

# THE OBSERVER

OF THE TWIN CITY AMATEUR ASTRONOMERS



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## EDITOR'S CHOICE: IMAGE OF THE MONTH

This month's Image of the Month is Messier 27, the Dumbbell Nebula, in Vulpecula. Tim Stone captured this image using the 20" PlaneWave telescope in Prairie Sky Observatory. It is one of the very few images obtain by club members this spring and summer due to the extended cloudy conditions that have prevailed since April. See Tim's commentary about this image starting on page 5.

Members should note that a new guide will soon be available to help them learn how to use the club's 17" and 20" telescopes for capturing such images as those shown in *The OBSERVER* over recent months.



The TCAA is an affiliate of the [Astronomical League](#). For more information about the TCAA, be certain to visit our [club website](#).

**The OBSERVER** is the monthly *electronic* publication of the Twin City Amateur Astronomers, Inc., a registered 501(c)(3) not-for-profit educational organization of amateur astronomers interested in studying astronomy and sharing their hobby with the public.

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##### Membership Dues

Individual Adult/Family \$40  
 Full-time Student/Senior \$25  
 (senior status equals ages 60+)

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

## A NOTE FROM PRESIDENT WEILAND

In just a few days I will be sending out an email asking for volunteers to assist with the Sugar Grove Nature Center's (SGNC) Autumn Celebration. This is a wonderful event where families can experience many Fall activities. Check out the SGNC website at [sugargrovenaturecenter.org](http://sugargrovenaturecenter.org) to learn more about the event.

Since we began building our first observatory on the grounds in 2000, SGNC has been a great partner. They are very supportive of our work and programs, and in return we strive to support their activities. This is one of the largest events they sponsor and as a result it also provides us with a fabulous opportunity to interact with potential guests to our Public Observation Sessions (POS). The Celebration is set for Saturday, October 18<sup>th</sup> from 10:00 a.m. to 5:00 p.m.

Twin City Amateur Astronomers (TCAA) will be conducting an open house for our visitors, as well as viewing stations. Our guests will be able to explore the domed observatory (Sugar Grove Observatory) as well as the roll-off-roof observatory (Prairie Sky Observatory). Weather permitting we will be doing some solar observing. We will also have a scope set up for terrestrial (land-view) viewing and a computer displaying some of the excellent pictures our club astrophotographers have been taking over the past several years.

With good weather, a large number of people will be attending the Celebration. As previously mentioned, this event will provide us with a wonderful opportunity to promote the TCAA and our POS, but we need your help. I would like to divide the day's activities in several multi-hour shifts. I know some of us are planning on being there most of the day, but we still need volunteers to make sure someone is available for setup and teardown, and to make sure all aspects of our tours are covered. This is a great opportunity to interact with the public and with your fellow club members. Watch for my email about signup and consider making plans to assist with this great event.

Tom Weiland  
 TCAA President

## NEXT PUBLIC OBSERVING SESSION OCTOBER 25<sup>TH</sup>

The 2014 public observing sessions come to a close with the month of October. The Saturday, October 25<sup>th</sup> program runs from 7:00 to 9:00 p.m. October's program, to be led by Kevin Brown, is titled *The Andromeda Galaxy*. Kevin's presentation has been described as follows, "The Milky Way's nearest neighbor in space is so vast a spiral galaxy that it can be found with the unaided eye among the stars of the constellation Andromeda if only you know where and how to look." The 2014 POS brochure with additional information can be found on the [TCAA public events webpage](#). Recall that these events will be held cloudy or clear, and cancelled only in the event of active rain.

This October's event features a telescope drawing. Since the first POS in March the club has been collecting email addresses in exchange for a chance to win a basic telescope during POS free drawing. This year the telescope is a Meade ETX-125AT (f/15) Maksutov-Cassegrain telescope donated to the club. TCAA members *are* eligible for the drawing. If you have not attended a POS this year, this will be your last opportunity enter the drawing to win this telescope.

By the way, the 2015 POS schedule has been approved by SGNC and topics selected based on recommendations of the membership, Board of Directors, and club officers. The 2015 POS brochure will soon be available on the TCAA website.

## CALENDAR OF CELESTIAL EVENTS – OCTOBER 2014

**MORNING STARS (10/15): VENUS, JUPITER** (Venus, appears to the north of the sun and, theoretically, is visible just before sunrise and just after sunset at mid month; in terms of practical visibility, however, it is visible both times only for a short time every 7 years.)

**EVENING STARS (10/15): VENUS, MARS, SATURN, URANUS, NEPTUNE**

**Question:** This month there are two first quarter moons – on the 1<sup>st</sup> and the 30<sup>th</sup>. How is this possible? See below for the answer.

**01 First Quarter Moon** – The moon sets at midnight and rises at midday.

**07 Uranus at Opposition** – The blue-green planet will be at its closest approach to Earth and its face will be fully illuminated by the Sun. This is the best time to view Uranus. Due to its distance, it will only appear as a tiny blue-green dot in all but the most powerful telescopes.

**08 Full Moon and Total Lunar Eclipse** – The moon rises at sunset and sets at sunrise. The early Native American tribes knew this full moon as the Hunters Moon because at this time of year the leaves are falling and the game is fat and ready to hunt. See the article later in this issue for information about the eclipse.

**15 Third Quarter Moon** – The moon rises at midnight and sets at midday.

**22/23 Orionid Meteor Shower** – The Orionid meteor shower is an average shower producing up to 20 meteors per hour at its peak. Dust grains left behind by Halley's Comet produce this shower. The shower runs annually from October 2 to November 7. This year will be excellent for viewing the Orionids because the moon will be at new phase. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Orion, but can appear anywhere in the sky.

**23 New Moon and Partial Eclipse of Sun** – The moon rises and sets with the sun and is not visible. See article.

**25 Moon and Saturn** – An extremely thin 2-day-old crescent moon will be found to the upper left of Saturn in the evening sky. Binoculars probably will be needed to see this gathering.

**30 First Quarter Moon** – The moon sets at midnight and rises at midday. The second first quarter moon this month.

**Answer:** This event (similar to two full moons in a month – the second labeled a “blue moon”) can occur because the moon's synodic period – say the period from full phase to full phase – is about 29.5 days. Hence, with month of 30 or 31 days, it's possible to have two of the same phase each month.

## NEW & RENEWING MEMBERS

The following individuals have paid dues for new or renewed memberships as of September 30<sup>th</sup>, 2014. (Others who paid after that date will appear in the November 2014 issue of *The OBSERVER*.)

Scott Woodrum (new)	Lisa Wentzel (renewal)
Satya Marivada (new)	Craig Prost (renewal)
Brad Welch (renewal)	J. Kevin Brown (renewal)

## DUES BLUES

If you have received a “your dues are due” statement along with the email that brought you this issue of *The OBSERVER*, please remit your dues to Mr. Duane Yockey, TCAA Treasurer, 508 Normal Avenue, Normal, IL 61761. Current dues are \$25 for senior (60 years of age and over) and \$40 regular.

## SUBSCRIBING TO OUR E-MAIL LISTS

By subscribing to a group's mailing list you will receive email messages from the group so you won't have access to the group's web features (like photos, files, links, polls, calendar, etc.) unless members [activate it later](#). The club now has two email listservs. The main email listserv is known as the **TCAA** listserv. It will be used to share announcements and reminders about astronomical and club events. To join this main listserv you must do the following:

1. Subscribe: Send a blank email to [TCAA-subscribe@yahoogroups.com](mailto:TCAA-subscribe@yahoogroups.com) Note: You'll be sent a confirmation email from the group. Reply to the confirmation email to activate your subscription.
2. Unsubscribe: [tcaa-unsubscribe@yahoogroups.com](mailto:tcaa-unsubscribe@yahoogroups.com)
3. To post a message: [tcaa@yahoogroups.com](mailto:tcaa@yahoogroups.com)

A second listserv – **TCAA-imaging** – is for club astronomical photographers as well as those who want to view their images and follow their discussions. It is an easy way to keep up with all the stuff we're doing at the observatories.

1. Subscribe: [tcaa-imaging-subscribe@yahoogroups.com](mailto:tcaa-imaging-subscribe@yahoogroups.com)
2. Unsubscribe: [tcaa-imaging-unsubscribe@yahoogroups.com](mailto:tcaa-imaging-unsubscribe@yahoogroups.com)
3. To post a message: [tcaa-imaging@yahoogroups.com](mailto:tcaa-imaging@yahoogroups.com)

Once members join a Yahoo! group, they can [manage group and subscription settings](#) whenever it is desired to customize the group experience.

## THIS MONTH'S PHASES OF THE MOON



First Quarter  
October 1 and October 30



Full Moon  
October 8



Third Quarter  
October 15



New Moon  
October 23

All moon phase dates are given for Central Daylight Time. Additional moon phases can be found for the 2014 calendar year by clicking [here](#). These four images were provided by J.K. Howell of the Champaign-Urbana Astronomical Society and are used with permission.

## OCTOBER FEATURES TWO ECLIPSES

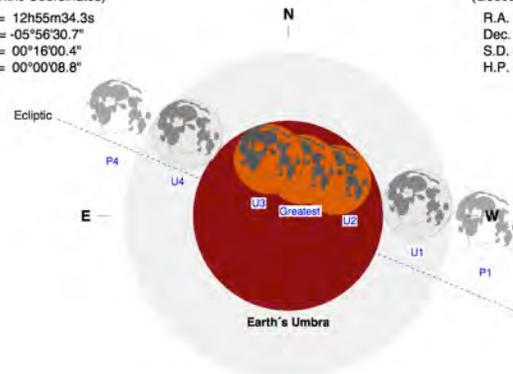
The moon will undergo a total eclipse during the predawn hours of Wednesday, October 8<sup>th</sup>. This occurs when the moon passes through the shadow of the Earth. Most, but not all of the event will be visible here. The darker umbral eclipse will begin at 4:18 a.m. with the moon about 1/3 way up in the west. Earth's umbral shadow will enter the moon's disk from the upper left as seen locally. Totality begins at 5:27 a.m. with the moon about 17 degrees off the western horizon. Maximum eclipse (when the moon is darkest) occurs at 5:55 a.m. with the moon 12 degrees above the horizon. Totality ends at 6:22 a.m. with the moon 7 degrees above the horizon. The Earth's shadow will appear to slide off the moon moving from top to bottom roughly speaking. Moonset occurs at 7:00 a.m. with moon's diameter being about 40%

Sun at Greatest Eclipse  
(Geocentric Coordinates)

R.A. = 12h55m34.3s  
Dec. = -05°56'30.7"  
S.D. = 00°16'00.4"  
H.P. = 00°00'08.8"

Moon at Greatest Eclipse  
(Geocentric Coordinates)

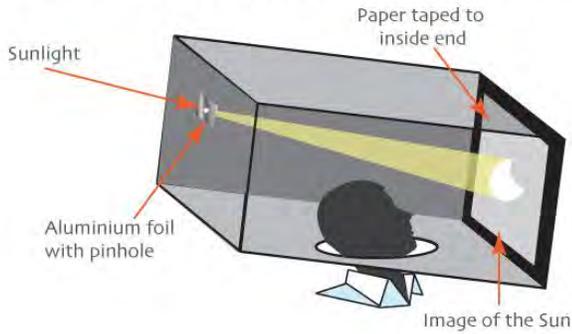
R.A. = 00h55m07.2s  
Dec. = +06°18'26.8"  
S.D. = 00°16'20.3"  
H.P. = 00°59'57.9"



eclipsed; the moon's lower portion will be in Earth's shadow at that time. The partial phase of the eclipse ends some 30 minutes after moonset. Sun's twilight glow will somewhat affect the visibility of this event. Astronomical dawn starts at 5:29 a.m., nautical dawn starts at 6:01 a.m., and civil dawn starts at 6:32 a.m.

About two weeks after this event, on Thursday, October 23<sup>rd</sup>, a very interesting partial solar eclipse will occur beginning around 4:49 p.m. with the sun about 14 degrees above the southwestern horizon. Maximum eclipse occurs at about 5:46 p.m. with the sun a mere 3 degrees above the west-southwestern horizon. At this time the moon will cover about 41% of the sun's diameter. Because the sky will be appreciably dimmed by the eclipse phenomenon, the negative 3.9 magnitude Venus might be glimpsed to the upper right of the moon as shown in the illustration here. To view Venus at this time, shield your eyes from the sun with your hand and look to the sun's upper right. Be very cautious that you do not damage your eyes by looking at the sun however.

## Pinhole projector using a box



© timeanddate.com

One of the safest ways to view solar eclipses for those who do not possess the appropriate solar filters is to use the projection technique shown here. The sun is sufficiently bright that even two index cards, one held in the shadow of the other, can produce clearly discernable images of the eclipsed sun so long as the index card closer to the sun has a pinhole in it. A larger pinhole will allow for a brighter image; it will also make for a blurrier image. To maximize the sun's image size, the separation between the two index cards should be as large as possible.

Failing to have index cards, you might consider holding a small section of pegboard over a light surface such as a sidewalk or a wall to project dozens of images of the eclipsed sun. Alternatively, a first-surface mirror with a cardboard cover with a hole in it can be used to direct the sun's rays onto a wall under a shelter. The image can be huge!

Finally, look for naturally occurring pinholes among leaves of trees and bushes that project tiny image of the sun on the ground. Look for these around eclipse time but several days in advance so you can be prepared to observe the eclipsed sun without having to spend time looking for these naturally occurring pinhole during the eclipse.

## PUBLIC OBSERVING SESSION SET FOR PARTIAL SOLAR ECLIPSE

~ by Dave Osenga, Coordinator ~

The Twin City Amateur Astronomers will host an observation of a partial solar eclipse to be held in the parking lot just north of the Sugar Grove Nature Center. The eclipse will start about 4:49 PM on Thursday, October 23, 2014.

We plan to have a number of safe, observing methods available, using telescopes and other instruments, setup by 4:30 PM for those attending to observe this event. There are plans to have some telescopes with solar filters, telescopes with the funnel projection kits that were built for the Venus transit, the H-alpha solar scope, and the Sunspotter. If you would like to come and help us by bringing or manning some equipment, please let Dave Osenga ([DaveOsenga@msn.com](mailto:DaveOsenga@msn.com)) know by October 17<sup>th</sup>, 2014. We can also use some help directing people where to park.

The maximum eclipse occurs at about 5:46 PM with the sun a mere 3 degrees above the west-southwestern horizon. At this time, the moon will cover about 41% of the sun's diameter. We should then be able to see Venus, also. We will plan to have this event unless the sun is not visible due to clouds or rain. If we have to cancel, it will be posted on the [TCAA Web site](#) and a note will be sent out on the [TCAA Yahoo group](#).



## IMAGE OF THE MONTH: MESSIER 27

~ by Tim Stone ~

M27 is one of the most popular objects for casual viewing in the summer sky. Its 8'x5' size and its relatively close distance of 1300LY make it big and bright in our sky, and thus easy to find. It has a unique shape that gives it the common name of "The Dumbbell Nebula."

M27 is a bi-polar planetary nebula, the result of the central star's contraction into a white dwarf. These planetary nebulae are quite common, and derive their name from their resemblance to planets in the small telescopes used in the early days of telescopic exploration of the heavens. Few planetary nebulae are as close as this one, affording us the opportunity to study it in great detail. Photographs such as this one reveal considerable structure that is invisible in the eyepiece.

The clotted, cloudy central gasses are what we see with our eyes through the eyepiece. The polar jets spew out gasses in highly collimated streams. The nebula has several halos, colliding with the interstellar medium and glowing with the energy of the shock. A very faint outer halo, hinted at in this image, is the result of an earlier phase of matter loss.

Professional astronomers have extensively studied this nebula seeking to understand the mechanisms by which white dwarfs shed their atmospheres, as well as the bi-polar nature of that process. Even with these studies, using all manner of ground-based instruments and the Hubble Space Telescope, these processes are still poorly understood. In M27, matter outflow from the central white dwarf has recently shut down, leaving the nebular gasses without the support of further outflow. These gasses are moving at the leisurely rate of 25-30 kilometers per second, far less than the white dwarf's escape velocity. As a result, there is evidence that suggests the gasses are reversing direction and actually accelerating inward. If so, this could explain how multiple halos are formed.

It's interesting to imagine how this nebula would look from other vantage points. If we could go there and look at it from a position 90 degrees to our line of sight, it might very well look like its cousin M57, The Ring Nebula. We look down the barrel of that planetary, with its bi-polar jets tracing spirals around our line of sight. On the other hand, M27 may trace the same kind of spirals, but we see them from the side.

This image combines both Luminosity/Red/Green/Blue filter exposures with narrowband images with Hydrogen Alpha emissions, along with those of Oxygen III and Sulfur II ions. It includes some 12 hours of imaging on six nights beginning in July 2014 and ending in September. Carl Wenning, Bob Finnigan, and Tim Stone acquired the data at the Prairie Sky Observatory using the 20" telescope.

## MINUTES OF THE SEPTEMBER 16<sup>TH</sup> BOARD MEETING

The meeting of the TCAA Board was held at the office of Treasurer Duane Yockey. In attendance were Board members Tom Weiland, Carl Wenning, Robert Finnigan, Tim Stone and Dave Osenga, as well as Secretary Lee Green and Duane. The meeting was called to order at 6:30 p.m. The minutes of the previous meeting were approved.

There were no reports from the President or Secretary. Duane noted a minor mistake in the recent Treasurer's report that has been corrected, and reported that he would be attending the Illinois Dark Sky Star Party.

Tim Stone submitted the current Property Manager report that detailed issues, improvements, equipment and software for each observatory along with general notes.

Turning to old business, Carl has distributed a preliminary operational guide for the telescopes and noted that additional improvements would be forthcoming. Tim reported no progress on disposition of unused equipment. Board members noted no issues concerning the second imaging-only listserv account.

The mini-conference held at the Nature Center on August 23 was very successful. Carl reported 31 attendees including 10 from the TCAA and 14 from CUAS, as well as two from Astro-Physics and one member from the Chicago Astronomical Society.

Tim reported that 'stoop' work needed for drainage was continuing. Carl will follow up with the builders about annual maintenance requirements for PSO. Lee indicated that the web site's content had been recently updated to include the latest version of Carl's contributions to "About the TCAA".

The next Board meeting was set for November 4. We noted that the annual Autumn Celebration at the SGNC would be held on October 18.

Carl passed out a copy of the 5-year plan that was reviewed. It was noted that many elements were things we are doing. It was agreed to review the document periodically.

We discussed a request to hold an observing session after the ISU Family Science Day. With most active members planning to be engaged throughout the day at ISU, the consensus was to preliminarily approve the event, but to contact ISR (ISU?) and the SGNC to see if other, related events were being planned. This will be decided after further discussions.

Carl agreed to lead the preparation of the 2015 POS schedule, and several potential topics were discussed.

Further discussion about the policy for placing personal equipment in the observatories was taken. Bob moved, and Tim seconded a proposal to establish a new standing rule to address, and the proposal was adopted.

### **XII – Placement of Personal Equipment in the Observatories**

All members of the organization are free and welcome to use equipment in the observatories with adequate training. Unless members intend to donate equipment, place it under TCAA's complete control, and if the TCAA Board of Directors accepts the donation, there are no grounds for members to place equipment within either of the club's observatories.

The Board decided not to host a public event for the October 8 lunar eclipse due to the 4:45am time of the event. Dave volunteered to organize an event for the partial solar eclipse on October 23 at 4:49 p.m. Tim agreed to assist.

A field trip to visit the NEO observatory has been delayed. The Board discussed the need to present a slate of candidates for the next Board. The Board also approved the electronic exchange of our newsletter with other astronomy clubs; the idea was warmly received and Carl volunteered to make arrangements.

A speaker for our annual business meeting is always needed and Carl suggested that Bill Kemp from the McLean County Historical Museum would be an excellent candidate. The Board agreed and Carl will open discussions with Bill.

The meeting adjourned at 7:56pm.

Respectfully submitted,  
Lee Green, Secretary

## NCRAL-MSRAL 2016 CONFERENCE PLANNING

Following the Board of Directors meeting on September 16<sup>th</sup>, the conference planning committee met for 20-25 minutes and the following points were made:

**Suggested keynote speaker:** Michael Bakich, Senior Editor, *Astronomy* magazine has expressed interest in serving as keynote speaker, and has suggested an eclipse talk that he previously gave within the MSRAL region. He has asked for a \$500 honorarium plus expenses. The planning team felt that for that cost, it would be best if Mike tailored a new talk to our specific requirements. Mike has probably seen as many total solar eclipses as any human alive; he was asked to give a travelogue in which he describes his many experiences and impressions.

### Possible invited speakers/topics/workshops:

- Carl Wenning will provide technical details about the 2017 eclipse. This will be a modified version of the talk he gave at the Mini Conference on August 23<sup>rd</sup>. He will include detailed information about viewing sites, weather expectations, etc., but NOT the “how to” of observing and photographing.
- Someone to provide a talk about eclipse-viewing including hazards (for both eyes and telescopes), and how to work with the general public to view this phenomenon safely.
- Someone to conduct a make-and-take workshop to create a “[solar funnel viewer](#)” that can be used with any telescope using a 1.25-inch eyepiece. There would have to be a fee (perhaps \$10) for this workshop to cover expenses.
- Someone to speak about solar viewing in general and eclipse photography in particular.
- Someone to talk about the moon and eclipse mechanics, including future solar and lunar eclipses beyond 2017.
- Someone to talk about the club’s observatories.



**Possible Friday or Saturday field trips/activities:** Activities are needed for Friday evening and possibly during the day on Saturday. Suggestions include a make-and-take “[solar funnel viewer](#)” workshop (Tom Weiland has agreed to take the leadership in this area; there will be a workshop fee to cover the cost of materials), the Challenger Learning Center (Carl Wenning will arrange for an open house and a fee-based mission), and joint trip to a telescope mirror-making workshop and Staerke Planetarium in Champaign (that will also include a fee for bus and admission). We will have a bus trip to SGNC to visit PSO and SGO late on Saturday afternoon; this will be part of the program and the registration fee will include the expenses. The SGNC trip will take place after the talks and Section meetings and will be completed in time for people freshen up before the evening banquet.

**Updates to who will be doing what...** Lee Green indicated that he will manage the web-based aspects of the meeting as he did with NCRAL 2010. Carl reported that Dan Miller stated that we could borrow his stands we used for displaying astronomical images during the NCRAL 2010 photo contest. Dave Osenga has agreed to serve as the Master of Ceremonies. Carl has agreed to develop a series of videos to promote the event. A draft one-minute trailer is currently available at [http://www.phy.ilstu.edu/~wenning/NCRAL-MSRAL\\_2016.m4v](http://www.phy.ilstu.edu/~wenning/NCRAL-MSRAL_2016.m4v). Carl has been in contact with Jackie Beucher, secretary of MSRAL, to confirm the joint meeting for 2016.

## OCTOBER FIELD TRIP POSTPONED

TCAAers might not be familiar with the NEO observation program sponsored by NASA that is taking place near Charleston, IL. The program features a number of large automated photographic telescopes operated by Bob Holmes. The largest telescope, a 50-inch behemoth, will soon be operating at the Astronomical Research Institute, and we have been invited to attend a rare open house event.

Originally scheduled for October 11<sup>th</sup>, the event had to be delayed a week at the request of Bob Holmes. The event is now slated for October 18<sup>th</sup> as an afternoon visit due to the need to use the observatory that evening if clear. Unfortunately, the TCAA has a schedule conflict on that day with SGNC's Autumn Celebration running from 10:00 a.m. to 5:00 p.m. So, the best we can hope for is to reschedule the field trip for some time next spring. The field trip will also include an evening visit to Staerke Planetarium.

## E/PO FOR SEPTEMBER 2014

Playing catch up from last month, Dave Osenga reported on the following event that took place on August 2<sup>nd</sup>. "I was invited by some friends to come to their home just southeast of Bloomington and have a star party with them and their family. By the end of the evening, there were about 25 kids, grandkids, and neighbors standing in the street in front of their house looking through my binoculars and telescope. We observed Saturn and the moon a lot. I also did a star tour showing a number of constellations in spite of the moon being at just at first quarter and the sky being a bit hazy. By 10:00, the dew had settled on everything, the kids were ready worn out, and I packed up and went home. Several of the adults and kids thanked me for the fun time for several days afterwards."

Lee Green reported, "We had 24 people present for our POS tonight (August 29<sup>th</sup>), split about evenly between members and guests. Among the members were Bob and Lynn Fearneyhough, John and Joyce Mori, Mark Boulware and Nataya, Paul and Eve Pouliot, Brian Barling, Kevin Brown, Geoff Hughes, Tim Stone, Bob Finnigan and Lee Green. John's presentation *From Earth to the Edge of the Universe* was well received. Less well received were the clouds that obscured the skies and prevented viewing. Lee and Kevin set up Dobsonian telescopes and had a brief look at the crescent moon. Bob and Tim provided a tour of the PSO. We wrapped up and all left before 9:30 p.m." Thanks, Lee, for the detailed report.

Carl Wenning and Tim Stone hosted a visit of 9 students from the ISU Environmental Action Coalition on Sunday, September 21<sup>st</sup>. The group gathered at SGNC for a brief talk about Light Pollution and concluded with a tour of both club observatories. Afterwards, everyone returned to the parking lot for a sky lecture and views through Carl's CPC 11" telescope. Immediately following this event, the club president asked Carl to suggest some dates for a more extensive presentation on the ISU campus dealing with light pollution including non-astronomical impacts. (The follow-up talk has now been scheduled for the evening of October 14<sup>th</sup> on the ISU campus.)

September's POS was held on September 27<sup>th</sup>. Despite the fact that the sky was about 75% overcast, this did not prevent some 65 individuals (including club members) from attending our event. The evening began with Tom Weiland gathering up email addresses of those registering for the telescope drawing, and then delivering a half-hour presentation about globular star clusters. With only fragments of constellations visible through small openings of the clouds, many attendees started with tours of the club observatories and then returned to the parking lot hoping to see some of the clusters that Tom had described earlier. Despite the small openings in the clouds a good observing session was possible. Viewers stayed for about 90 minutes of telescope viewing, and some staying until 9:45 p.m. TCAAers in attendance included also included Carolyn Weiland, Bryce & Mark Heiniger, Geoff Hughes, Tim Stone, Bob & Cheryl Finnigan, Tony Cellini, and perhaps several others who were not recognized by this author under the dark conditions. Tony, Tom, and Carl set out their telescopes for viewing while Bob and Tim managed the open houses at our observatories. Lee set up binoculars on an observing tripod. Tim reported at the end of the session that six youngsters were elated to be able to take luminance channel shots using the 20" PlaneWave telescope in Prairie Sky Observatory. The results of their photographic work can be found on the next page.

*"If the stars should appear one night in a thousand years, how would men believe and adore; and preserve for many generations the remembrance of the city of God which had been shown! But every night come out these envoys of beauty, and light the universe with their admonishing smile."*

— Ralph Waldo Emerson, *Nature and Selected Essays*



Image by Bryce, M57

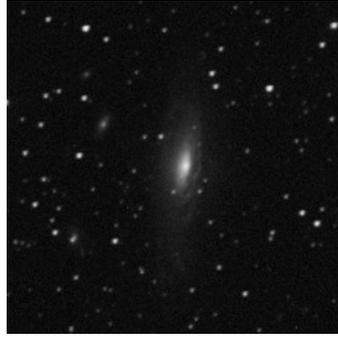


Image by Chase, NGC 7331



Image by Dillon, M31



Image by Gunnar, M15

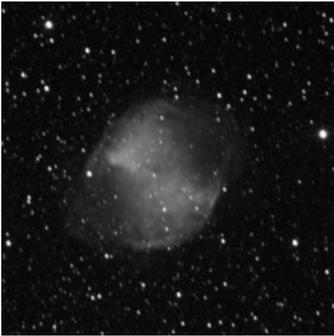


Image by Hannah, M27

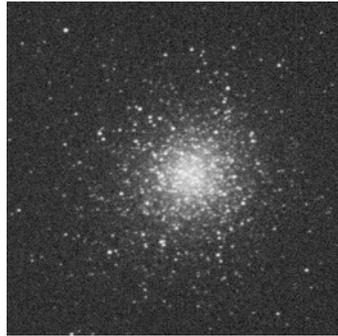


Image by Paige, M13

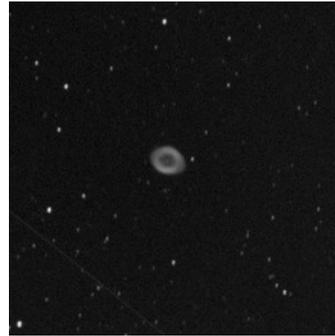


Image by Paige, M57

**Editor:** Six youngsters who visited SGO during the September public observing session took the accompanying 60-second images using the club's 17" telescope. Tim Stone worked with each of the kids to take a single luminance shot of the six different objects shown here (M57 was photographed twice). TCAA members should be impressed by what can be done by even the youngest astronomers with just a bit of training. It's surprising that more adult club members don't take advantage of the opportunity to work with the club's equipment. Note that all images are at the same scale but for the Andromeda Galaxy, M31.

Dave Osenga further reported on events taking place on Friday/Saturday, September 26/27. "My grandkids who live in Nashville, TN, have asked me several times to bring my telescope when we visited, but have been frustrated by weather every time until this past weekend. The waxing crescent Moon, closely followed by Saturn, were visible just above the trees as we watched them from the driveway of my son's home in southern Nashville. We hurriedly went to an open area in a park nearby and setup the telescope and binoculars to get a better view of those objects, then some of the brighter constellations that were visible in spite of the city lights and heavy haze. The next night, we setup just the binoculars to see the moon again and were soon joined by about a dozen neighbors. We then got the telescope setup up quickly enough to catch both the Moon and Saturn before they set. There were several requests to do that again!! The equipment used at both events were my Celestron Nexstar 11" GPS telescope and a pair of Celestron 20X80 binoculars on a modified camera tripod. Many of the people said that this was the first time they had looked through a telescope, let alone seeing Saturn or the Moon through even binoculars. There were comments like, 'This almost looks too real to be real it's so clear!'"

Tim Stone reports on an unusual informal public outreach that occurred on Monday, September 29<sup>th</sup>...

There isn't often unusual activity on the Nature Center grounds, but last night there was some. As I was walking from the SGO to the PSO I heard a human sound coming from the direction of the metal outbuilding Mark Cabaj used. I could see a dim light moving around back there. I generally freak out when this is going on, and lock myself in the observatory until I think whoever it is has left. That's what I did, except when I finally emerged, the activity was still going on, so I put my brave on and walked over there to see what was going on.

It turns out that a group of 8 to 10 guys had brought the 10" Orion dob that one of them had, and as I approached I could tell they were trying to find Andromeda. I introduced myself, and helped them find that, as well as M57 and M13. They were really happy – oohing and aahing. I asked if they'd be interested to see the PSO, and of course they were, so we all trooped in there. I fired up the 11" and we viewed a few more things. They were wide-eyed.

I told them about the club, showed them some of the imagery I was working on, and gave them brochures because they were asking how to join. As they left, each one of them shook my hand and thanked me.

They were the nicest bunch of kids, all locals who grew up together and were interested enough in the sky to drive all the way out there, set up a telescope, and try to see what they could see.

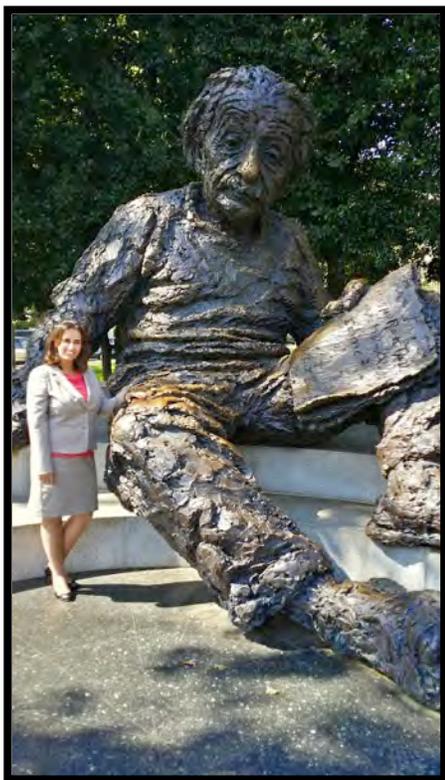
Dave O. hosted a stargazing event for Mrs. Jill Elston's 5<sup>th</sup> graders from the Prairieland Elementary School (and a lot of parents and siblings as well) on Tuesday evening, September 30<sup>th</sup> in an empty lot just north of the school. Approximately 70 were in attendance. They were able to see Saturn for quite a while until it set in the west. Dave then talked about how the telescope works, Saturn, the upcoming lunar and solar eclipses, and some general information about the distances involved in the solar system. He then pointed out several constellations and asterisms using a laser pointer. The laser pointer was the biggest hit for this group!! He then trained the telescope on the first quarter moon. There were a lot of people who saw these objects through a telescope for the first time. Several of the students and parents got in line several times! The session ended about 8:30 as the temperature dropped into the 50's and it was time for the students to head for bed.

## POS 2015 FOR THE RECORD

The TCAA Board of Directors has approved the following schedule and topics for the 2015 public observing sessions at SGNC. All 2015 dates will be the 3<sup>rd</sup> Saturday of each month. The dates, topics, and presenters are as follows:

- March 21 – Venus and Jupiter (Lee Green)
- April 18 – NASA Mission Updates (Dave Osenga)
- May 16 – A Clearing in the Woods (Bob Hoy)
- June 20 – From Satellites to Drones: Evaluating Earth's Biomass (John Werner)
- July 18 – Celestial Motions (Tim Stone)
- August 15 – Buying Binoculars and Telescopes (Carl Wenning)
- September 19 – Shine on Harvest Moon (Tom Weiland)
- October 17 – The Big Bang (Eve Pouliot)

Please note that additional prominent sky objects such as the moon, planets, nebulae, star clusters, and galaxies will be viewed when visible. The beginning time varies depending on the date. A more fully detailed description will appear in the February 2015 issue of *The OBSERVER*. The brochure should be available soon on the TCAA website.



## ASTROBITS

★ As longtime TCAA members know, former member Rebecca Wenning Vieyra is one of this school year's Albert Einstein Distinguished Educators. She works out of the NASA office in Washington, DC, and is having a wonderful time. She writes a weekly blog that anyone would find exciting to read. You are encouraged to do so through Rebecca's [Events Blog website](#).

★ The cost accounting for the August Mini Conference meal is in. The meal (less refreshments which were purchased and paid for separately) was prepared for a material cost of only \$124.35. With 31 in attendance, that amounted to only \$4.01 per person. This was quite cost effective considering the many fine compliments were received on the meal. Two anonymous donors from the TCAA covered the cost of the meal.

★ The doldrums that clouded the sky over central Illinois since April have finally begun to break. Cooler, less humid air moved into our region in the first week of September. Darren Erickson and Tim Stone resumed astronomical imaging on September 6<sup>th</sup> and Bob Finnigan and Carl Wenning resumed work on written instructions for how to work with the 17" and 20" telescopes the following night.

★ Darren Erickson has had some success with photographing the moon lately. He shared some of his recent work on the imaging listserv as of late.

★ Craig Prost has had considerable success recently photographing Messier 45, the Seven Sisters star cluster.

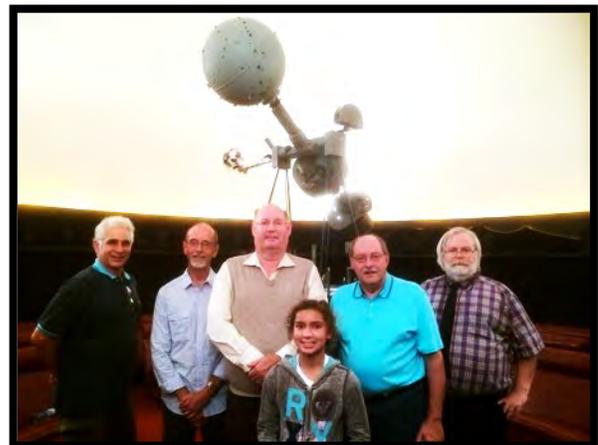
- ★ While we all enjoy the quarterly publication of **REFLECTOR** from the Astronomical League, how many of us read their monthly updates available at <http://www.astroleague.org>? These monthly updates often contain useful information. Amateur sky watchers, you might just want to look up this publication.
- ★ On Saturday, September 13<sup>th</sup> Bob F. and Tim S. spent the afternoon at SGO photographing the sun using the H-alpha telescope. The sky was exceptionally clear and those conditions continued in to the evening when Carl W. returned to work with Bob on the 20" telescope guidelines. Later in the evening Dan Miller and John Werner made a cameo appearance for the first time in many moons. They spent time observing the exceptionally clear and dark night with the 11" Celestron telescope of SGO. Tim continued to image late into the night. Bob and Carl continued work the next night refining the guidelines for operating the 20". Carl now seems to have a basic understanding of how to run the 20" and take images.
- ★ During the pre-dawn hours of September 14<sup>th</sup>, Carl W. observed the passage of the International Space Station (ISS). It reached a magnitude of -3.3 and a maximum elevation of 71°. He used an iOS application called *Sputnik!* to observe the passages of ISS as well as to view Iridium flare satellites that sometimes can reach a magnitude of -8.0.



★ On Saturday, September 13<sup>th</sup>, Tom Willmitch and Carl Wenning were featured in a *Pantagraph* article dealing with the 50<sup>th</sup> anniversary of the ISU Planetarium. The article appeared "above the fold" on page A1. The article is titled "Stellar milestone" and can be found on the *Pantagraph* webpage under the title [Planetarium marking 50 years in starring role](#). Perhaps if ISU gets lucky, some one will notice that the old Spitz A3-P projector is greatly in need of replacement and will donate a new unit.

★ Early to mid September evenings have been graced by a lineup of three bright objects in the southwest after sunset – Saturn, Mars, and the ruddy star Antares. This unusual appearance seems to have gathered considerable attention among some of our viewers.

- ★ Property manager Tim S. has updated *Maxim DL* on the computer in SGO from version 5 to 6. Having installed a number of new drivers, the program would not operate the 17" telescope's camera. Brad W. came to the rescue on Sunday, September 14<sup>th</sup>, when he was able to resolve the problems caused by the update. While Brad worked on the SGO computer, Tim rerouted cables through the Astro-Physics 1600 mount under the 20" PlaneWave telescope.
- ★ Brian Barling showed up at PSO on Sunday evening, September 14<sup>th</sup>, to make observations with the PSO's 11" telescope. He observed a variety of objects and was having a bit of difficulty finding some of the fainter objects due to the telescope not being quite polar aligned. Carl W. showed Brian how to "sync" on nearby bright stars to make finding fainter objects easier. Afterward, Brian found fifteen Messier objects, a dozen NGC objects, and one IC object. He also spent time splitting double stars. He focused in and out while looking at a star to find out if it was a double. According to Brian, "Most of the stars I observed this way end up to be double stars just touching each other. Then I use a higher power eyepiece to note their colors and separation. Most stars you see in the sky are double or triple systems."
- ★ Mr. Bill Kemp, librarian and archivist of the McLean County Museum of History and well-known columnist, has agreed to speak with the membership at our February Annual Meeting. His topic will be "The Night the Stars Fell". It will describe the 1833 Leonid meteor storm and focus on local personalities and events. Bill is most frequently recognized for his Sunday history columns in the *Pantagraph*.
- ★ Consider helping out at SGNC's Autumn Celebration. The TCAA will feature an open house at both SGO and PSO, and distribute information about the club, our public observing sessions, and the upcoming solar eclipse. We also will have telescopes trained on the sun and possibly some bright planets. The event runs from 10 a.m. to 5:00 p.m. Make plans today to attend and help out if you can.
- ★ Five TCAAers attended a celebration of the ISU Planetarium's Golden Anniversary. The event took place on Saturday, September 20<sup>th</sup>. The 7 p.m. program with a look at the half-century history of the ISU Planetarium. This was followed by



a showing of part of the current program *Galaxies* and a brief sky lecture. In attendance were Mark Boulware, Tom Weiland, former planetarium director Carl Wenning, Nataya Boulware, and Dave Osenga. Also appearing in the accompanying image is current planetarium director Tom Willmitch. Carolyn Wenning also as in attendance as was an audience of some 30 individuals, mostly university students, including a number of students from the ISU Astronomy Club.

- ★ Tom Willmitch has reported that during June the ISU Planetarium projector received \$6,000 in much needed maintenance. John Hare, a well-known planetarium specialist from Florida, serviced the half-century-old machine. Most important among the things done were the repair of the annual motion drive and replacement of planet light bulbs with much more intense light emitting diodes. For the first time in over a decade, the planetarium projector can now be used to demonstrate the sun's annual motion along the ecliptic and the motions of the planets. It is hoped that John will be able to return next year to completely rebuild the A3-P star projector's less-than-adequate moon projection system.
- ★ If for no other reason than to welcome the pending arrival of autumn, several TCAA Board members gathered at the rural Lexington home of Cheryl and Bob Finnigan to converse over an informal evening meal. Left to right in the accompanying photo are Bob & Cheryl F., Tim & Diann S., Carolyn & Carl W., and Tom W. Carolyn W. took the photograph.
- ★ In a recent effort by the TCAA leadership to get other Illinois astronomy clubs to exchange electronic newsletters, only one group responded to our solicitation. Unfortunately, that group said that members could individually apply to receive a temporary subscription and then go to their club's website each month to download the PDF. As most will not do this (even the editor won't), this approach is not likely to provide the hope-for benefits. The only club currently sharing newsletters with the TCAA is the Champaign Urbana Astronomical Society (CUAS) for which we are grateful. Our mutual newsletter exchange has created new opportunities for cooperative activities and might have been at least partially responsible for the large CUAS turnout at the August 23<sup>rd</sup> Mini Conference. The CUAS group had 40% greater numbers present than even the TCAA that hosted the event!
- ★ Tim S. has reported recently that the poachers were out at SGNC. They usually can be seen driving their vehicles in the prairie area north of the nature center using spotlights. If so disposed, it's not a bad thing to alert the conservation police in the event of such unusual and unexpected activities. They can be reached at [dnr.lawreception@illinois.gov](mailto:dnr.lawreception@illinois.gov).
- ★ Tom W. has had 500 copies of the 2015 POS brochure printed. These will available for distribution at SGNC's Autumn Celebration on October 18<sup>th</sup> as well as the partial solar eclipse viewing session on October 23<sup>rd</sup> and the club's final POS on October 25<sup>th</sup>. The electronic copy of this brochure will soon be available on the [TCAA website](#).



### PROFILES IN AMATEUR ASTRONOMY: MARK & NATAYA BOULWARE

Mark and Nataya Boulware have become "fixtures" at recent astronomy club events. When asked recently how they got started in amateur astronomy Mark responded, "Approximately 4 years ago we would star gaze back on our farm in west central Illinois where very limited light pollution is present. This was an activity my daughter Nataya and I would do even in the winter season. Originally, it was a game to identify different star arrangements. Nataya interest increased after attending Challenger Learning Center activities here locally and Space Camp in Huntsville, AL. My interest began after being enrolled in the NASA program during the 1960's and so share a common bond."

Participating in club events since March 2013 and joining the TCAA in May 2013, Mark and Nataya observe with a Celestron Power Seek 114EQ telescope. Right now they are focusing their attention on locating and distinguishing different star group. As Mark noted, "...the trip has only just begun." They are looking forward to working on some Astronomical League observing programs, and have the Lunar Observation

Program in their sights.

In addition, they are looking forward to enhancing their knowledge of celestial objects and explore opportunities that might exist to expand their knowledge base. They also want to become more versed in the astronomy field and promote the values the field has to offer. Both are impressed by the extent “technology has allowed the average person to extend observations. Technology has allowed the common person to participate in a level that was not available years ago. Professional astronomers now have the opportunity to exponentially move forward with developing further understanding of different cosmos components.”

According to Mark, Nataya continues to show interest in attending various functions related to astronomy and programs such as Challenger Learning Center and Space Camp all of which allows the younger group opportunities to progress educationally.”

## 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 [Twin City Amateur Astronomers: 1960-2010](#) or in [The OBSERVER archive](#) found on the [TCAA website](#).

**50 Years Ago: October 1964** – The TCAA membership gets its formal introduction to the ISU Planetarium when members are present for a 7:30 p.m. showing on October 1<sup>st</sup>. Ray Wilson gave no formal program, but did demonstrate the capabilities of the new star projector – a Spitz A-3P. The month’s second meeting was held at IWU’s Scherff Hall of Science where David Williams gave a talk about attending “the second national amateur astronomers convention” in Denver.

**25 Years Ago: October 1989** – The subject of the club meeting – held at the ISU Planetarium – was “Mirror Making” presented by member Joe DeHoff. Jim Moncher is now serving as editor of *The OBSERVER of the Twin City Amateur Astronomers*.

**10 Years Ago: October 2004** – Early club member Donna Miller passes away due to complications from diabetes and Crohn’s disease on October 22<sup>nd</sup>. Rebecca Wenning gives several E/PO events during this month. The Sugar Grove Nature Center building has a grand opening on October 16<sup>th</sup> where William Carney and Duane Yockey put on an Astronomy Day type display. That evening a POS is held with 45 members of the general public present.

## 2014 IDSSP Report

~ by Duane Yockey ~

The 2014 Illinois Dark Sky Star Party was held from Thursday, September 25 to Sunday September 28. The attendance was much better than last year when most of the viewing was washed out. It also was a beautiful, warm weekend to be outside! Also attending from the TCAA was Craig Prost. (*Editor: Nataya and Mark Boulware also attended on Saturday.*)

I arrived Thursday afternoon under cloudy skies. The forecast was for clearing later. I set up my CPC 1100, and the skies “cleared” but there was a light overcast until early in the morning, which made viewing subpar.

Friday was a warm mostly sunny day. Tom and Edith Auchter, of the Northwest Suburban Astronomers, gave a fantastic program on the Astro VIP (Volunteer in Parks) Program of the National Park Service. They told of their experiences at Great Basin National Park in Nevada in 2013 and 2014. They gave details of the program, showed pictures of themselves in action and of the scenery and sky views, and talked about their interaction with the public visiting the park. It was a very entertaining and educational program, and the Astro VIP Program would be rewarding for amateur astronomers who have summers available. That evening, the viewing was similar to the night before, which made detailed observing of anything low to the horizon difficult at best.

Saturday was another excellent day weather-wise. I missed the Astronomy Bowl because I took a long bike ride through the park. The afternoon speaker was Dr. John Martin, Prof. of Physics and Astronomy (U of Illinois-Springfield). He spoke about estimating brightness of variable stars and how to report your data to AAVSO. He handed out charts from AAVSO on  $\gamma$  Cassiopeia,  $\beta$  Persei,  $\beta$  Lyrae, R Lyrae,  $\mu$  Cephei,  $\delta$  Cephei, and  $\eta$  Aquilae, and he spent time explaining how to use the charts to estimate brightness based upon the specific comparison stars listed on the charts. He also mentioned the considerable

online information available from the AAVSO to assist amateur astronomers to contribute to “real science”. That evening, the sky was much improved from the previous two evenings. Many of the attendees spent the entire night observing and doing astrophotography. I enjoyed naked eye viewing whenever I gave my telescope a rest.

I had a very enjoyable time at the event again this year. The attendees were fun to be around, the food was excellent, the programs were enlightening, and viewing the wildflowers, deer, butterflies and dragonflies was an added bonus.



Space Telescope. This variable star is located near the edge of our Milky Way Galaxy and served as the basis of the familiar Firefox browser logo.

**Did you know?** The image to the left is star V838 Monocerotis captured by the Hubble Telescope. This variable star is located near the edge of our Milky Way Galaxy and served as the basis of the familiar Firefox browser logo.

**Neptune & Triton:** On September 30<sup>th</sup> Tim Stone was doing a guider calibration test on the 17” and happened to notice that Neptune was nearby. He snagged a quick image of it and was surprised to see both its lovely blue color and its moon Triton!



### CORRECTED TCAA TREASURER’S REPORT – AUGUST 2014

OPERATING FUND BALANCE – July 31, 2014 -			\$ 2,228.01
<u>Income</u>			
	- Geoff Hughes	\$	26.00
<u>Expenses</u>			
	- PayPal (Geoff Hughes)	\$	0.87
OPERATING FUND BALANCE – August 31, 2014 -			\$ 2,253.14
OBSERVATORY FUND BALANCE – July 31, 2014 -			\$ 4,381.02
<u>Income</u>			
	None -	\$	0.00
<u>Expenses</u>			
	None -	\$	0.00
OBSERVATORY FUND BALANCE – August 31, 2014 -			\$ 4,381.65
INSURANCE ESCROW BALANCE – July 31, 2014 -			\$ 5,274.00
<u>Income</u>			
	None -	\$	0.00
<u>Expenses</u>			
	None -	\$	0.00
INSURANCE ESCROW BALANCE – August 31, 2014 -			\$ 5,274.00
TOTAL TCAA FUNDS – August 31, 2014 -			\$ 11,908.79

### TCAA TREASURER'S REPORT – SEPTEMBER 2014

OPERATING FUND BALANCE – August 31, 2014 -	\$ 2,253.14
<u>Income</u>	
- Dues (Lisa Wentzel)	\$ 41.00
- Dues (Satya Marivada)	\$ 41.00
- Dues (Brad Welch)	\$ 41.00
- Dues (Scott Woodrum)	\$ 41.00
- Dues (Craig Prost)	\$ 41.00
- Dues (Kevin Brown)	\$ 41.00
<u>Expenses</u>	
- PayPal (service charges)	\$ 7.20
- Sugar Grove Nature Center (renewal)	\$ 100.00
OPERATING FUND BALANCE – September 30, 2014 -	\$ 2,391.94
<hr/>	
OBSERVATORY FUND BALANCE – August 31, 2014 -	\$ 4,381.65
<u>Income</u>	
None -	\$ 0.00
<u>Expenses</u>	
None -	\$ 0.00
OBSERVATORY FUND BALANCE – September 30, 2014 -	\$ 4,381.65
<hr/>	
INSURANCE ESCROW BALANCE – August 31, 2014 -	\$ 5,274.00
<u>Income</u>	
None -	\$ 0.00
<u>Expenses</u>	
None -	\$ 0.00
INSURANCE ESCROW BALANCE – September 30, 2014 -	\$ 5,274.00
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TOTAL TCAA FUNDS – September 30, 2014 -	\$ 12,047.59

Respectfully submitted,  
L. Duane Yockey, Treasurer