

PRESIDENT'S MESSAGE: 1 SUMMER IN THE TCAA	1
TCAA EVENTS FOR JULY	1
A FOND FAREWELL	1
WHITE NIGHTS & NOCTILUCENT CLOUDS	2
AL OBSERVING PRO- GRAM STANDINGS	3
TCAA BOARD/NCRAL PLANNING MEETINGS SLATED	3
JUNE EDUCATION/ PUBLIC OUTREACH	4
JUNE OBSERVERS' LOG	4
UPCOMING ASTRO- NOMICAL MEETINGS	4
JULY SKY GUIDE	4
2009 IYA SESSIONS @ BPL	5
2009 MEMBERS-ONLY OBSERVING SESSIONS	5
2009 PUBLIC OBSERV- ING SESSIONS	5
CONSTELLATION OF THE MONTH: LIBRA—THE SCALES	6
CHASING NGC4565	6
JULY IN THE IYA— BLACK HOLES	7
SGO CLEAR SKY CLOCK	7
LOWELL OBSERVA- TORY	8
ASTRO IMAGING CONFERENCES	8
TREASURER'S REPORT	9

PRESIDENT'S MESSAGE: SUMMER IN THE TCAA

Often I recall the little joke about how, as we age, time seems to pass faster and that by the time we hit 70 years old, we're having breakfast every 15 minutes. I used to think that was funny, but here we are already, in the second half of 2009 and the Sun is moving South on us.

This month, we continue our busy activity schedule with a Board Meeting on July 14 where we will begin planning for our annual meeting next year and will continue our planning activities for the 2010 NCRAL meeting next April. We will also hold our Classroom for Kids on July 25 at the Bloomington Public Library which will focus on the Perseids Meteor Shower, as well as our monthly Members-Only and Public Observing Sessions on July 18th and July 25th. And next month we will be holding our annual picnic, so watch for upcoming details about that event that you won't want to miss.

Please join me in hoping for clear skies for these events so that we can break our nearly perfect streak of poor weather conditions this year.

TCAA EVENTS FOR JULY

July's members-only observing session will be held on Saturday, July 18th at Sugar Grove Nature Center. Observing begins at dusk. Sunset is at 8:23 p.m. with the end of astronomical twilight occurring at 10:20 p.m. Most observers will probably start viewing at around 9:30 p.m. due to the late sunset and prolonged period of twilight what is common at this time of year. Members, their families, and friends are invited – indeed encouraged – to attend this viewing session. There typically are about a half dozen telescopes available for viewing during this informal event. Lee Green is coordinator. Of course, the sky will need to be clear for this event to be held.

July's Classroom for Kids program at Bloomington Public Library will take place in the Bloomington Public Library's community room on Saturday, July 25th. This free public event will run from 1:30 to 3:00 p.m. and will feature the theme of black holes. There will be a talk and a black hole demonstration. Carl Wenning is tentatively slated to present this program, but others are encouraged to participate and even lead the program if they are qualified.

A FOND FAREWELL

Long-time members Michael Rogers and Jean Memken, along with their children, have moved to Missouri to take new teaching jobs there. Until this year, Michael had been working at Millikin University and Jean at Illinois State University. Most recently both had been active in preparation for the club's hosting of the NCRAL 2010 conference, Jean as registrar and Michael as marketing agent. No doubt their valiant contributions will be missed.

Until recently, both had been active members in the TCAA. Shortly after Weldon Schuette passed away in 1986, Michael and Jean took over publication of this newsletter, *The Observer*. So well did they do that they were recognized for their efforts when they received the Astronomical League's inaugural Mabel Sterns Award. In subsequent years, the couple won the TCAA's Eugene and Donna Miller Family Award, and Michael membership in the TCAA's G. Weldon Schuette Society of Outstanding Amateur Astronomers. Both Jean and Mike had served the club in capacity of president. For many years Jean coordinated the club's Annual Meeting banquet at ISU.

Over the past few years one could always count on seeing Michael and family members observing with their 20-inch aperture telescope. They have moved to Maryville, Missouri, where both have taken teaching jobs – ostensibly at Northwest Missouri State University. They will be missed.

Thanks, Michael and Jean, for all you did on behalf of the TCAA. We all hope that you will come back to visit from time to time – especially your son Jonathan who continues as an ISU physics major.

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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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

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WHITE NIGHTS & NOCTILUCENT CLOUDS

~based in part on several stories from the Internet~

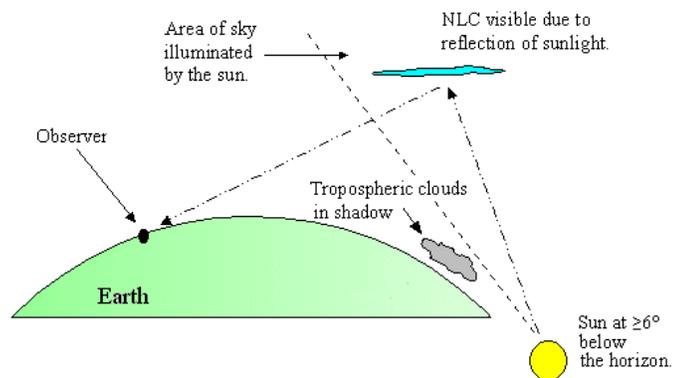
On their June 14th-27th cruise on the Baltic aboard the *Emerald Princess*, Carl, Carolyn, and Teresa Wenning (as well as Carl's mother Agnes) visited the three Scandinavian countries, as well as Finland, Russia, Poland, and Estonia. During the middle of the night they frequently observed "white nights" as well as noctilucent clouds. Traveling as far north as they did, the sun never set far enough below the horizon to make the sky completely dark at night. Night therefore was a short but continuous twilight. Hovering high above the horizon some evenings were noctilucent ("night-shining") clouds that Carl was able to observe from the deck of the ship.



Above: Noctilucent clouds see from 57° north latitude on June 19th

According to Internet resources, noctilucent clouds hover on the edge of space at an altitude of 80 to 100 kilometers. They are thin, wispy clouds that glow electric blue. Some scientists think they're seeded by space dust. Others suspect they're a telltale sign of global warming because there is no record of their appearance until 1885 when we moved into the industrial age. A century ago the clouds were confined to latitudes above 50°, and you had to go to places like Scandinavia, Russia and Britain to see them. In recent years they have been sighted as far south as Utah, Colorado, and possibly Virginia.

Noctilucent clouds (NLC) can be viewed when the sun is more than 6° below the horizon, but not more than 16° below the horizon. The geometry shown in the image below allows for the sun to illuminate noctilucent clouds when tropospheric clouds are in the Earth's shadow.



Above: The optimum viewing geometry for noctilucent clouds. Sunlight scattered by tiny ice crystals is what gives the clouds their characteristic blue color.

Observing tips: Look west 30 to 60 minutes after sunset when the Sun has dipped 6° to 16° below the horizon. If you see luminous blue-white tendrils spreading across the sky, you've probably spotted a noctilucent cloud. Although noctilucent clouds appear most often at arctic latitudes, they have been sighted in recent years as far south as Colorado, Utah and Virginia. NLCs are seasonal, appearing most often in late spring and summer. In the northern hemisphere, the best time to look would be between mid-May and the end of August.

AL OBSERVING PROGRAM STANDINGS

Below is a listing of the status of observers pursuing AL observing programs reported as of June 30th. If you would like to have your information included in next month's listing, be certain to forward your observing totals to Carl Wenning before the end of the month.

AL Award	Brian Barling	William Carney	Lee Green	David Hahn	Dave Osenga	Carl J. Wenning	Duane Yockey
S. Skies Binocular 50						50*	50*
S. Sky Telescope 50						(52)	(50)
Telescope Messier Prov70/Hon110	(110)	(110)	103*	101*	72*	(110)	31
Binocular Messier 50		(100)	42			78*	16
Deep Sky Binocular 60		33					
Herschel 400 Club	249	400*	400*			(400)	
Urban Club 100		(100)	95			100*	
Comet Club Silver12/Gold30		31*				4	
Double Star Club 100	17		0			100*	
Planetary Neb Club Bas60/Adv110		1				59	
Globular Cluster Club 50						56*	
Lunar Club 100	(100)	(100)	93		88	100*	
Lunar II Club 100		6					
Asteroid Club Reg25/Gold100		(46)					
Outreach Basic10/ Stellar60/ Master160			60 ^{h+} *, **			31 ^h -06* 26 ^h -07 44 ^h -08** 20 ^h -09	

* Program or first award level now complete. ** Second award level now complete. Both * and ** will receive AL recognition (certificate and pin) at the next general membership meeting if available. Numbers in parentheses (#) indicate that the award has been both earned and received.

TCAA BOARD/NCRAL PLANNING MEETINGS SLATED

The TCAA Board of Directors will have its semi-monthly meeting on July 12th starting at 6:30 p.m. Members are invited to attend this meeting which will take place at the offices of Lewis, Yockey & Brown in downtown Bloomington. Immediately following the Board meeting, the NCRAL planning committee will meet.

The Board will review past events and plans for upcoming events. They will also discuss a possible amendment to the club's Bylaws that could be put to a vote at the Annual Meeting of the TCAA during February 2010. The NCRAL planning committee will look at early drafts of a video presentation being assembled by Lee Green and a PowerPoint presentation being assembled by Carl Wenning. Detailed reports will be made by each of the planning committee members, including status of the work included in the official time line, as well as estimates of anticipated costs.

JULY SKY GUIDE

04	The Moon passes 0.5° north of Antares, 5 A.M.	
07	Penumbral lunar eclipse, 4 A.M.	
10	The Moon passes 4° north of Jupiter, 5 P.M.	
	The Moon passes 3° north of Neptune, 5 P.M.	
13	The Moon passes 6° north of Uranus, 7 A.M.	
	Jupiter passes 0.6° south of Neptune, 2 P.M.	
	Mercury is in superior conjunction, 9 P.M.	
14	Venus passes 3° north of Aldebaran, 1 P.M.	
18	The Moon passes 5° north of Mars, 7 A.M.	
19	The Moon passes 6° north of Venus, midnight	
21	Total solar eclipse, 10 P.M.	
25	The Moon passes 7° south of Saturn, 10 A.M.	
27	Mars passes 5° north of Aldebaran, 6 A.M.	
31	The Moon passes 0.5° north of Antares, 11 A.M.	

JUNE EDUCATION/PUBLIC OUTREACH

At June's *Classroom for Kids* program at BPL on the 20th, Carl Wenning presented the program "Star Clusters" to a small but interested audience consisting of three adults and three children. Carl engaged the group in constructing a graph of weights and heights for humans, and drawing implications from that graph. He used this example to explain how astronomers learn about the color, temperature, masses, and ages of star clusters. He also compared small fuel-efficient compact cars and large inefficient SUVs (e.g., Prius vs. Hummer) to characterize how fuel supplies and consumption rates can be used to determine stellar life spans.

The June Public Sky Viewing Session also was held on the 20th at Sugar Grove Nature Center. The event for the evening coincided with the National Wildlife Federation's Great Backyard Campout hosted by SGNC. Some fifty campers were in attendance. About an hour before the program the sky clouded over and this was followed by a ominous looking and fierce thunderstorm. The program began at 9 p.m. inside the Nature Center with Carl giving a talk about our amazing moon and its carters. His 45-minute talk "Our Amazing Moon" awed the 30-member audi-

JUNE OBSERVERS' LOG

The month of June started cool and clear, but with a near full moon. Dave Osenga took advantage of the near ideal observing conditions on June 4th to make lunar observations for his AL Lunar Club award. He set up a telescope on his back deck for two hours and identified and observed 88 of the 100 lunar targets. He has also gotten some time in on observing Messier objects from time to time over the past month...

The sky was somewhat hazy and overcast to the north on June 6th, but Carl Wenning was able to view the occultation of the star Antares by the moon. Though viewed through a confluence of several jet contrails and at an altitude of only about 10 degrees, the disappearance of Antares was clearly observed at the a razor think dark leading edge of the moon at 9:13:29 p.m. The moon was a waxing gibbous at 99.5% full phase. The disappearance was instantaneous as would be expected for a point source of starlight. Carl viewed from the playground of Colleen Hoose Elementary School in Normal because this site provided good access to the southeastern horizon. Carl returned home and attempted to observe the emergence of Antares from the now full moon, but a passing cloudbank disrupted this observation. He re-observed Antares at 10:32 p.m., about 16 minutes after emerging from behind the moon.

Sharon MacDonald observed the occultation of Antares from her home in Carlock. She reported, "I was actually having a good deal of success with my binoculars from my front yard, the moon beautifully framed by my neighbor's trees, and all visible through translucent clouds. I followed Antares right up until the last very few seconds when Antares disappeared, but the disappearance may have been cause by narrow line of passing clouds. When the clouds passed, Antares was gone. Since I was already viewing through clouds, it was sorta difficult to tell whether the moon or the new layer of narrow clouds caused the disappearance. That's what I get for being too lazy to haul out the scope."

The MOOS on June 20th was cancelled due to an overcast sky following a day of clear. Clouds started moving in around 3 p.m., though the morning sky had revealed a beautiful crescent moon adjacent to Venus and Mars according to Carl Wenning.

UPCOMING ASTRONOMICAL MEETINGS

For the record, here at the dates of regional astronomical meetings for amateurs that TCAAers might wish to attend. TCAAers in charge of outreach for the 2010 NCRAL meeting might want to get on the agenda of some of the meetings.

- ☆ Prairie Skies Star Party: September 17-20, Bourbonnais, IL, see <http://www.prairieskies.org/>
- ☆ Illinois Dark Sky Star Party: October 15-18, Jim Edgar Panther Creek State Park, see <http://www.sas-sky.org>

2009 IYA SESSIONS @ BPL

The TCAA's saga into astronomy in recognition of the International Year of Astronomy continues with the *Classroom for Kids* program. Family astronomy workshops for those aged 10 years and above will take place from 1:30 to 3:00 p.m. on the 4th Saturday of each month at Bloomington Public Library throughout 2009. The tentative dates and topics for the remainder of the year are as follows:

Date	Topic	Possible Activity	Coordinator(s)
August 22	Rocks and Ice in our Solar System	Making a comet	
September 26	Planets and Moons	Ooblick activity	
October 24	What is the Fate of the Universe?	Study an explosion	
November 28?	The Lives of Stars	Light and spectra	
December 26?	Discovering Other Worlds		

These events are all intended to include hands-on, minds-on activities. Coordinators are needed for the majority of these events. Please inform Carl Wenning at wenning@phy.ilstu.edu if you are willing to coordinate one or more of these events.

2009 MEMBERS-ONLY OBSERVING SESSIONS

The club's members-only observing sessions are slated one week earlier than the club's public sky viewing sessions. This ensures club members with a dark night, and a public sky viewing session with typically a crescent moon. Member-only observing sessions begin as soon as the sky grows dark enough for viewing, usually one hour after sunset. Coordinators are needed for each session to ensure that at least one telescope is available for viewing with TCAAers not in possession of their own telescopes.

Date	Coordinator(s)	Date	Coordinator(s)
July 18	Lee Green	October 10	John Werner
August 15		November 14	Lee Green
September 12	Carl Wenning	December 19 (Saturnalia)	Carl Wenning

2009 PUBLIC OBSERVING SESSIONS

Throughout 2009 – the 400th anniversary of the invention of the telescope – we acknowledge the astronomical work of Galileo in our Public Observing Sessions. One, and preferably two, coordinators are needed for all Saturday events as illustrated in the table below. Don't hesitate to volunteer to lead a public sky viewing session if you are qualified to do so.

Date	Times	Sunset	Topic	Coordinator(s)
July 25	9:00 PM ~ 11:00 PM	8:18 PM CDT	Galileo's Telescope	Dave Osenga
August 22	8:30 PM ~ 10:30 PM	7:43 PM CDT	Jupiter and Neptune	Dave Osenga Carl Wenning
September 19	7:30 PM ~ 9:30 PM	6:58 PM CDT	Exploring the Milky Way	John Werner Dave Osenga
October 17	7:00 PM ~ 9:00 PM	6:13 PM CDT	The Pleiades Star Cluster	John Werner Dave Osenga

Additional prominent sky objects such as planets, nebulae, star clusters, and galaxies will be viewed when visible. *When uncertain if an observing session will be held, call one of the following cell phone numbers after 6:00 pm: 309-830-4085 (Carl) or 309-824-2804 (Lee).* The 2009 public brochure for these sessions can be downloaded from the club's web site: www.tcaa.us.

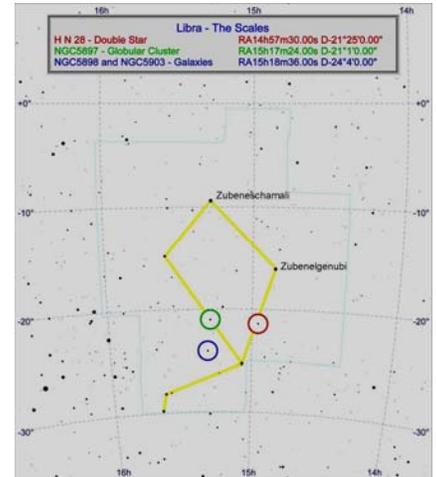
CONSTELLATION OF THE MONTH: LIBRA—THE SCALES

Libra is located in the summer sky just below the celestial equator between Virgo and Scorpius. As one of the constellations of the zodiac, the Sun passes through Libra from October 31 to November 23. Libra is the only zodiac constellation that is not a creature.

Libra was not always considered to be a separate constellation. The two brightest stars, Zubeneshamali and Zubenelgenubi, are the Northern and Southern Claws of the scorpion Scorpius. However, the constellation is seen to be a balance and is often associated with the Goddess of Justice, neighboring Virgo.

Astronomically, Libra is the 29th largest constellation covering 538 square degrees and is the 40th brightest. Libra is at opposition on May 12.

Among the deep space objects in Libra are a number galaxies because of its position away from the Milky Way's obstructions. Galaxies NGC5898 and NGC5903 are two close, fairly bright spiral galaxies. NGC5897 is a loose globular cluster. The double star H N 28 is a beautiful red and orange pair.



CHASING NGC4565

NGC4565 in Coma Berenices, a large edge-on spiral galaxy with a prominent dust lane, is one of the many spectacular objects listed in the Herschel 400 observing club. When you first see it, the contrast between the central core and the dust lane is quite evident. So this galaxy was my target of first choice in my quest to take some images of galaxies.

The first major problem I had was framing the image. Since NGC4565 is so large, 18 arc minutes across, it was a tight fit to the size my SBIG ST10 camera. By orienting the target diagonally across the CCD chip, I was able to capture most of the object. Fortunately, there was a good guide star available which allowed me to track well.

The next problem was encountered during my imaging session. Since this was my first attempt at imaging galaxies, I didn't know how long to expose the image. I started with 5 minute filtered exposures to get my color data while the object was high in the sky. The signal levels came in quite low. I extended the exposure time for the (unfiltered) luminance channel, first to 10 minutes, then to 20. Even that was way too short since the signal level only rose to 20% of the camera capacity. Next time I'll take much longer exposures. This LRGB image had exposure times of 70, 20, 20, 20 minutes.

I was able to complete in one night the data collection for the LRGB image along with a few dark fields of the appropriate exposure time and a set of flat field images. Since the signal levels were too low, that ensured that the image would be of lower quality and rather noisy. But here it is, submitted for your approval.



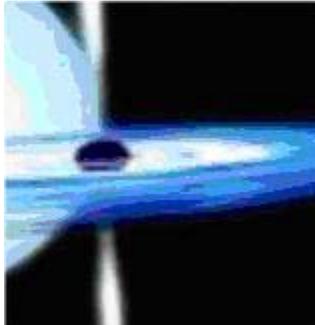
JULY IN THE IYA—BLACK HOLES

Before the bright lights of cities outshone the wonders of the night sky, the Milky Way was a common sight for most of the world. Legends from various cultures described this region as a road, a river, or a flock of birds. The Greeks and Romans thought the haze looked like milk, which is where the name Milky Way comes from. When Galileo pointed his small telescope towards this band of light, he didn't see milk or birds. "The Milky Way is nothing else but a mass of innumerable stars planted together in clusters." We know now that the Milky Way Galaxy is indeed a collection of gas, dust and billions of stars, including our Sun.

But there is more to the galaxy than stars, gas, and dust. There are also black holes. In the dense center of the Milky Way, there is good evidence that a supermassive black hole exists with over 2 million times the mass of our Sun. Scientists have good evidence that most large galaxies contain giant black holes in their centers. But we can't point a telescope at a black hole and see it directly. We only see their effect on the things around them, like stars and gas. In fact, the mass of a black hole is determined using physics developed by Galileo's contemporary, Johannes Kepler.

There is a smaller, more common type of black hole with only a few times the mass of our Sun. These are the remains of giant stars that end their lives in a supernova explosion. If there is enough mass left at the core of the star after the explosion, it collapses to a point, creating a region of gravity so strong that not even light can escape.

This makes finding black holes a little bit tricky. But scientists love a challenge. As it turns out, when material falls into a black hole, it gets heated up to millions of degrees releasing high energy radiation like x-rays before it is lost forever. So searching for sources of x-rays is another way to detect black holes, and this is how NASA's Chandra Observatory studies the black hole at the center of our galaxy. Scientists are also using x-rays to research the behavior of black holes with the Suzaku and XMMNewton space observatories. The Hubble Space Telescope has even discovered medium sized black holes. With future generations of telescopes, like the James Webb Space Telescope, astronomers will be able to go deeper in their understanding of black holes and the role of the black holes in galaxy evolution.



SGO CLEAR SKY CLOCK

Thanks to an anonymous donor, the SGO's Clear Sky Clock is being sponsored once again by the TCAA. The weather-related web site provides detailed hourly forecasts of weather phenomena for the Sugar Grove Observatory and sports the new TCAA logo. As a result of communications between the donor and the web site owner, Attila Danko, the default location of SGO on the forecast maps has been shifted to the center of the field. Previously, the SGO was shown at the bottom of the default map and approaching weather phenomena from the southwest were missing.

With this renewed sponsorship, which will last approximately one year, additional features will be available through the Clear Sky Clock. Observers should want to take a look at this valuable site prior to an observing session. Observing session coordinators often use it to determine whether or not to cancel a given session. Check out the SGO's Clear Sky Clock by accessing the club's web site (www.tcaa.us/Conditions.aspx) or directly by accessing <http://www.cleardarksky.com/c/SGOILkey.html>.

For detailed observing information visit Carl Wenning's observing page at the following URL: http://www.phy.ilstu.edu/~wenning/observing_page.htm.

LOWELL OBSERVATORY

I had a chance recently to visit the Lowell Observatory. This facility is located on a hill overlooking Flagstaff Az. The observatory was established in 1894 by Percival Lowell. The facility is a private, accredited facility with a small staff of dedicated astronomers. The observatory is open to the public and has an extensive Visitors Center that includes some excellent educational exhibits. In support of the observatory, Flagstaff has adopted some of the strictest lighting ordinances in the country.

The tour started with one of the volunteers showing us the Sun through a small telescope. Next we visited Percival Lowell's mausoleum in route to the Clark telescope, a 24" refractor. The dome was constructed from the Ponderosa Pine that is prevalent in the area.

We next followed the Walk of the Planets which put the Solar System on a scale of 1 inch = 1 million mile. At the distance of each planet, an informative sign was placed to describe the planet. All the terrestrial planets were very near the start of the path and the gas giants were much more distant. This provided a wonderful scale by which to judge the size of the Solar System. By the time we got to Pluto, we had walked about 250 yards and the walk terminated at the building that housed the Astrograph. That is the instrument used by Clyde Tombaugh when he discovered Pluto.

The final stop in the tour was at the Slipher Rotunda Building which housed many of the instruments used in the many discoveries made at the observatory. These include the spectrometer used by Vesto Slipher when he measured the radial velocity of spiral galaxies and copies of the plates of Tombaugh's discovery of Pluto.

There are five telescopes still in use at the observatory, although the majority of the scientific work occurs at Anderson Mesa, some 12 miles outside town. The newest observatory, the Discovery channel Telescope, a 4.2 meter telescope, is current under construction there.

For more information about the observatory, please visit the web site at www.lowell.edu.

ASTRO IMAGING CONFERENCE

By Lee Green

I attended the third annual Midwest Astro-Imaging Conference that was held June 26-27 at the Hoffman Estates campus of NIU. The conference was hosted by AstroPhoto Insight, a monthly newsletter published by Professional Insight. About 50 people attended the conference.

The MWAIC featured a variety of speakers who addressed many issues of relevance to today's astrophotographers. Using DSLRs for astro-imaging was a big topic of discussion, from choosing a camera and modifying filters to focusing and post-processing.

How-to talks covered the spectrum of astrophoto techniques and included in-depth and detailed discussions on choosing a camera, getting started, focusing, autoguiding, calibrating, post-processing and automation. In addition there were many excellent examples of high-quality photographs by speakers and by attendees. One notable standout was Alan Friedman who showed us many of his outstanding photos of the Solar System including a gallery of solar prominences.

Several vendors were included in the speaker including Adobe engineer Alan Ericson who spoke about the improvements planned for the next version of Photoshop, and Warren Keller of IP4AP.com who spoke about the many techniques used to enhance photos. Other vendors included Fishcamp Engineering, Canon, AstroTrac, DC-3 Dreams, Light-Buckets and QSI. Sponsors also included OPT, Orion Telescopes and 20/20 Telescopes.

I thought the event was well run, informative and relevant to those trying to take pictures of the objects in the sky. Please visit www.mwaic.com for more information.

TCAA Treasurer's Report – June 2009

OPERATING FUND BALANCE – May 31, 2009 - \$ 2,941.35 *

Income

Lucien Ionescu (dues) - \$ 41.00
Mark Cabaj (dues) - \$ 100.00
Chris Franklin (dues) - \$ 40.00
Jim Ryan (dues) - \$ 40.00
Josh Lindsey (student dues) - \$ 25.00
Donation (towards sky clock) - \$ 48.60

Expenses

LYB Inc. (June Observer) - \$ 25.04
Attila Danko (sky clock) - \$ 50.00
Astronomical League (dues) - \$ 180.00

OPERATING FUND BALANCE – June 30, 2009 - \$ 2,980.91

OBSERVATORY FUND BALANCE – May 31, 2009 - \$ 2,183.60

Income

Josh Lindsey (keyholder fee) - \$ 5.00
Chris Franklin (keyholder fee) - \$ 5.00

Expenses

None - \$ 0.00

OBSERVATORY FUND BALANCE – June 30, 2009 - \$ 2,193.60

TOTAL TCAA FUNDS – June 30, 2009 - \$ 5,174.51

Respectfully submitted,
L. Duane Yockey, Treasurer

Sugar Grove Observatory

Listing of Official Keyholders (Paid \$10 deposit/\$5 renewal)

Duane Yockey (renewed through 2009)
Michael Rogers (renewed through 2008)
William Carney (renewed through 2009)
Carl Wenning (renewed through 2009)
Brian Barling (renewed through 2009)
Christopher Franklin (renewed through 2009)

David Osenga (renewed through 2009)
Josh Lindsey (renewed through 2009)
Andrew Morrison (February 2008)
Dan Miller (renewed through 2009)
Lee Green (renewed through 2009)

UPCOMING EVENTS

July 12—TCAA Board/NCRAL planning committees meeting, 6 P.M., LYB, Inc.

July 18—Members-only Observing Session, dusk, SGNC

July 25—Classroom for Kids “Black Holes,” 1:30-3:30, BPL

MISSING OUT ON ACTIVITIES OR 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.

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

Visit the Twin City Amateur Astronomers
on the web at
www.twincityamateurastronomers.org/