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Reflector



A TOUR OF THE ORION NEBULA
A HOME-BUILT CORONAGRAPH AND ITS IMAGES
A HIGH-SCHOOL STUDENT'S NIGHT UNDER THE STARS
A SIMPLE AND SAFE ECLIPSE VIEWER

extending me their business cards for future events. Mr. Crawford's event coordinator came by and booked the MOB's for the spring.

This Oklahoma town of almost 37,000 people has a diverse population and a checkered past in terms of how different groups have interacted with each other. With these past difficulties still in the forefront of many adult minds, events of this type serve another purpose besides science, technology, engineering, art, and math: they bring together individuals from all walks of life for a common cause – to appreciate the night sky that belongs equally to all of us.

We met up with Charles a week later and he shared something most unexpected. After the videos from the event were posted by the blogger, Charles received a call from one of the Chamber of Commerce members who claimed that he could not believe his eyes... (stay tuned for the rest of the story in the March issue)

Full STEAM ahead (with a cliffhanger),

—Peggy Walker

Astronomical League STEAM and Jr. Activities Coordinator

Deep-Sky Objects

A WHALE OF A GALAXY

M77, a spiral galaxy, is one of the most fascinating galaxies cataloged by the 18th century French astronomer Charles Messier. Aside from the unique physical structure of the galaxy, many of its distinctions are purely a factor of the geometry of our vantage point and constellation boundaries.

M77 resides in the constellation Cetus 6.3 degrees southwest of the star Menkar (Alpha Ceti) and 3.3 degrees south of Gamma Ceti. The galaxy shines at magnitude 9 and is 7.1 by 6.2 arcminutes in size.

M77 is the only Messier object in Cetus, one of the largest constellations, and is the only Messier object on the celestial equator. The next closest is M2, 0.8 degrees south of the celestial equator. M77 is also the first target on the list for my March Messier Marathon – the one night around the late March new moon when it is possible to spy the entire Messier catalog. My best was 102 Messier objects the night on March 17–18, 2007.

M77 was discovered in 1780 by Pierre Mechain, a colleague of Messier. Messier originally thought it was a star cluster, as did William Herschel. The Irish astronomer William Parsons (Lord Rosse) discovered its spiral nature and in 1850 listed it among 13 others as spiral nebulae that were thought to reside within the Milky Way Galaxy. A century ago, Edwin Hubble discovered that these spiral nebulae were really distant galaxies. M77 lies nearly 70 million light-years away.

M77 is a moderately wound spiral galaxy with massive dust lanes and a bright, starlike core. The galaxy has an active galactic nucleus and is thus classified as a Seyfert galaxy. The galaxy emits massive amount of radio waves and is also known as the radio source Cetus A. X-rays and neutrinos have also been detected coming from M77. All of this energy, across the spectrum, is powered by a supermassive black hole at the center, obscured in visible wavelengths by a massive cloud of cosmic dust. The black hole may have the equivalent mass of ten million suns!

My image of M77 was taken with an 8-inch Ritchey–Chrétien telescope with a SBIG ST-2000XCM CCD camera. The exposure was 160 minutes. As seen in the image, the galaxy is nearly face-on. Barely visible in the image is a large ring structure circling the galaxy. Better images taken with extremely large telescopes

show this ring may be composed of two enormous extended spiral arms. The ring also contains a large amount of dust and is undergoing as much new star formation as the inner spiral arms. The outer ring may have formed when a smaller galaxy passed through M77 causing an outward push of star-forming material around the larger galaxy.

Whether it's from the central black hole, from a galactic merger, or both, M77 has the brightest star-forming regions in any galaxy within 100 million light-years of Earth. All of this provides good food for thought when spying this little faint fuzzy object in an 8-inch telescope.

—Dr. James R. Dine

Around the League

CALL FOR AWARD SUBMISSIONS

Applications or nominations for all 2023 League youth and general awards must be received no later than March 31, 2024, at 11:59 p.m. CDT. Award information, including applications, eligibility criteria, and available cash prizes, if any, appears on the "Awards" page at www.astroleague.org. Award submissions are not deemed complete until you receive a confirming email acknowledging receipt. If no confirmation is received within 48 hours of submission, contact the League vice president.

LEAGUE YOUTH AWARDS

National Young Astronomer Award – Qualified U.S. citizens (or U.S. school enrollees) under the age of 19 who are engaged in astronomy-related research, academic scholarship, or equipment design are encouraged to apply for the National Young Astronomer Award, now in its 32nd year. League membership is not required. The top two winners win expense-paid trips to the League's national convention (U.S. travel only) and receive Explore Scientific telescope prizes. The application, research paper, and a photo of the nominee must be emailed to NYAA@astroleague.org.

Youth Service Awards – Qualified League members under the age of 19 who are engaged in service to the League, their clubs, their schools, and/or the amateur astronomy community are encouraged to apply for the Horkheimer/Smith Youth Service Award. Club or regional officers may nominate candidates. The Horkheimer/Smith winner receives a plaque, a cash prize, and an expense-paid trip to the League's national convention (U.S. travel only). The application or nomination and a photo of the nominee must be emailed to HorkheimerService@astroleague.org.

Youth Imaging Award – Qualified League members under the age of 19 who are engaged in astronomical imaging are encouraged to apply for the Horkheimer/Parker Youth Imaging Award. Club or regional officers may nominate candidates. The winner receives a plaque, and the top three

