Skylights

Newsletter of the Astronomical Society of Northern New England

MAY 2019

Member of NASA's

Astronomical League

ASNNE MISSION

ASNNE is an incorporated, non-profit, scientific and educational organization with three primary goals:

1) To have fun sharing our knowledge and interest with others.

2) To provide basic education in astronomy and related sciences to all who are interested.

3) To promote the science of Astronomy.

What's Up in May

By Bernie Reim

The month of May is named for Maia, the Roman goddess of the earth. We are halfway into spring already, but this part of the northern hemisphere is just beginning to awaken as myriad shades of green spread across and infuse our landscape with new life and hope. Buds are opening and tender young leaves are springing to life. Some of the birds have returned and the spring peepers are contributing to the audible soundtrack in the early evenings as the whole chorus of nature sings once again. It is truly a natural symphony of the earth across the visible and audible spectrum revealing the irrepressible nature of life as it appears in its many forms.

The skies above are also undergoing a continuous and predictable transformation as we are losing the Winter Hexagon in the west even as the Summer Triangle is rising in the east. This will be a great month to get outside again as the weather continues to warm allowing us to better enjoy the many celestial highlights visible this month.

Mars is finally getting some company in the evening sky as Jupiter is now rising at about the same time as Mars is setting, around 10 pm. Then Saturn also pushes across the midnight rising threshold early this month even as Venus continues to rise in the morning twilight an hour before the sun. Mercury will join the evening planets towards the end of May. The moon will pass right through the Beehive cluster in Cancer and form several nice conjunctions with planets. Ceres and another asteroid, Pallas, reach opposition this month and a faint comet passes through Scorpius. Beyond that, the main highlight this month will be the indirect return of Halley's Comet in the form of the Eta Aquarid Meteor Shower, which will be favorable this year since the moon will not interfere.

Mars has recently passed directly between the Hyades and Pleiades open star clusters in Taurus and is now rapidly heading into Gemini. Look for Mars to form the third horn of Taurus the Bull in early May since it will appear directly between the two stars that normally make up the two horns. On May 7th, a slender waxing crescent moon will slide by the red planet within a few degrees. Then keep watching as Mars will have a close encounter with a large open star cluster named M35 at the feet of Gemini the twins on the 19th. Mars continues to fade as we leave it farther behind in our orbits, but you can still tell that it is distinctly orange and not white.

Jupiter rises about 4 minutes earlier each evening, beginning the month rising around 11 pm. The king of the planets is already in retrograde or westward motion back towards Antares in Scorpius and will reach opposition on June 10 when it will rise right at sunset. It continues to brighten a little each evening as we are catching up with this huge planet in our sky, which is 10 times our size, but still 10 times smaller than the sun. Remember that Juno is still orbiting this planet in highly elliptical orbits that plunges it down to just a few thousand miles above its turbulent poles every 53 days. The spacecraft continues to

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What's Up "*Continued from page 1*"

take remarkable pictures of this planet with its great and colorful swirls of dense clouds that look more like Van Gogh's "Starry Night" than what we would expect from a planetary surface.

Saturn starts this month rising just after midnight and ends up rising around 10 pm, approaching its own opposition in early July, a month after Jupiter will be at its best. The ringed planet will also brighten noticeably this month, but it will still be 3 magnitudes, or 15 times fainter than its cousin, Jupiter. You can see 5 of its brightest moons in a small telescope, but you can see all 4 of Jupiter's brightest Galilean moons with just a pair of binoculars. That is mainly because Saturn is twice as far away, at nearly one billion miles or over an hour at the speed of light.

Venus is way ahead of the earth now and rises only an hour before sunrise in the morning twilight. It is at its faintest for the year, even though it is nearly fully illuminated by the sun, approaching superior conjunction. Our sister planet is still over 3 times brighter than Jupiter.

Mercury will put in a brief appearance low in the morning sky near Venus early this month and then again low in the evening sky near Mars on the last few days this month. It will put on a better show next month.

Watch carefully as a waxing crescent moon will pass right in front of the Beehive Cluster (M44) on the evening of Friday, May 10th. Try to photograph this event and use binoculars or a small telescope to better see this fairly rare event. The moon will cover about a dozen stars in the Beehive between 10 and 11 pm.

Our first asteroid, Ceres, will reach opposition at the end of this month in Scorpius, not far from Jupiter. At 600 miles across, or about the size of Texas, Ceres was the first asteroid discovered, in 1801, and is the only asteroid to be classified as a dwarf planet. Ceres is layered, with a dense rocky core at its center, then an icy mantle, and then an icy crust at its surface. It will reach 7th magnitude, just out of visible reach. Then Pallas will reach opposition in Coma Berenices in early May, reaching 8.3 magnitude. It is about half the size of Ceres.

The conditions are favorable for the return of tiny, sand grain-sized pieces of Halley's Comet this month on Monday morning May 6. Radiating from a point in the sky in the water jug asterism in Aquarius, you can expect about 20 meteors per hour. If you lived in the southern hemisphere you could see around 60 per hour. The best meteor shower I ever saw was the November 18th, 2001 Leonid meteor shower. We had just built our observatory in Kennebunk and we saw nearly 1000 meteors per hour over the course of nearly 3 hours that memorable night right until twilight started washing them out.

That averaged out to one meteor every 4 seconds. There was no lull for over 10 seconds and I saw as many as 7 in one single second, much better than fireworks. We also saw many brilliant bolides that lit up the whole sky. The constant rain of meteors was so intense that I could get a sense of the earth's 18.6 mile-per-second motion through space for the first and only time. The only event in astronomy that could top that would be a total solar eclipse and we just happened to have one that will cross right over Maine in under 5 years, April 8 of 2024.

May 2. The waning crescent moon passes near Venus this morning.

May 3. The moon passes near Mercury this morning.

May 4. New moon is at 6:46 P.M. EDT.

May 5. On this day in 1961 Alan Shepard became the first American in space aboard Freedom 7.

May 6. The Eta Aquarid meteor shower peaks this morning. The night before and after should also produce many meteors.

May 7. The moon passes just south of Mars this evening.

May 10. The moon will pass right in front of dozens of stars in the Beehive cluster this evening.

On this day in 1900, Cecelia Payne-Gaposchkin was born. She was a British-born American astronomer that helped to decode the complicated spectra of starlight along with the famous "Harvard Computers", women astronomers that developed the spectral classification system for stars. She wrote a brilliant paper determining the true composition of stars and she was also a good musician.

May 11. First quarter moon is at 9:12 P.M. EDT.

May 14. Our first space station, Skylab, was launched on this day in 1973.

May 18. Full moon is at 5:11 P.M. This is also known as the Milk, Planting, or Flower Moon.

May 20. The moon passed just north of Jupiter this morning.

May 21. Mercury is in superior conjunction with the sun this morning.

May 22. The moon passes just south of Saturn this morning.

May 26. Last quarter moon is at 12:34 p.m.

May 28. Ceres is at opposition this evening.

May 29. On this day in 1959 Able and Baker were the first primates in space and returned to Earth safely.

Moon Phases

May 4
New

May 11
First Quarter

May 18
Full

May 26
Last Quarter

Moon Data

May 2
Venus 4° north of Moon

May 3
Mercury 3° north of Moon

May 7
Mars 3° north of Moon

May 13
Moon at perigee

May 20
Jupiter 1.7° south of Moon

May 22
Pluto 0.07° north of Moon

Saturn 0.5° north of Moon

May 26
Moon at apogee

May 27
Neptune 4° north of Moon

May 31
Uranus 5° north of Moon

OBSERVER'S CHALLENGE* – May, 2019

By Glenn Chaple

NGC 4036 – Lenticular Galaxy in Ursa Major (Mag: 10.7 Size: 3.8' X 1.0')

For the third month in a row, the Observer's Challenge brings us face-to-face with a pair of galaxies – this time, in Ursa Major. Our main quest is the lenticular galaxy NGC 4036 (we'll look at its field-of-view neighbor, NGC 4041 later). NGC 4036 was discovered by William Herschel in 1790 and in early star atlases bears the Herschel Catalog designation H I-253 – his 253rd Class I (Bright Nebulae) object. A potential catch in a 4-inch scope (dark skies a must!), NGC 4036 normally requires apertures 2 or 3 times greater, especially when viewed from average suburban skies. Look for a misty oval patch about a half degree NE of a row of three 6th and 7th magnitude stars.

NGC 4041 shares the same medium-power field with NGC 4036, ¼ degree to its NNE. Also discovered in 1790 by Herschel (Herschel Catalog number H I-252), it's a magnitude 11.3 face-on spiral with 2.6' X 2.6' dimensions and is the more challenging of the two.

Both galaxies appear to be gravitationally connected and lie about 70 million light years away. Gaze at this distant pair, and the photons entering your eye left when dinosaurs still roamed the earth.

**The purpose of the Observer's Challenge is to encourage the pursuit of visual observing and is open to everyone who is interested. Contributed notes, drawings, or photographs will be published in a monthly summary. Submit them to Roger Ivester (rogerivester@me.com). To access past reports, log on to rogerivester.com/category/observers-challenge-reports-complete.*

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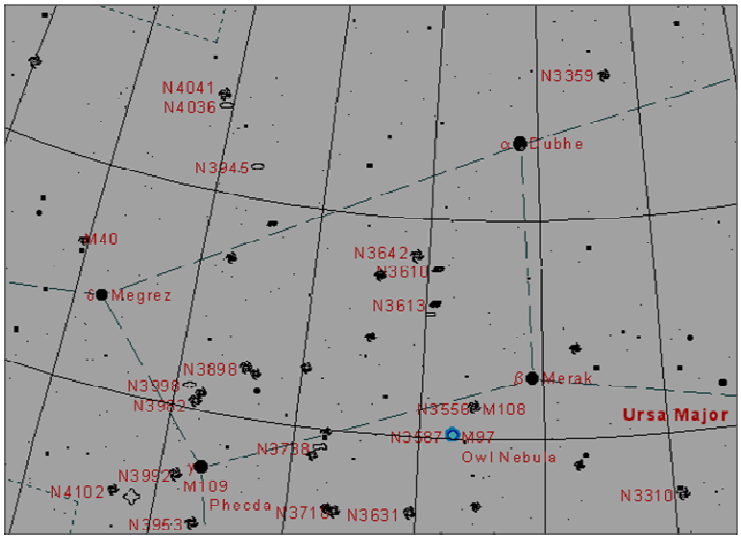

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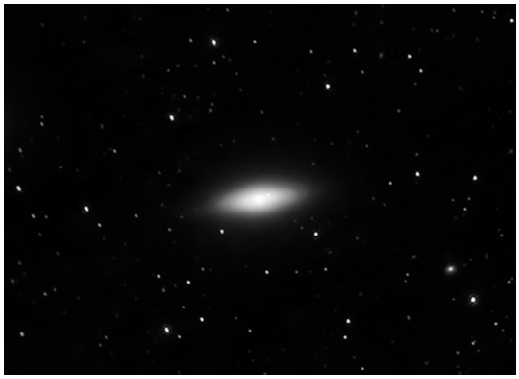


NGC 4036 Image by Mario Motta, MD, ATMoB

NGC 4036 (below center) and NGC 4041 (center, near top) Image by Doug Paul, ATMoB

Principal Meteor Showers in 2019

January 4
Quadrantids

April 22
Lyrids

May 6
Eta Aquarids

July 30
Delta Aquarids

August 12
Perseids

October 9
Draconid

October 21
Orionids

November 9
Taurids

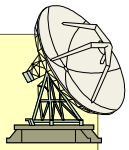
November 18
Leonids

November 26
Andromedids

December 14
Geminids

December 22
Ursids

Note: Dates are for maximum



Got any News?
Skylights Welcomes Your Input.

Here are some suggestions:

Book reviews -- Items for sale -- New equipment -- Ramblings -- Star parties -- Observing -- Photos.

Our Club has Merchandise for Sale at: www.cafepress.com/asnne



All money raised goes to our operating fund.
Any design can be put on any item.
Just let our club member, David Bianchi, know.

RED ALERT — Downward Pointing Lasers

NASA is planning to use (or is already using) downward pointing lasers which are mounted on their spacecrafts. For those of us who look at the night sky through a telescope, or a pair of binoculars, this is a potential hazard. If a laser beam enters our instrument at the very time we are viewing, eye injury or blindness could occur. Contact physicist, Dr. Jennifer Inman, jennifer.a.inman@nasa.gov and tell her your concerns about this perilous issue. Why should we have to live in fear each time we look into a telescope or a pair of binoculars? This is unacceptable!

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

Watching the Late Spring Skies

By David Prosper

Late spring brings warmer nights, making it more comfortable to observe a good showing of the **Eta Aquarids** meteor shower. Skywatchers can also look for the delicate **Coma Star Cluster**, and spot the **Moon** on the anniversary of **Apollo 10**'s "test run" prior to the Moon landing in 1969.

The **Eta Aquarids** meteor shower should make a good showing this year, peaking the morning of May 6. This meteor shower has an unusual "soft peak," meaning that many meteors can be spotted several days before and after the 6th; many may find it convenient to schedule meteor watching for the weekend, a night or two before the peak. You may be able to spot a couple dozen meteors an hour from areas with clear dark skies. Meteors can appear in any part of the sky and you don't need any special equipment to view them; just find an area away from lights, lie down on a comfy lawn chair or blanket, relax, and patiently look up. These brief bright streaks are caused by Earth moving through the stream of fine dust particles left by the passage of Comet Halley. While we have to wait another 43 years for the famous comet grace our skies once more, we are treated to this beautiful cosmic postcard every year.

While you're up meteor watching, try to find a delightful naked eye star cluster: the **Coma Star Cluster** (aka Melotte 111) in the small constellation of Coma Berenices. It can be spotted after sunset in the east and for almost the entire night during the month of May. Look for it inside the area of the sky roughly framed between the constellations of Leo, Boötes, and Ursa Major. The cluster's sparkly members are also known as "Berenice's Hair" in honor of Egyptian Queen Berenices II's sacrifice of her lovely tresses. Binoculars will bring out even more stars in this large young cluster.

May marks the 50th anniversary of the Lunar Module's test run by the A**pollo 10** mission! On May 22, 1969, NASA astronauts Thomas Safford and Eugene Cernan piloted the Lunar Module - nicknamed "Snoopy" - on a test descent towards the lunar surface. Undocking from "Charlie Brown" - the Command Module, piloted by John Young – they descended to 47,400 feet above the surface of the Moon before returning safely to the orbiting Command Module. Their success paved the way for the first humans to land on the Moon later that year with Apollo 11. Look for the Moon on the morning of May 22, before or after dawn, and contemplate what it must have felt like to hover mere miles above the lunar surface. You'll also see the bright giant planets Saturn and Jupiter on either side of the Moon before sunrise. When will humans travel to those distant worlds?

You can catch up on all of NASA's current and future missions at nasa.gov

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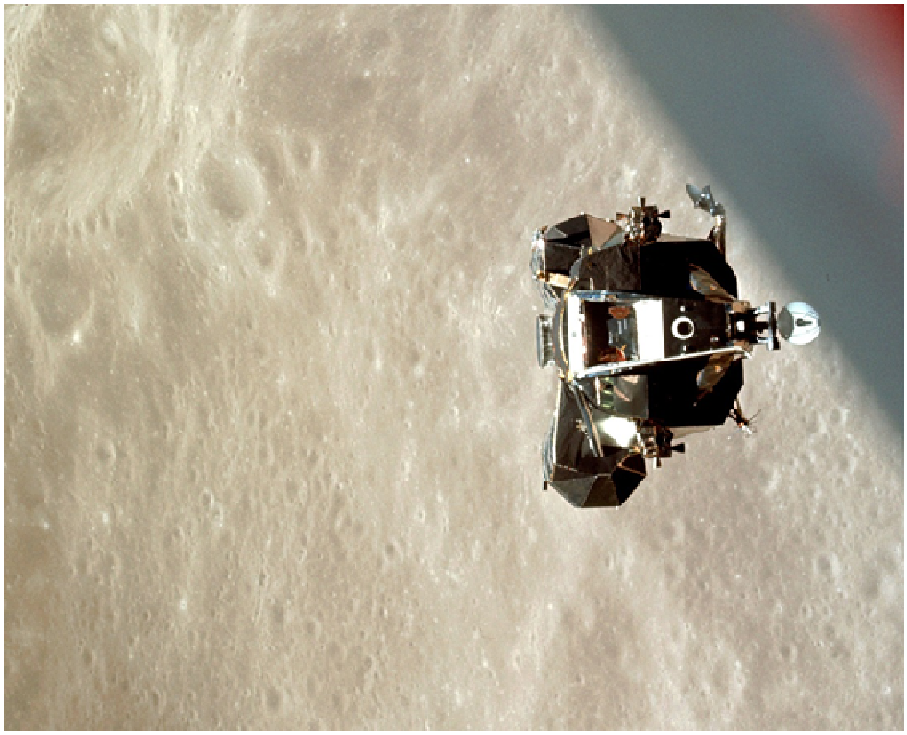
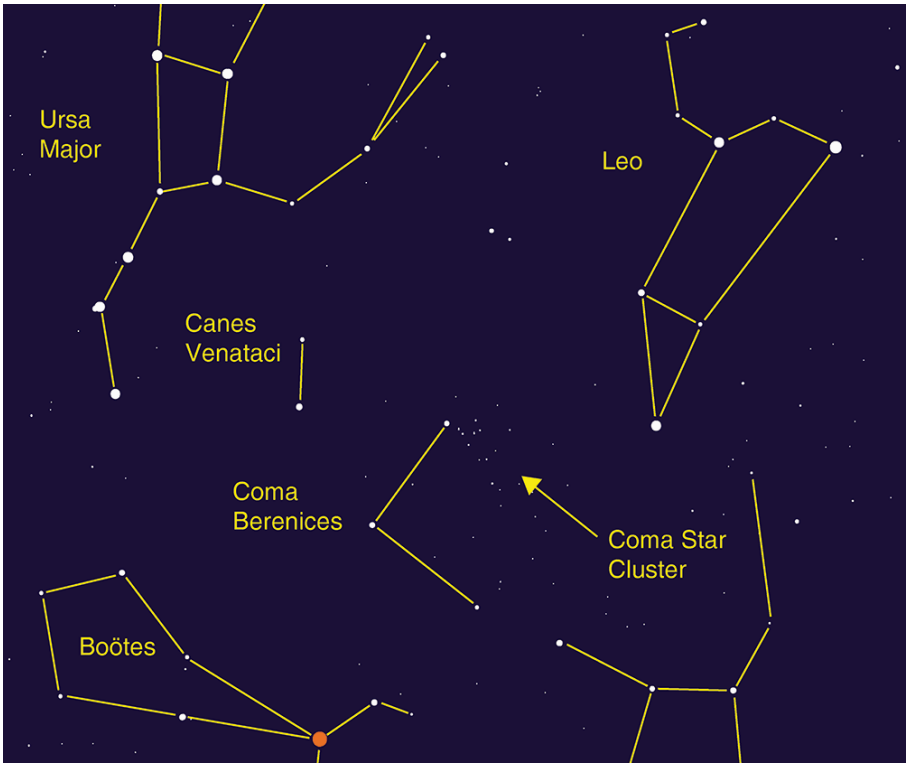


A view of Apollo 10's Lunar Module from the Command Module as it returned from maneuvers above the lunar surface. Photo Credit: NASA Source: http://bit.ly/apollo10view



Try to spot the Coma Star Cluster! Image created with assistance from Stellarium

Point and Shoot Camera Astroimaging

Canon Powershot SX50 HS

Image & write-up submitted by Paul Kursewicz

M33 (Triangulum Galaxy) **Specs: RAW, f/3.5, FL 1200mm, 6 x 3 min, ISO 800, 12-4-18**

The Triangulum Galaxy, also known as M33, is located roughly three million light years from Earth in the constellation Triangulum. Under dark sky conditions, M33 is just barely visible with the naked eye which makes it the most distant object that can be seen with our eyes. M33 is the third-largest galaxy in the local-group of galaxies, behind the Milky Way and Andromeda. It has a diameter of about 50,000 light years and is believed to contain 40 billion stars, which is significantly less than the Milky Way (about 400 billion stars) and Andromeda (about 1 trillion stars). Unlike the Milky Way and Andromeda, the Triangulum Galaxy does not have a central bulge of stars. At it's core is a nebula (a cloud of gas and dust) called an HII region.

James Napolitano Article

Submitted by Sara Carter

"As I believe that my mind is too small to reconcile everything that happened that night, I won't even begin to try."…from the memoir of James Napolitano

On a September night in 1994, James Napolitano made a change in flight plans that kept him from dying. US Air's flight 427 from Chicago to Pittsburgh crashed that night with the loss of all 132 passengers and crew. What had started as a routine business trip became an experience that was to resonate through the rest of Napolitano's life.

James Napolitano died in 2004. The following contains quotes from Napolitano's memoir of that night.:

"I always choose a window seat when I fly, just so I can look at something besides a magazine. At 15,000 feet, I looked out the window. It was difficult to see due to the cabin lights and just as difficult to concentrate because of the noisy kids behind me. However, being a determined recreational astronomer, I pressed against the window with my hands cupped around my face, and glanced out periodically. When we reached 35,000 feet, I looked out and was astounded by what I saw. There was Sagittarius in all its glory and the Scorpion to the West gently lying on its side! Their stars sparkled like diamonds against a black backdrop of perfectly smooth velvet! Both constellations were well above the horizon due to our altitude, and presented a view that I could never have imagined being an observer from Pittsburg. The vision will be forever etched in my mind!"

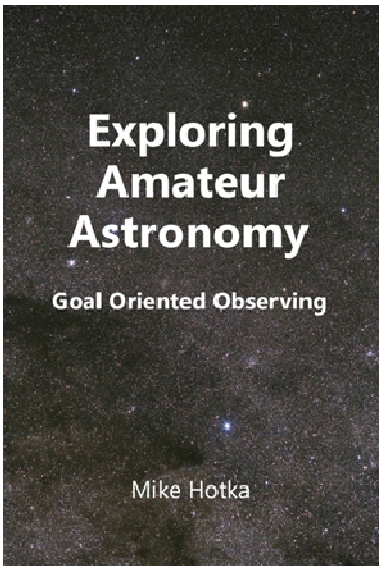
However, when Napolitano reached the Pittsburg airport, the normal bustle and crowds were missing. Disquieted he hurried to his car. "I had a strange feeling because I knew something wasn't right." Napolitano remembers. When he got to his car he tuned the radio to a local news station. It was then he learned that the jet he would normally have flown had crashed.

"I'm not sure there is a moral to this story. I only know that in one evening I managed to observe the unparalleled majesty of a small patch of the Universe, but also managed to witness a tragedy of epic proportions. I will probably never know why that plane crashed or why I was spared my participation in it. And I believe that none of us will ever know why the Universe "***is***" as it is. Therefore, I must defer to a higher power, and accept the beauty and splendor of this life, as well as the tragedies; accept the balance of nature that affects us here on Earth and that extends to the farthest reaches of the Universe."

Understanding her father's appreciation of astronomy, Angel Napolitano donated his library of books on the subject to the Astronomical Society of Northern New England (ASNNE).. "It was simply the right thing to do!" she acknowledged in an interview.

With deep appreciation for the man, and his daughter's generosity, ASNNE accepts the posthumous donation of 75 astronomy books from the library of Stargazer, James Napolitano.

Want to complete more Observing Programs?



Have you ever wanted to start and complete more of the Astronomical League's observing programs but just didn't know how? Mike Hotka's new book, *Exploring Amateur Astronomy – Goal Oriented Observing*, will not only help you start more observing programs, but will also share an observing methodology to help you get more out of your observing sessions. Mike is a Platinum Master Observer and has completed all but three of the currently existing observing programs. In his book, he shares tips and tricks he learned throughout the years of how to overcome some of these program's learning curves, so that you can start recording observations sooner. He wrote this book because of his love of astronomy and his desire to share his knowledge of observing celestial objects with others.

Mike's book explains the concept of setting SMART goals to ensure you observe on a regular basis. The book goes on to explain a methodology that Mike has developed and refined over the years of how to plan an observing session, find the resources you will need in the field and the importance of keeping a good observing log of your observations.

The remainder of the book contains a chapter for each of the observing programs that Mike has completed. These chapters describe how Mike approached each observing program and he shares the techniques that were effective in completing the observations for each program. With this knowledge, you will be able to start making observations from the very beginning for even the most difficult of observing programs.

This book emphasizes learning and refining astronomical observing techniques. It is designed to aid the beginner as well as the experienced amateur astronomer to train their eye to see faint celestial objects. This book is dedicated to those that would like to start and complete more Astronomical League observing programs.

Exploring Amateur Astronomy – Goal Oriented Observing can be purchased in a paperback or eBook version from Amazon.com.

Club Meeting & Star Party Dates

Date	Subject	Location
May 3	**ASNNE Club Meeting:** **Business Meeting** 6:30 PM **Beginners Class** 7:00 - 7:30 PM (no class is scheduled) **Regular Meeting** 7:30-9:30 PM **Guest speaker/topic - Professor Francois Foucart**. His talk will be on his main research interests; the study of very compact objects (black holes, neutron stars), and what happens when they collide (emission of gravitational waves, gamma-ray bursts, production of gold/platinum/...). **Bernie Reim** - What's UP **Astro Shorts:** (news, stories, reports, questions, photos)	The New School, Kennebunk, Me.
Last Month	LEVIATHAN OF PARSONSTOWN. Amateur astronomer and ASNNE Member **Dwight Lanpher** spoke about his visit last September to Birr Castle, County Offaly, Ireland to examine "*the Great Telescope*." Built in Ireland in 1845 by the 3rd Earl of Rosse, it was the largest telescope in the world for 70 years. For a more detailed report of his presentation see page 12.	
TBD	**Club/Public Star Party:** If skies are clear members may go to the observatory after the meeting.	Talmage Observatory at Starfield West Kennebunk, Me.

Directions to ASNNE event locations

Directions to The New School in Kennebunck [38 York Street (Rt1) Kennebunk, ME]

For directions to The New School you can use this link to the ASNNE NSN page and then click on "get directions" from the meeting location. Enter your starting location to generate a road map with complete directions. It works great. http://nightsky.jpl.nasa.gov/club-view.cfm?Club_ID=137

Directions to Starfield Observatory [Alewive Road, Kennebunk, ME]

From North:
Get off turnpike at exit 32, (Biddeford) turn right on Rt 111. Go 5 miles and turn left on Rt 35. Go 2 miles on Rt 35 over Kennebunk River to very sharp 90 degree left turn. The entrance to the Starfield Observatory site is at the telephone pole at the beginning of the large field on the left. Look for the ASNNE sign on the pole.

From South:
Get off the turnpike at exit 25 in Kennebunk. After toll both turn right on Rt 35. Go up over the turnpike and immediately turn right on Rt 35. About 4 miles along you will crest a hill and see a large field on your right. Continue until you reach the end of the field. Turn right into the Starfield Observatory site at the last telephone pole along the field. Look for the ASNNE sign on the pole. If you come to a very sharp 90 degree right turn you have just passed the field.

Submitted by Carl Gurtman

ASTRONOMY CLUB TALK - THE LARGEST TELESCOPE OF THE 1800"S.

At the last meeting of the Astronomical Society of Northern New England (ASNNE), members and guests were privileged to hear a presentation by ASNNE Member Dwight Lanpher about the LEVIATHAN OF PARSONSTOWN. Dwight reported on his trip, with slides, to Birr Castle, County Offaly, in Ireland, where he had specifically travelled to visit that telescope. People interested in astronomy may know about this large telescope. Built in Ireland in 1841-1845, by the 3rd Earl of Rosse, it was the largest telescope in the world for 70 years. This giant had a 72" speculum mirror.

Dwight, an engineer by profession, carefully examined the telescope, which had been rebuilt and renovated in 1995 for the cost of $1,200,000. The telescope was built just as the Industrial Revolution was taking off, and in the early years of photography. Dwight showed us paintings, sketches, and early photographs of the Leviathan., with its 54' long tube. The telescope was suspended between two purpose-built castle walls.

Dwight had researched the telescope via several books, his own photographs, and presented detailed drawings of his own, and described how the telescope worked. In most cases, the Earl, who had some technical training, but was an inspired amateur innovator, designed his own gear, and had it build. The Earl also had designed and build movable observation platforms. Nothing of this size had been built before, so he had to innovate. Unfortunately, after its extensive, and expensive renovation, there were not sufficient funds to keep the renovated telescope operable. In its heyday, the original Leviathan required, in addition to the observer, four men to assist in the telescope's operation.

Dwight examined the one remaining speculum mirror at the Museum of Science in London. (The other mirror has been lost.)

With his telescope the Earl of Rosse discovered the remarkable spiral shape of many objects then classed as “nebulae,” which are now recognized as individual galaxies. His drawing of the spiral galaxy M51 is a classic work of mid-19th-century astronomy. He studied and named the Crab Nebula. He also made detailed observations of the Orion Nebula.

To join **ASNNE**, please fill out the below membership form. *Checks should be made payable to: Astronomical Society of Northern New England (A.S.N.N.E).* For more details, please visit our website: **http://www.asnne.org**

Astronomical Society of Northern New England
P.O. Box 1338
Kennebunk, ME 04043-1338

2019 Membership Registration Form

(Print, fill out and mail to address above)

Name(s for family): _____

Address: _____
City/State: _____ Zip code: _____

Telephone # _____

E-mail: _____

Membership (check one):
Individual $35 _____ Family $ 40 _____ Student under 21 years of age $10 _____ Donation_____

Total Enclosed_____

Tell us about yourself:
1. Experience level: Beginner____ Some Experience ____ Advanced_____

2. Do you own any equipment? (Y/N) And if so, what types?

_____
3. Do you have any special interests in Astronomy?

_____
4. What do you hope to gain by joining ASNNE?

_____
5. How could ASNNE best help you pursue your interest in Astronomy?

_____
6. ASNNE's principal mission is public education. We hold many star parties for schools and the general public for which we need volunteers for a variety of tasks, from operating telescopes to registering guests to parking cars. Would you be interested in helping?
Yes_____ No_____

7. ASNNE maintains a members-only section of its web site for names, addresses and interests of members as a way for members to contact each other. Your information will not be used for any other purpose. Can we add your information to that portion of our web site?

Yes_____ No_____