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Reflector

OBSERVING WITH A PURPOSE

TOUCH THE ECLIPSE

AWARD SEASON

IMAGING CORONAL FINE STRUCTURE

ASTRONOMY OUTREACH FOR VETERANS

Deep-Sky Objects

A DOUBLE TREAT INSIDE THE HOUSE

To me, the constellation Cepheus looks like the side view of a house with a very steep roof. Four stars (Alpha, Beta, Iota, and Zeta Cephei), all approximately third magnitude, form the house's walls. Iota, Beta, and Gamma Cephei form the roof.

NGC 7129 and NGC 7142.

Cepheus lies along the Milky Way, so the constellation contains a multitude of star clusters and nebulae. Two that lie inside the house asterism are found within a region approximately the same size as the Moon. They can easily be viewed simultaneously in telescope eyepieces that can contain the entire Moon! These two splendid objects are known as NGC 7129 and NGC 7142.

NGC 7129 is an eleventh-magnitude open cluster with a diameter of seven arcminutes. An eight-inch telescope will show three stars brighter than magnitude 11 and a few more brighter than magnitude 12. Overall, there may be 130 stars in this cluster. If you are wondering how a star cluster can be catalogued as eleventh magnitude but contain stars brighter than eleventh magnitude, so am I. The star cluster is embedded in a nebula catalogued as IC 5134. The nebula features light from the three bright stars reflected off of gas and dust. It appears white to blue on long photographic exposures with small telescopes. Larger telescopes and longer exposures show the reflection nebula with blue and pinkish-red colors. In dark skies, a hint of the nebula can be spied with 8- to 10-inch telescopes. The star cluster is young, perhaps only a million years old. The cluster is 3,300 light-years away.

NGC 7142 is located south and east of NGC 7129. It is a much larger open star cluster, 12 arcminutes in diameter, with more stars visible at the telescope than in NGC 7129. However, the brightest stars in NGC 7142 are not as bright as the brightest stars in NGC 7129. NGC 7142 is much older than NGC 7129, perhaps three to six billion years old. Therefore, it doesn't contain the hot, bright OBA spectral class stars seen in NGC 7129. Any OBA stars that initially formed in NGC 7142 would have long died out since they use up their nuclear fuel quickly. However, the cluster does have a few "blue stragglers." These blue stars are thought to have formed by the merger of two smaller cluster members. The combined star, being more massive, burns hotter and will not live as long as the unmerged stars would have. Although they are close to each other in the sky, NGC 7142 is 3,000 light-years farther away than NGC 7129.

My picture of NGC 7129 and NGC 7142 was taken with a William Optics 132 mm f/7 apo with a Tele Vue 0.8× focal reducer/field flattener yielding f/5.6. The exposure was 220 minutes (using 10-minute subframes) with a SBIG ST-2000XCM CCD camera. In the image, NGC 7129 is at the upper right with the bright stars immersed in some faint nebulosity. NGC 7142 is to the lower left.

When panning the Milky Way through Cepheus for deep-space objects this autumn, try to capture two in the view with NGC 7129 and NGC 7142.

—Dr. James R. Dire

References

NASA. "Nebula NGC 7129." *Spitzer Space Telescope*, *www.spitzer.caltech.edu/download/MediaFile/612/binary/original*.

Straižys, V. et al. 2014, *MNRAS* 437, 1628

From The Editor

As we prepare for the longer, crisper nights of autumn, your *Reflector* team is turning over a new leaf, so to speak. It is the end of an era here, quite literally. Managing editor Ron Kramer is hanging up his newsroom hat after many years at the helm. Ron recruited Kevin and me as his assistant editors in 2013, and in 2019 he handed me the editor's reins. I cannot tell you how honored I was (and still am) for the trust he placed in me. I hope I have lived up to his expectations. Another vital member of the team, design and layout guru Michael Patterson, also recruited under Ron's leadership, is also taking a bow. He will be missed more than I can say. If you have liked the way our magazine looks (and I hope you do!), it is all due to Michael's creativity and talent. As noted elsewhere in this issue, we are fortunate to be bringing on board some fresh new talent, Max Nomad. He has already instituted some changes in the production process, and Kevin and I look forward to seeing what other innovations he brings to the table. Please join me in wishing Ron and Michael well and thanking them for their years of work on behalf of the League!

Eyes on the Skies: T CrB

By the time this issue reaches your hands, the famous "Blaze Star," the recurrent nova T CrB, may have erupted. If so, we hope you are submitting your obsevations to the American Association of Variable Star Observers (AAVSO). Even if it is past peak, observations of the decline are needed all the way back to quiescence. If the outburst has not occurred, please keep an eye on this star (and your eye to the Internet for word of the outburst)– it is a once-in-a-lifetime experience!

More information on observing this star (including finder charts and comparison stars for photometry) can be found at

www.aavso.org/t-crb-finder-charts .