star formation. The image was taken with 90 minutes filters Ha, 40 min O-111 and S2 each, with my ZWO ASI6200 camera, also with my 32-inch, and then processed in pixInsight.

Third: I then tried another zone, adjacent to the chin, which would be the "forehead" also with my 32 and NB filters. This area has Bok globules, typical of new star and planetary system formation.



There are many other zones in this nebula that appear ripe for exploring with a large scope like my 32-inch, with contoured shock waves and Bok globules, in a very active star forming region.



Phil Orbanes: Observer from Massachusetts

I took the following images in 2017 during my “mosaic” period. It was part of the largest mosaic I have ever attempted: ten panels comprising both the Heart and Soul nebulae.

I framed the final image, which is a whopping 52" x 24" in size (1.2 gigabytes!)

I got into mosaics at that time because Pixinsight had developed a whole set of tools to stitch the individual photos together seamlessly. I have included the complete mosaic in miniature as part of the attached image.

The Soul Nebula (IC 1848) is about 7500 light years away in Cassiopeia, and spans 2.1 x 1.4 degrees in the sky, which is the equivalent of twelve full moons.



The Soul Nebula - IC 1848

Extracted from 10 panel mpsaic
of the Heart and Soul nebulae
taken in narrowband during 2017.

Actual size of the mosaic
is 52" x 24"

PEO



Dr. James R Dire: Observer from Texas



IC 1848 is a galactic star cluster in the constellation Cassiopeia. The star cluster is embedded in the Soul Nebula, which is also sometimes referred to as IC 1848. The star cluster mostly contains stars magnitude 11 and fainter. More than two-dozen stars can be seen in the cluster surroundings its two brightest members which shine at magnitudes 7.4 and 8.4. The two stars are separated by two arcminutes. The brighter component has a close companion two arcseconds away shining at magnitude 9.1. On nights of good seeing they can be split! The integrated magnitude of the star cluster IC 1848 is 6.5.

The two brightest stars in the cluster may be foreground objects. The other stars, thought to be formed from the nebula, help determine the distance to the Soul Nebula. This distance is 6500 light years. This would place the nebula inside the Perseus Spiral Arm of the Milky Way Galaxy.

IC 1848 is located approximately 10 degrees east of the star Ruchbah, one of the stars in the W asterism in Cassiopeia. For comparison, the star Caph (westernmost in the W) is also 10° from Ruchbah. IC 1848 is a young star cluster. Its age is estimated to be 6.9 million years.

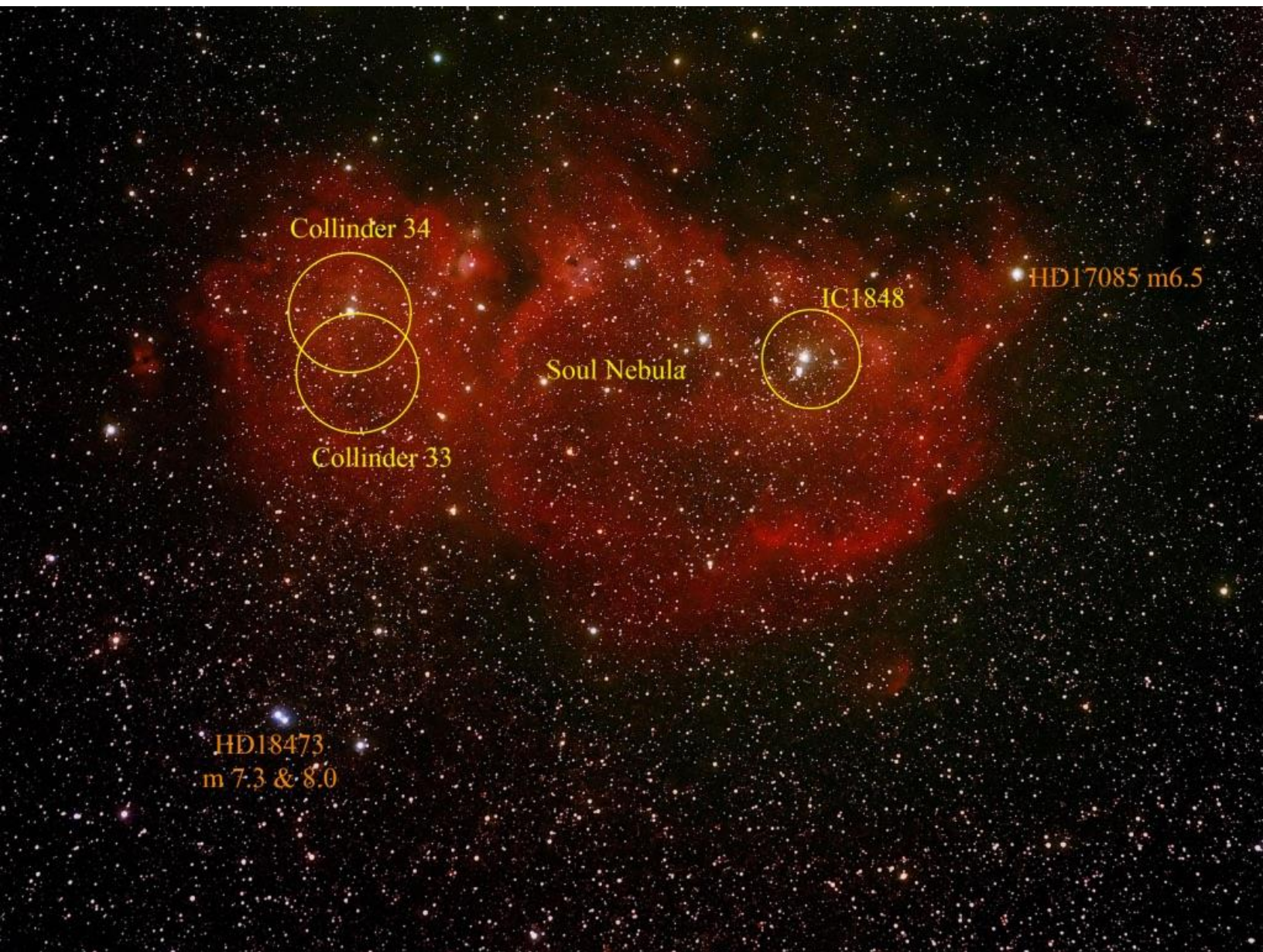
The Soul Nebula is huge. At its widest points it spans nearly 110 arcminutes in right ascension and 55 arcminutes in declination. The nebula is also known as Westerhout 5. Westerhout is a catalog of radio sources. The largest star-forming region contained in the Soul Nebula is the source of radio emissions. The Soul Nebula is sometimes called the Baby Nebula. The baby's head is on the east side and its feet on the west.

There is no good published magnitude estimate for the nebula, as it's too broad and faint to make a meaningful magnitude estimate. Those who quote a magnitude for the nebula (usually 6.5), even here in this blog, are mistakenly giving the magnitude for the star cluster IC 1848. Brighter regions of the nebula may be spied in large light buckets and appear as a faint gray glows, slightly brighter the black surrounding areas between stars outside the nebula.

Two other star clusters have been identified in the Soul Nebula. The first is Collinder 33, which is around 3260 light years away, and has an integrated magnitude of 5.9. The cluster contains scores of stars with an age around 229 million years.

The second cluster is Collinder 34, with an integrated magnitude of 6.8. The cluster is 6800 light-years away. Collinder 34 is located inside a bubble in the “baby’s head” of the Soul Nebula. Centered therein is the O-type star HD 18326, the brightest star in the cluster. I could not find an age estimate for Collinder 34. This typically means not enough stars whose masses can be estimated, have left the main sequence, which occurs when all of the hydrogen fuel in the cores of stars is exhausted.

My image of the Soul Nebula was captured with a William Optics 71mm f/4.9 apochromatic refractor from Kauai. The image was a 180-minute exposure (10-minute subframes) using a SBIG STF8300C CCD camera. The brightest star in the image is HD17085. It has a magnitude of 6.5. The image also captured the beautiful wide optical double star HD18473 whose components are magnitude 7.3 and 8.0, respectively.





Joseph Rothchild: Observer from Massachusetts



This month's challenge object is IC 1848, the Soul Nebula, an emission nebula with imbedded star clusters. I had not previously observed this object or the adjacent heart nebula, but attempted from dark skies on Cape Cod with my 6-inch f/5 reflector. It was windy and transparency was fair. I used a 22 mm eyepiece (34x) and NBP filter. I located the nebula north of a small asterism of 4 stars. I observed a vertical ridge of nebulosity and stars. Adjacent were two small circular areas of nebulosity. I could not observe or determine the overall nebula structure.

Mike McCabe: Observer from Massachusetts



I was able to get out twice this week to tackle NGC 1848, known as the Soul Nebula. The nebulosity is very illusive from these parts, but I finally saw some brightening in the field, but only in the "babies belly" and rump area. The baby I saw was ghostly and headless!

Anyway...I'm looking forward to next year already. The January and February (2024) objects look like they'll be a welcome relief, from the invisible to "extremely difficult" visual objects such as, galaxy IC 10 and IC 1848.

Roger Ivester: Observer from North Carolina



IC 1848: Nebula in Cassiopeia; Date of Observation: December 7th 2023

Telescope: 80 mm f/5 EQ Refractor; Sketch Magnification 17x Field of View: 3.5°

NELM: 5.0; *Transparency: Excellent*

Observing notes and a pencil sketch as following:

I was very surprised, as almost immediately, after pointing my telescope in the location of IC 1848, I saw a faint chain of about 10 stars, oriented E-W. With careful viewing, with a magnification of 17x, some very

faint nebulosity became evident. I then added a UHC filter, and the nebula became obvious, as it was much brighter and enlarged.

The nebula enveloped the entire star chain, but with other areas of the nebula, also expanded N-S, but only with averted vision. At this point, I removed the filter and increased the magnification to 47x, with many more faint and additional stars becoming visible.

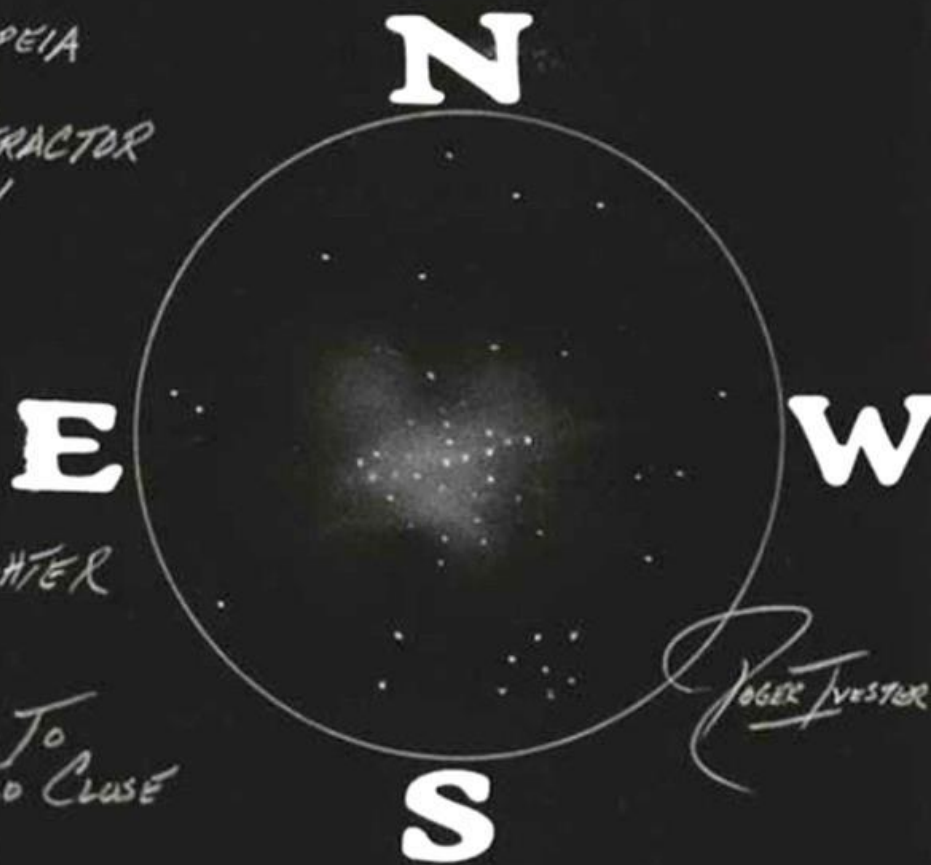
I attempted to place the stars as accurately as possible in my following pencil sketch, but with so many more stars, it was difficult to place them correctly, but I tried my best. My concern was mostly sketching the nebula.

As all visual observers know and will agree; drawing and accurately placing stars in an open cluster can be difficult...especially with freezing hands.

IC 1848 - NEBULA CASSIOPEIA
DATE: DECEMBER 7, 2023
TELESCOPE: 80MM F/5 REFRACTOR
SKETCH MAGNIFICATION: 17X
FIELD-OF-VIEW: 3.5°
NEEM: 5.0
TRANSPARENCY: EXCELLENT

17X PRESENTED THE
NEBULA, BUT VERY FAINT
W/ UHC FILTER, MUCH BRIGHTER
AND ENLARGED.

WILL BE SO EASY NOW... TO
LOCATE AND SEE, AND SO CLOSE
TO THE DOUBLE CLUSTER.



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

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