

The OBSERVER

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VOLUME 36, NUMBER 12

DECEMBER 2011

E/PO FOR NOVEMBER 2011

On November 1st the TCAA held a successful event for the Olympia Middle School's new Science and Math Club. Over 50 students came out to SGNC for hotdogs cooked over a campfire followed by constellation and telescope viewing on a clear evening with a crescent Moon and temperatures in the 50s. Lee Green welcomed the club and congratulated them on their inaugural event and made a presentation as an introduction to astronomy highlighting Jupiter. Afterward he conducted a laser-guided sky tour of the major constellations. TCAAers Carl Wenning, Dan Miller, Paul Pouliot, Tom Weiland, William Carney and Lee all had telescopes set up for viewing a variety of heavenly sights and Bob Finnigan assisted.

On November 4th, Sugar Grove Nature Center held their Campfire & S'mores program. William Carney hosted an unscheduled impromptu observing session focusing primarily on the moon for the 30 attendees (20 kids and 10 adults) after the program. Lee, Tony and Bob were imaging the Heart Nebula that evening and missed the action.

The TCAA received a last-minute invitation to hold an observing session on November 5th for a group of Girl Scouts at Camp Tapawingo west of Metamora. Lee, William, Paul and Eve, Dan and Chris all answered the call. Lee contacted the Peoria Astronomical Society and extended an invitation to assist, but nobody from the club joined in. Lee gave a presentation and the 50 scouts and 25 parents enjoyed observing. The early clouds gave way to reasonably clear skies.

William Carney provided another impromptu observing session for about 25 4H'ers (kids and parents) on Friday, November 11th. He treated them to a view of Jupiter after their event at SGNC.

Lee Green led a troop of TCAAers to Family Fun Night at Oakland Elementary from 6:00-7:30 pm on November 17th. Family Fun Night consisted of a combination of stations for the kids to learn, play games, and make theme-related items that went along with their Book Fair. This year's theme was 'Out of this World' and the TCAA had a prominent role. The event brought Lee's interaction with the TCAA full circle as he returned to place where he attended elementary school and where he first encountered TCAA member Rev. Lloyd Strouse at events held there in the mid-1960s. Lee set up his 14" telescope outside his 4th and 5th grade classrooms (where he recalls watching launches of Gemini spacecraft) that brought back many fond memories. He pointed the telescope at Jupiter on a cool and breezy but crystal clear evening. There was a steady stream of people waiting to view the planet and its four prominent moons and they were not disappointed.



Editor's Note: The following photos were taken at the SGNC's Autumn Fest. They were inadvertently omitted from the November edition of *The OBSERVER*.



The *OBSERVER* is a monthly publication of the Twin City Amateur Astronomers, Inc., a registered 501 (c)(3) non-profit educational organization of amateur astronomers interested in studying astronomy and sharing their hobby with the public.

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Submission deadline is the first of each month.

Membership Dues

Individual Adult/Family \$40
Full-time Student/Senior \$25
Electronic Newsletter \$25

To join the TCAA, send your name, contact info and dues payment to
Duane Yockey
508 Normal Avenue
Normal, IL 61761

TCAA BOARD MEETING—NOVEMBER 8, 2011

The TCAA Board meeting was held at the office of Duane Yockey on November 8, 2011. President Dave Osenga called the meeting to order at 6:30pm. In attendance were Tom Weiland, Paul Pouliot, Tony Cellini, Duane Yockey, Bob Finnigan, Lee Green, Carl Wenning and John Werner. The minutes of the previous meeting were unanimously approved as was the Treasurer's report.

Dave noted that river rock had been placed around the observatory and noted his appreciation to William for his excellent efforts. Lee related that SGNC Shed had largely been completed, including the club's storage area and that several items were currently being stored there. Carl asked whether locks had been installed. It was agreed that we should install a key lock and store the key in the observatory. Lee also reported that the plans for adding electrical improvements to the SGNC Shed had progressed and that the estimate for materials ran to nearly \$800, far below the allocated amount. Tom and Dave volunteered to assist on the project which Lee will pursue with the help of his brother Lex and others in the coming weeks.

Duane reported that he had not heard back from the insurance company about the fire and casualty policy he submitted. Concerns about the cost of a policy remain, given the state of the club finances and Carl suggested self-insuring. Bob offered to purchase another safe for storing equipment, and we discussed the possibilities of reconfiguring the storage shelves or siting one in the new storage area. We agreed to consider the issues and make a recommendation for action at the next Board meeting.

Lee submitted a quote from Ash Dome for \$159.70 for foam sealants and eye bolts for the observatory. The Board approved the purchase and Duane wrote a check to them.

Dave applauded the increased member participation this year and was pleased that our 2012 schedule of public events had been finalized and posted on the club web site. He suggested that December 17 was the best date for our annual Saturnalia party. He asked the group to consider upcoming nominations for the Board and for awards so we could discuss them at our next meeting January 3.

John told us about the plans for the upcoming Peru trip over the Christmas holidays and reviewed the itinerary. At least 8 people are planning to attend.

Carl reported the Bob Loy had donated a variety of books to the club. It was agreed that these be distributed.

Lee reported that a last minute request for observing for the girl scouts had worked out well, thanks to several members including Paul Pouliot and Eve, William Carney, and Dan and Chris Miller. He also noted the outstanding effort of so many members this year that pushed our outreach efforts to surpass the results of previous years, as we had interacted with over 1600 people.

We wrapped up the meeting discussing some upcoming astronomical events and adjourned at 7:20pm.

Respectfully submitted,

Lee Green

TCAA Secretary

HOW TIME FLIES

TCAA Historian Carl Wenning provides monthly updates about the history of the club going back to intervals of 50, 25, and 10 years. Details about all mentioned events will be found in either the club history (<http://www.tcaa.us/History.aspx>) or in *The OBSERVER* archive found on the club's web site (<http://www.tcaa.us/Observer.aspx>).

50 Years Ago

December 1961 – It is announced to the TCAA that the Normal Parks & Recreation Department will not be able to assist the TCAA in moving Behr Observatory to Fairview Park disappointing the membership. Mirror making and observations of the variable stars delta Cephei and Algol continue. 111 Geminid meteors were observed by members Hank Janecek and Bill Blunk on four evenings in December.

25 Years Ago

December 1986 – The December issue of *Astronomy* magazine carried a report by member Darren Drake titled "Japanese Rocket Causes August Light Spectacular." Future club president Don Johnson joins the club. Don was an undergraduate physics teacher education major at the time.

10 Years Ago

December 2001 – The TCAA reading group is concluding its study of Galileo's *Siderius Nuncius* (*Starry Messenger*). The club continues fund-raising efforts with regard to purchasing a 12" Meade GoTo telescope for installation in Sugar Grove Observatory.

CURIOSITY ROVER LAUNCHED

NASA Launches Most Capable and Robust Rover to Explore Mars From NASA's Website

CAPE CANAVERAL, Fla. -- NASA began a historic voyage to Mars with the Nov. 26 launch of the Mars Science Laboratory (MSL), which carries a car-sized rover named Curiosity. Liftoff from Cape Canaveral Air Force Station aboard an Atlas V rocket occurred at 10:02 a.m. EST.

"We are very excited about sending the world's most advanced scientific laboratory to Mars," NASA Administrator Charles Bolden said. "MSL will tell us critical things we need to know about Mars, and while it advances science, we'll be working on the capabilities for a human mission to the Red Planet and to other destinations where we've never been."

The mission will pioneer precision landing technology and a sky-crane touchdown to place Curiosity near the foot of a mountain inside Gale Crater on Aug. 6, 2012. During a nearly two-year prime mission after landing, the rover will investigate whether the region has ever offered conditions favorable for microbial life, including the chemical ingredients for life.

"The launch vehicle has given us a great injection into our trajectory, and we're on our way to Mars," said MSL Project Manager Peter Theisinger of NASA's Jet Propulsion Laboratory (JPL) in Pasadena, Calif. "The spacecraft is in communication, thermally stable and power positive."

The Atlas V initially lofted the spacecraft into Earth orbit and then, with a second burst from the vehicle's upper stage, pushed it out of Earth orbit into a 352-million-mile (567-million-kilometer) journey to Mars.

"Our first trajectory correction maneuver will be in about two weeks," Theisinger said. "We'll do instrument checkouts in the next several weeks and continue with thorough preparations for the landing on Mars and operations on the surface."

Curiosity's ambitious science goals are among the mission's many differences from earlier Mars rovers. It will use a drill and scoop at the end of its robotic arm to gather soil and powdered samples of rock interiors, then sieve and parcel out these samples into analytical laboratory instruments inside the rover. Curiosity carries 10 science instruments with a total mass 15 times as large as the science-instrument payloads on the Mars rovers Spirit and Opportunity. Some of the tools are the first of their kind on Mars, such as a laser-firing instrument for checking rocks' elemental composition from a distance, and an X-ray diffraction instrument for definitive identification of minerals in powdered samples.

To haul and wield its science payload, Curiosity is twice as long and five times as heavy as Spirit or Opportunity. Because of its one-ton mass, Curiosity is too heavy to employ airbags to cushion its landing as previous Mars rovers could. Part of the MSL spacecraft is a rocket-powered descent stage that will lower the rover on tethers as the rocket engines control the speed of descent.

The mission's landing site offers Curiosity access for driving to layers of the mountain inside Gale Crater. Observations from orbit have identified clay and sulfate minerals in the lower layers, indicating a wet history.

Precision landing maneuvers as the spacecraft flies through the Martian atmosphere before opening its parachute make Gale a safe target for the first time. This innovation shrinks the target area to less than one-fourth the size of earlier Mars landing targets. Without it, rough terrain at the edges of Curiosity's target would make the site unacceptably hazardous.















The innovations for landing a heavier spacecraft with greater precision are steps in technology development for human Mars missions. In addition, Curiosity carries an instrument for monitoring the natural radiation environment on Mars, important information for designing human Mars missions that protect astronauts' health.

The mission is managed by JPL for NASA's Science Mission Directorate in Washington. The rover was designed, developed and assembled at JPL. NASA's Launch Services Program at the Kennedy Space Center in Florida managed the launch. NASA's Space Network provided space communication services for the launch vehicle. NASA's Deep Space Network will provide spacecraft acquisition and mission communication.

YEAR END DONATIONS SOLICITED

TCAAers are encouraged to support the club through tax-deductible contributions. The TCAA is a federally recognized 501(c)1 educational non-profit organization. If you would like to donate to the support of the club before the end of the year, please do so by sending your contribution to our Treasurer Mr. Duane Yockey, 508 Normal Ave, Normal, IL 61761.

DEEMBER SKY GUIDE

- | | | |
|----|---|---|
| 01 | The Moon passes 6° north of Neptune,
9 A.M. |  |
| 04 | The Moon passes 6° north of Uranus,
2 A.M. |  |
| | Mercury is in inferior conjunction,
3 A.M. | |
| 06 | The Moon passes 5° north of Jupiter,
2 P.M. |  |
| 10 | Total lunar eclipse,
9 A.M. |  |
| 14 | Geminid meteor shower peaks, |  |
| 17 | The Moon passes 8° south of Mars,
7 A.M. |  |
| 20 | The Moon passes 7° south of Saturn,
4 A.M. |  |
| 22 | Solstice (norther winter/
southern summer begins),
midnight |  |
| | Mercury passes 7° north of Antares,
2 P.M. |  |
| | Mercury is at greatest western elongation (22°), 9 P.M |  |
| | The Moon passes 6° south of Mercury,
10 P.M. |  |
| 27 | The Moon passes 6° north of Venus,
5 A.M. |  |
| 28 | The Moon passes 6° north of Neptune,
7 P.M. |  |
| 31 | The Moon passes 6° north of Uranus,
10 A.M. |  |

OBSERVERS' LOG FOR NOVEMBER 2011

Bob and Tony spent time imaging the Elephant Trunk Nebula (IC 1396) during the first days of November with spectacular results. After that, their attention (now including that of Lee) turned to the Heart Nebula once again. After that, it was the Flaming Star Nebula.

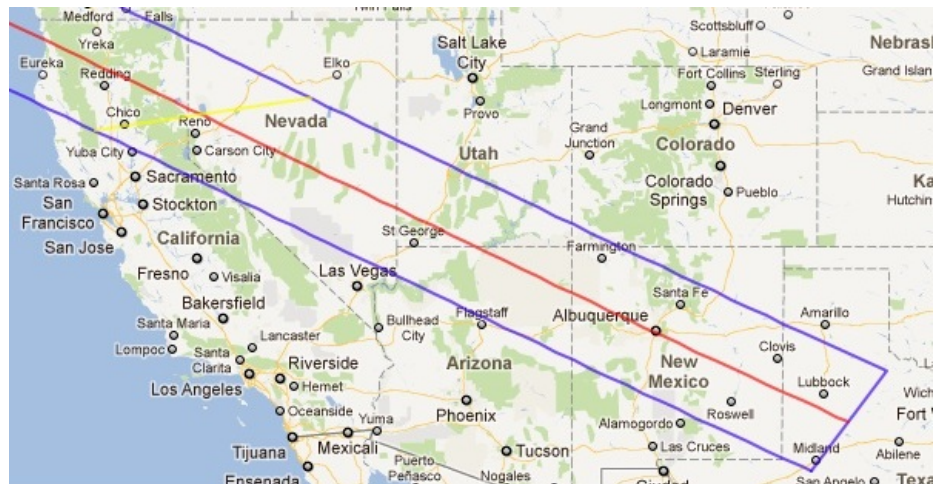
As the astroimagers named above were leaving on November 4th, Mark Honzell showed up to start his night. Dressed in fully insulated coveralls, farmer's hat with built in earmuffs, hiking boots and thick socks, he was prepared to stay the remainder of the night to get his Messier list done. But, despite the "clear sky" prediction, it turned ugly. So, he only made it until 2:30 am. He did manage to observe two more Messier objects and a handful of double stars before the wind and clouds rolled in. As Mark noted later, "Believe it or not, I stayed warm but my hands were freezing from the constant removal of my gloves to handle paper and pencil while drawing those double stars. Daylight savings time will help me on my next shot at this since my last Messiers rise about 3 a.m. now." Mark has now observed 76 of the 110 Messier objects, and 47 of 100 double stars.

Bob Finnigan and several other astrophotographers continued their efforts to image the known universe. Bob reported working on the Tulip Nebula prior to mid-month. On the 18th he photographed Comet C/2010 G2 (Hill) with nice results. Unfortunately, the comet is 12.9 magnitude and showed up only as a fuzzy dot on the star field of Auriga the Charioteer. Proper motion however was discernable in the black and white time exposure.

The latter part of November was filled with partly to mostly cloudy skies that limited viewing and photography as it is wont to do during the winter months. Despite a few crisp, cold, and clear nights, the remainder of autumn and most of winter will likely be overcast.

MAY 20, 2012 ANNUAL ECLIPSE

A rare annular eclipse will be visible from the continental USA on May 20, 2012. The last such eclipse visible locally was on May 10, 1994. Next year's centerline sweeps eastward through California, Nevada, Utah, Arizona, New Mexico, and Texas (sunset event), through New Mexico, Arizona, Utah, Nevada, and California. Now is the time to begin planning for this event if you would like to see it.



THE FLEDGLING ASTRONOMER—DECEMBER 2011

By Mark Honzell

With my telescope ordered, I realize this will take a few days to a couple of weeks to arrive as most come from Taiwan and online stores keep very little inventory these days. While waiting, I will try to use this perfect opportunity to start learning one of those needed skills: reading a star map.

Believe it or not, I do not need to own a scope to go outside and look at the stars. What I need is a basic map telling me where to look and a vivid imagination to connect the dots. These basic maps can be found just about anywhere I would expect such as on the internet (which is usually for free) and at the local store in magazines such as *Sky & Telescope*, or *Astronomy* (about \$6.) I can even download free programs to generate my own maps, such as Cartes du Ciel.

So, back to the basic map... The first thing I need to learn is orientation. You know, East, West, North, South: easy, right? Imagine, it's dark and I am out in an open field without a single building or man-made light for a mile and I am looking at a "map" that seems to have two of its directions backwards. Ah, good thing I started in the backyard.

Unfortunately, I now find a need for my first non-budgeted item: a flashlight with a red lens. The red lens will keep me from losing my night vision, which I would not recognize until it is lost by looking at white light. Once lost, it can take 45 minutes to recover. So, I spend a couple of dollars on a small flashlight with a red lens and a neck lanyard.

Back to finding North... The easiest way I know is to find the Big Dipper. This is a constellation most of us learned as a child and is usually recognized by all.

(In the off chance you are unfamiliar with it, consider this next idea carefully: ask someone to point it out. I know, it may be tough to do this, but you have to start somewhere. An alternative to this, attend a local astronomy group gathering and quietly take notes during a laser-guided tour of the heavens. This may additionally provide some good insight on what to bring to your first dark sky. ie. Bug spray)

So, I find the Big Dipper. Then, using the two stars making up the "scoop" furthest away from the handle, I draw an imaginary line upward until I run into another star. This is Polaris: the North Star. And now I know where North is oriented. From here, I use the map to identify a few of the constellations by holding the map over my head and comparing it with the sky. North is much easier to identify now that I have a couple of constellations behind me. And, the smug feeling of being able to look in the right direction when someone says to look at Sagittarius is priceless. Within these constellations, I learn a few of the brightest stars. These become my guideposts for later.

CONSTELLATION OF THE MONTH: PERSEUS—THE HERO

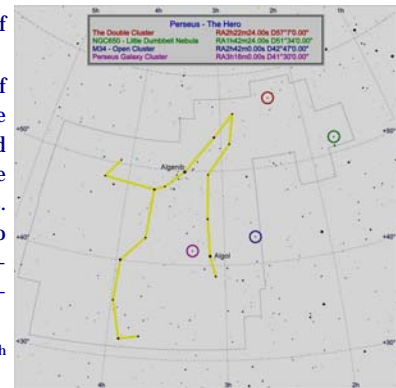
Perseus is a prominent constellation that is visible in early winter. It is located east of Andromeda, south of Camelopardalis and west of Auriga.

Perseus was the son of Jupiter and Danaë. Perseus was sent to dispatch Medusa, one of the Gorgons. Medusa was once a maiden with beautiful hair but when Minerva became jealous, Medusa was transformed into an ugly, vicious creature with snakes for hair and whoever looked upon her face would be turned to stone. Perseus received the help from the gods Minerva, who gave him her shield, and Mercury who provided his winged shoes. Perseus tracked Medusa and used the shield to avoid looking at her face and was able to slay her. Later, Perseus used his sword and the winged shoes to help him defeat the sea-monster Cetus, thereby saving the life of Andromeda, daughter of Cassiopeia and Cepheus, and winning her for his wife.

Perseus is the 24th largest constellation covering 615 square degrees. It is the 18th brightest constellation and reaches opposition on November 16.

The named stars in Perseus include Algenib and Algol, the Demon Star. Algol is a special class of variable star called the eclipsing binary. When two stars rotate, we will see both stars at all time unless the rotation is oriented such that the stars will pass in front of each other. With these eclipsing binaries, the brightness dips when the stars are aligned. Algol is a famous eclipsing binary system that changes from 2nd magnitude to 3rd magnitude during the 10 hour eclipse period every 2.86 days.

The Milky Way passes through Perseus so the constellation contains a large variety of objects including many attractive open clusters. The famous Double Cluster is two open clusters, NGC869 and NGC994, which have similar size and composition but are thought to be of greatly different ages. In NGC869, we see many blue stars that tend to be younger and in NGC884, we see older red giant stars. We also find a variety of emission, reflection and dark nebulae including the large but dim California Nebula. Towards the southern end of Perseus we find a number of galaxies including Abell 426 which is a cluster of 40 galaxies.



NPOESS PREPARATORY PROJECT (NPP) **(NPP launched from Vandenberg AFB on October 28, 2011)** **From NASA's Website**

Understanding, monitoring, and predicting the course of long-term climate change AND short-term weather conditions remain tasks of profound importance. Economic competitiveness, human health and welfare, and global security all depend in part on our ability to understand and adapt to global environmental changes.

Over the last dozen years, NASA has launched a series of satellites – known collectively as the Earth Observing System (EOS) – that has provided critical insights into the dynamics of the entire Earth system: clouds, oceans, vegetation, ice, solid Earth and atmosphere. Now NASA is helping to create a new generation of satellites to extend and improve upon the Earth system data records established by EOS.



The NPOESS Preparatory Project (NPP) will serve as a bridge between the EOS satellites and the forthcoming series of Joint Polar Satellite System (JPSS) satellites. NPP represents a critical first step in building this next-generation satellite system. The JPSS satellites, previously called the National Polar-orbiting Operational Environmental Satellite System (NPOESS), will be developed by NASA for the National Oceanic and Atmospheric Administration (NOAA).

NPP will carry five science instruments and test key technologies for the JPSS missions. NPP is the first satellite mission to address the challenge of acquiring a wide range of land, ocean, and atmospheric measurements for Earth system science while simultaneously preparing to address operational requirements for weather forecasting.

NPP also represents the gateway to the creation of a U.S. climate monitoring system, collecting both climate and operational weather data and continuing key data records that are critical for global change science.

Key science objectives and capabilities of NPP include: Climate change -- contribute to long-term records of global environmental data critical for understanding the dynamics of climate change Health of the ozone layer -- daily measurements of the atmospheric ozone layer that will determine whether the ozone layer is recovering as expected Natural disasters -- monitor wildfires, volcanic eruptions, snowstorms, droughts, floods, hurricanes and dust plumes Weather predictions -- a sounding instrument will collect information about cloud cover, atmospheric temperatures, humidity and other variables critical to accurate weather prediction Vegetation -- map global land vegetation and quantify changes in plant productivity to understand the global carbon cycle and monitor agricultural processes to predict and respond to food shortages and famines Global ice cover -- monitor changes to Earth's sea ice, land ice and glaciers to track the pace of climate change Air pollution -- monitor the spread of health-sapping pollutants such as soot, particulate matter, nitrogen dioxide and sulfur dioxide Temperatures -- maintain a global record of atmospheric, land surface and sea surface temperatures critical to understanding the long-term dynamics of climate change Earth's energy budget -- make measurements to determine how much energy is entering and exiting Earth's atmosphere.

TCAA Treasurer's Report – November 2011

OPERATING FUND BALANCE – October 31, 2011 - \$ 1,736.28

Income

John Poag (Dues) - \$ 41.00

Ryan Apple (Student Dues) - \$ 26.00

Orlyn Edge (Senior Dues) - \$ 25.00

Charles Mosier (Senior Dues) - \$ 26.00

Expenses

Ash Mfg. Co. (Dome Repairs) - \$ 159.70

LYB Inc. (Observer copies & postage) - \$ 20.72

PayPal (John Poag) - \$ 1.20

PayPal (Ryan Apple) - \$ 0.87

OPERATING FUND BALANCE – November 30, 2011 - \$ 1,671.79

OBSERVATORY FUND BALANCE – October 31, 2011 - \$ 2,754.38

Income

None - \$ 0.00

Expenses

None! - \$ 0.00

OBSERVATORY FUND BALANCE – November 30, 2011 - \$ 2,754.38

TOTAL TCAA FUNDS – November 30, 2011 - \$ 4,426.17

Respectfully submitted,

L. Duane Yockey, Treasurer

MISSING OUT ON TCAA ACTIVITIES & EVENTS?

If you are missing out on club activities or celestial events, be certain to join the TCAA listserv. Many activities are planned at the last minute, and announced only hours in advance through the club's listserv. Reminders about celestial events are also broadcast to the membership through the club's listserv. To join this free service by Yahoo, send a blank email to TCAA-subscribe@yahogroups.com. Unsubscribing is just as easy. To unsubscribe, just send a blank email to TCAA-unsubscribe@yahogroups.com.

To keep up to date on celestial events not described in *The OBSERVER* or addressed in the listserv, visit Carl Wenning's observing page at www.phy.ilstu.edu/~wenning/observing_page.htm. It has been recently updated to include an extended sky calendar of events as well as additional space weather and satellite viewing links.

The OBSERVER

Newsletter of the TCAA, Inc.

Erin Estabrook, Editor
314 Covey Court
Normal, IL 61761

Are your dues due?



The Dues Blues?

If you see a check in the box above, it means your dues are due. To retain membership, please send your dues renewal to our esteemed Treasurer:

**Duane Yockey
508 Normal Avenue
Normal, IL 61761**