

PRESIDENT'S MESSAGE: UPCOMING EVENTS	1
MINUTES OF THE TCAA BOARD MEETING	1
MINUTES OF THE 2010 NCRAL PLANNING MEETING	2
REPORT FROM IDSSP 2008	3
STARGEEZER MOON WATCHING	3
SEPTEMBER OBSERVERS' LOG	4
OCTOBER SKY GUIDE	4
UPCOMING MEMBERS-ONLY OBSERVING SESSIONS	5
AL OBSERVING PROGRAM STANDINGS	5
SEPTEMBER E/PO ACTIVITIES	6
OCTOBER E/PO EVENTS	6
OBSERVING PROJECT: FINDING THE MASS OF JUPITER	7
HISTORY OF THE TCAA	8
CONSTELLATION OF THE MONTH: PISCES AUSTRINUS—THE SOUTHERN FISH	8
TREASURER'S REPORT	9
OCTOBER SKY MAP	

PRESIDENT'S MESSAGE: UPCOMING EVENTS

On October 18th, the SGNC will be holding their Autumn Celebration from 10AM to 5PM. This annual event will be bigger than ever and will feature lots of music and fun activities for the whole family. Please visit www.sugargrovenaturecenter.org for more information. During the day, the TCAA will be hosting an open house at the Sugar Grove Observatory as one of the many activities. We will have the observatory open and will likely set up some solar telescopes for daylight observing. The event is often among our largest public outreach events and all members are invited to attend and assist.

On Tuesday, Oct 21, we will be holding our third monthly installment of Conversations with Amateur Astronomers at the Bloomington Public Library. This month we feature the presentation "The Search for Another Earth" which looks at NASA's Kepler mission and we will discuss the techniques we use to detect extra-solar planets. The event will be held from 7pm to 9pm on the third Tuesday of each month through December. Please visit http://www.bloomingtonlibrary.org/see_&_do/programs/conversations_with_amateur_astronomers/ for more information.

I know we all have lots of choices to make about how we spend our limited free time, so I hope you will choose to join us at one of our many fun events.

MINUTES OF THE TCAA BOARD MEETING

The TCAA Board of Directors assembled for their semi-monthly meeting on Monday, September 29th at the offices of LYB, Inc., in downtown Bloomington. In attendance were President Lee Green, Board members Dan Miller, Terry Lee Wright, and Dave Osenga, Treasurer Duane Yockey, and Secretary Carl Wenning. Board member William Carney was unable to arrive until 7:30 p.m. Lee called the group together at 6:36 p.m. The following matters were addressed:

Lee reviewed past and upcoming education/public outreach events that included adult education, the SGNC camp-out viewing session, BPL *Conversations with Amateur Astronomers*, and others. Carl noted that he will be holding a viewing session for the adult education course members from 7 to 8 or 8:30 p.m. at SGNC on October 2nd if the sky is clear. Dan noted that he will be giving a presentation for the Millennium Girls program at State Farm on October 3rd. The group was also reminded about the 25th anniversary DAAC Jamboree at Friends Creek Regional Park, also on October 3rd. Carl pointed out that he will be doing a St. Patrick's Youth Group observing session near Mackinaw on October 11th.

A brief discussion then ensued about the club's participation in the SGNC's *Autumn Celebration* on October 18th. Dan will bring the club display and set it up just outside the observatory door. Several others of the members present agreed to assist with an observatory open house, showing the Sun and Venus. *Autumn Celebration* runs from 10 a.m. to 5 p.m., and the members should attempt to be on site for opening up the display by approximately 9:30 a.m.

Dates were then tentatively set for the next two Saturday members-only observing sessions: November 22nd (at which the focus will be upon eyepiece filters such as Ha, OIII, and various colors), and December 20th (during which we will

hold the traditional *Saturnalia* holiday party). Carl will have to clear the dates with Angela at SGNC before they can be finalized.

Discussion about repairs to the Sugar Grove Observatory were tabled until William was able to arrive. A brief discussion ensued about who within the TCAA was the official point of contact for SGNC. Carl noted that he was appointed to this position and, as such, has the only SGNC key in the club's possession.

Recent purchases were reviewed in light of a recent anonymous \$1,500 targeted donation on behalf of the club. The money was spent at the direction of the donor to purchase a new computer for SGO and a new video projector for use with TCAA programs. It was noted that William had recently purchased a new laptop computer for approximately \$500, and that Lee had purchased an XGA video projector for \$1,478.84. He requested only \$1,000 in reimbursement effectively donating \$478.84 to the club in doing so. Duane will write Lee an official receipt from the club for making the 501(c)3 donation.

Duane handed out a club inventory sheet, and noted that it needs to be updated with information about the recent purchases, and should include other acquisitions as well such as telescopes, books, eyepieces (2), white light solar filter, etc. William, as property manager for the TCAA, will be asked to complete the record for tax purposes. Lee will eventually add the property list to the new TCAA website which is being developed at www.tcaa.us.

William arrived at this time and the SGO repairs were then addressed. It was agreed that the SGO needs to be resided. Carl, as point of contact with SGNC, will speak with Angela Smith about the club's intention to cover the obser-

(Continued on page 2)

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.

TCAA OFFICERS

President Lee Green
309-454-7349
lee@starlightsoftware.com

VP/Publicity Dan Miller
309-473-3465

Secretary/Historian Carl Wenning
309-454-4164
cjwennin@ilstu.edu

Treasurer/ALCOR Duane Yockey
309-452-3936
duane@lybinc.com

Web Michael Rogers
309-825-6454
mprogers@mac.com

3rd Director William Carney
willcarney@aol.com

4th Director Dave Osenga
DaveOsenga@msn.com

5th Director Terry Lee Wright
309-963-4135

Property Manager

William Carney 309-829-7748
willcarney@aol.com

The Observer Editor

Erin Estabrook
314 Covey Court
Normal, IL 61761
309-454-6894
erin@lybinc.com

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

MINUTES OF THE TCAA BOARD MEETING (CONT.)

(Continued from page 1)

vatory next summer using brown metal siding. At that time the dome will also be repainted in preparation for the 2010 NCRAL meeting. Dave will check into the cost of the siding materials.

William then pointed out that, while he has had some recent observing successes with the SGO's 12-inch telescope, that the GPS no longer appears to be working. Cost of repair will be prohibitive now that Meade is no longer providing warranty service. Dan suggested the use of *TPoint*, a computer program that will allow bypass of the LX200 hand controller as well as the GPS. Dan and William will work together to get the telescope fully operational once again.

A brief discussion was then held about club logos. Terry Lee showed about 12 variations of earlier possibilities, but no one seemed to be happy with any of the proposals. Lee has been unable to obtain updates from his graphic artist. Carl noted that the Board should review other logos and see what makes for a most desir-

able logo. He will resend a file full of logos that he had disseminated earlier for inspection. The discussion about logos was tabled until the December meeting of the Board.

Discussion finally turned to February's Annual Meeting. Carl suggested that an astronomer from Illinois Wesleyan be contacted about providing a talk. An honorarium of \$75 was approved. Carl will contact this individual about speaking with the club at a yet to be determined mid February Saturday. It is expected that the annual meeting will be held at ISU's Turner Hall with catering to be provided by the ISU Catering Club under the guidance of TCAA member Jean Memken. The event must take place on a "non-basketball" night.

The meeting drew to a close at 8:02 p.m. with Lee reminding those assembled that the next meeting of the Board will be held on Tuesday, November 25th, of Thanksgiving week.

Respectfully submitted,
Carl J. Wenning, Secretary

MINUTES OF THE 2010 NCRAL PLANNING MEETING

Another planning meeting for the 2010 NCRAL meeting was held immediately following the Board meeting on September 29th. In attendance were Lee Green, Duane Yockey, Carl Wenning, Dan Miller, Terry Lee Wright, Dave Osenga, William Carney, and Michael Rogers. Jean Memken was unable to be present for the meeting, but had previously submitted here work outline to Carl that he later shared with the group.

Mike started off the discussion by reviewing publicity. He indicate his duties in sequence, and gave deadline dates for having the work accomplished. He will, like the others, send his information to Carl who will develop a master list of activities.

Duane subsequently reported that he has investigated the five conference centers that were selected by the committee for the 2010 NCRAL conference. These were Eastland Suites, The Chateau, Parke Hotel & Conference Center, Holiday Inn, and The Doubletree. All were available for the April 16-17, 2010 dates with the exception of The Doubletree. Based upon information to date, we are leaning towards either the Holiday Inn or The Chateau. Dan suggested that we plan to ask for formal proposals through the McLean Co. Convention and Visitors Bureau (as we might get more competitive pricing) and make our selection at our next meeting.

Dan summarized a number of field trip possibilities keying in on Friday night trips around town (SGO, CLC, planetarium, movie theater), and to Peoria (new planetarium), and Champaign (Parkland Staerkel Planetarium and UIUC's 1890s campus observatory). He noted that he could also arrange family activities for Saturday working through the BNCVB to take trips to Funk's Mineral Museum, the David Davis Mansion, and the Children's Discovery Museum).

William talked briefly about vendor participation. His tasks include identifying and getting regional vendors to attend, and contributing door prizes. Terry Lee continues working on logo ideas, and noted his intention to provide marketable materials including the TCAA logo once it is decided upon. Dave noted his willingness to work with database management as needed.

Carl gave a quick outline dealing with identifying speaker who can provide talks consistent with the *Generations* theme. He talked about honoraria (typically \$500 for national speakers, \$250 for regional speakers, and less for local speakers), travel, room, and board expenses.

Carl then reviewed Jean's summary of efforts associated with that of registrar. Jean noted that her daughter Sarah Rogers and Sheri Rodgers had agree to assist with the detailed work of the registration.

Carl noted that he would integrate his work with that of the group to create the necessary master plan. He asked that everyone send him their timeline so that he will be able to do so. This master plan will be the focus of the next 2010 NCRAL planning meeting on Tuesday, November 25th, immediately following the next TCAA Board meeting. The meeting was adjourned at 9:07 p.m.

REPORT FROM IDSSP 2008

By Carl J. Wenning

Approximately 130 stargazers attended this year's Illinois Dark Sky Star Party at Jim Edgar – Panther Creek State Park which took place September 25th-28th. Four TCAAers attended this event, Duane Yockey, Carl Wenning, Dan Miller, and John Werner. Duane went down on Thursday afternoon and worked on a variety of observing goals through Saturday morning. Carl joined Duane on Friday afternoon and stayed through Sunday morning. Dan and John stopped for a short time on Saturday evening to check things out.

The site's sky this year was remarkably less dark than last year. Last year the sky was really dark and clear, and stars down to around magnitude 6 could be glimpsed. Frankly, last year's sky was the darkest I had ever seen in Illinois, and last year the star party lived up to its name. This year things were different, and I was a bit disappointed. The sky was hazy on Thursday night, clear (but amazingly steady) on Friday night, and somewhat hazy again on Saturday night. The limiting magnitude was on the order of 5 each night. The first two nights were rather cold and very damp. Both evenings the temperature reached 47-48 degrees. The dew halted Duane's observing by 10 p.m. on Thursday evening, and both Duane and Carl were cut short from ending observing at about 2 a.m. on Saturday morning – even after exhausting an 8-amp-hour battery used to power a 12-volt hair dryer. On Saturday evening the temperatures were higher and the dew very little. Unfortunately, these conditions ushered in several patches of clouds, and most viewers halter their work by midnight.

While there, Duane and I were fortunate to have camping beside us Rich Tennis from the Peoria Astronomical Society. Rich, who lives just outside of Eureka, IL, shared views through his 17.5-inch Dobsonian. He was enthralled with the use of the OIII filter on my Celestron 11-inch telescope, noting that he planned to purchase such a filter upon return home.

Our TCAA sky watchers took advantage of the viewing session to observe in the morning sky a very thin crescent moon (27^d 15^h old, and 1.43^d from new), Saturn – with razor thin rings – just now emerging from the glare of the morning sun, and in the evening sky Venus, Jupiter, Uranus, and Neptune, and throughout the night a variety of double stars, nebulae, clusters, and galaxies. The event featured several fine meals, lots of camaraderie, some nice observing projects, a photo contest, door prizes, and lots of handouts. Details about observations can be found in the September Observers' Log.

We obtained lots of interest from those with whom we talked about the 2010 NCRAL meeting. Perhaps the TCAA should make a point of getting on the program this coming year to promote our event.



STARGEEZER MOON WATCHING

By Carl J. Wenning

When the moon is at or near full phase, I often lead a life of quiet desperation. When the moon is between first quarter and third quarter phase especially, astronomical observing often grinds to a halt. Any of you who has been in the club for two decades or more is probably familiar with Timke's Law, "When the sky is clear, the moon is full." (The law was named after one of the TCAA's very competent, but rarely seen observers – Al Timke – who moved away years ago and now lives in Chatham, IL.)














Recently, with inspiration provided by William Carney and Lee Green, I decided to begin work on my AL Lunar Club Program. I made a half-hearted start on July 13th, then really got going on September 7th. That night, using hints from William and Lee about the proper techniques, I was able to conduct a rewarding lunar observing session. The secret, besides well-mounted binoculars, is to observe craters when they appear on the terminator – the day-night boundary of the moon. Observing the moon at the appropriate phase causes certain objects to stand out in stark relief due to the shadows.

Lee also pointed out online resources that have proved invaluable. One web site provides labeled moon images on a day-by-day, even hour-by-hour basis, of the moon at various phases. You can access the online lunar atlas at <http://www.stargazing.net/David/moon/atlasindex.html>. Another useful site to determine the moon's age (days past new) is <http://www.cycletourist.com/moon/>. Enter your time zone, date, and time, and hit the submit switch to show not only the moon's phase, but days past new. This information can help observers select the correct lunar atlas photograph to be used for identification purposes. Print out the required moon map image showing the labels, and take it with you outside and start observing the moon with your unaided eyes, binoculars, and telescope. It's more fun than ever I thought!



SEPTEMBER OBSERVERS' LOG

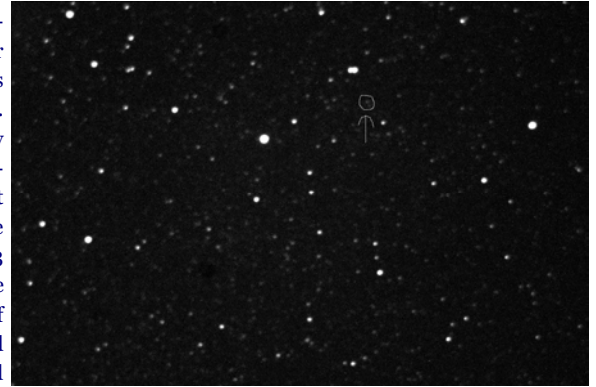
OCTOBER SKY GUIDE

01	The Moon passes 5° south of Venus, 9 P.M.	
04	The Moon passes 0.1° south of Antares, 6 A.M.	
06	Mercury is in inferior conjunction, 4 P.M.	
07	The Moon passes 2° south of Jupiter, 2 A.M.	
10	The Moon passes 0.9° north of Neptune, 5 A.M.	
12	The Moon passes 4° north of Uranus, 11 A.M.	
21	Orionid meteor shower peaks	
21	Mercury is at Greatest western Elongation (18°), 5 A.M.	
25	The Moon passes 5° south of Saturn, 3 A.M.	
26	Venus passes 3° north of Antares, 8 A.M.	
27	The Moon passes 7° south of Mercury, 1 P.M.	
29	Asteroid Vesta is At opposition, 9 P.M.	
30	Mercury passes 4° north of Spica, 3 P.M.	
31	The Moon passes 0.06° north of Antares, 1 P.M.	

On September 1st, Paul Pouliot and his granddaughter Eve went 12 miles west of Dwight for observing. The sky was very clear, but not quite as transparent as the prior Saturday night at SGO. Still, they were able to see M13 which was barely visible to the unaided eye. With Eve's Orion 4.5-inch Starblaster, they were able to just pick out M54 and M70, but could not pull M69 out of the sky glow in the south. They were able to pull in all 3 with Paul's Coulter 10-inch Dobsonian. That same evening, Michael Rogers was observing north of Bloomington but couldn't find the stars he needed between Ophiucus and Sagittarius. He indicated that he wasn't sure if it was the observing location or the sky, but thought that it might be the latter.

Carl took advantage of the unexpectedly clear sky and 8-day-old-moon on Sunday, September 7th to complete an additional 11 AL Lunar Club observations using 15X70mm binoculars. This brings his total to 28 objects. On Tuesday evening, September 9th, Carl was able to observe 24 additional lunar features by binocular and telescope bringing his lunar club total to 52. With the moon out of the way after midnight, Carl continued working on his double star and Urban Club observing programs. On Wednesday morning, September 10th, he was able to observe and record an additional double stars and Urban Club objects bringing his totals to 97 and 99 respectively. The last 4 objects for these two programs were too close to the sun in the morning sky to be readily observed at that time. Carl hopes to finish these observing programs some time in October. A total of 100 observations are required for each of the three programs to earn the associated Astronomical League awards. On the evening of the 11th, he raised his Lunar Club total 5 more to 57.

On September 16th, the night of the second *Conversations with Amateur Astronomers* series at the Bloomington Public Library, Lee Green observed a second time from home with family members visiting from Texas. As Lee later noted, "They came in from Houston for my Mom's birthday just in time to avoid Hurricane Ike, and they delayed their return waiting for power to be restored. Both times we were able to observe a nice variety of objects in spite of the Moon's presence. I was delighted that we had special treats observing Jupiter when we saw moon shadows traversing the face of the planet on both nights! That was a first for me, and I was very pleased to share the experience with them." Carl spent time afterwards observing the moon – which was just past full – with binoculars. He observed an additional 8 Lunar Club Program objects that evening, and the next morning glimpsed 2 additional Binocular Messier Club objects. On the subsequent evening, September 17th, he observed 3 additional Lunar Club Program objects



bringing this total to 68.

During mid to late September, William Carney spent time trying to spot Pluto visually. While he has not been able find it with the use of the SGO 12-inch SCT, he notes, "I did manage to image it just barely with my new CCD camera on the evening of the 22nd or 23rd." Later he noted, "I tried for almost two weeks to find Pluto visually. Finally, on the 26th, I photographed it and again on the 27th. On the 27th I also visually spotted it for the first time. The [accompanying] photo is a raw CCD where I circled Pluto. It's hard to spot but is there." Congratulations to William on his successes!

An informal September MOOS was held at the Illinois Dark Sky Star Party with only Duane Yockey and Carl Wenning in attendance. Duane traveled to Jim Edgar Panther Creek State Park on Thursday, September 25th, and Carl joined him a day later having had to conduct the TCAA adult ed class on Thursday evening. The first night Duane was "dewed out" by around 10 p.m. Heavy dew forming on the corrector plate, despite a dew shield, prevented further viewing. The sky was a bit murky as well. On Friday evening, the sky was much clearer, but not as dark as last year. Despite this, Duane was able to bring his observing totals to 16 objects on his binocular Messier and 31 objects done on his telescope Messier. Carl was able to observe, record, and draw 37 planetary nebulae. With his OIII filter, he as able to see spectacular views of the Veil, North American, and Helix nebulae, as well as many other faint objects. Both observers were overcome by dew around 2 a.m. and spent the rest of the night trying to sleep with the temperature reaching a low of 47°F. Duane departed on Saturday after lunch and Carl stayed though Saturday night to continue his observing program, this time focusing on globular clusters. Over course of just over one hour, he was able to observe, record, and classify 47 globular clusters. Carl was able to add two more double star observations and one more lunar observation over the weekend, bringing his totals to 99 and 69 respectively.

UPCOMING MEMBERS-ONLY OBSERVING SESSIONS

For the record, here is the list of the 2008 Members-Only Observing Sessions at Sugar Grove Nature Center. Two coordinators (one of whom should be an SGNC key holder unless they have their own telescope they can bring along) are desired for these Saturday sessions. Please sign up with Carl Wenning (309-830-4085, wenning@phy.ilstu.edu) if you are willing to assist with coordinating any of these events.

2008 MOOS Dates, Themes and Starting Times	Coordinator(s)
October 25th (6:45 p.m. start with a theme of "eyepiece filters for viewing")	William, Carl
November 22nd (7:00 p.m. start, no theme)	TBD
December 20th (Saturnalia holiday party & observing) 7:00 p.m.	Carl

The November 22nd observing session will be held only if the sky is reasonably clear; the December 20th club party will take place regardless of cloud cover. Please note that the date for the Saturnalia party is tentative, pending the approval of Angela Smith at SGNC.

AL OBSERVING PROGRAM STANDINGS

Below is a listing of the status of observers pursuing AL observing programs reported as of September 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.

	Brian Barling	William Carney	Lee Green	David Hahn	Dave Osenga	Carl Wenning	Sandy Wolford	Duane Yockey
S. Sky Binocular 50						50*		50*
S. Sky Telescope 50						52*		50*
Telescope Messier Prov70/Hon110	(110)	(110)	82*	82*	48	(110)	(110)	
Binocular Messier 50		(100)	12			70*		
Herschel Club 400	210	352	397			400*	(400)	
Urban Club 100		(100)	84			99		
Comet Club Silver12/ Gold30		22*						
Arp Galaxy CCD Club 100							53	
Dbl. Star Club 100	17		7			97	(100)	
Planetary Nebula Club 100						~37		
Globular Cluster Club 100						~47		
Lunar Club 100	98	(100)	78			69		
Asteroid Club Reg25/ Gold100		24						
Outreach Award Basic10/Stellar60/ Master160 hours						31 hrs in 2006		

* Program or first award level now complete – will receive AL recognition (certificate and pin) at the next TCAA Annual Meeting in February 2009. Numbers in parentheses (#) indicate that award has been both earned and received.

SEPTEMBER E/PO ACTIVITIES

Even though early September saw days of uninterrupted rain, including the remains of Hurricane Ike, several education/public outreach events were conducted. Unfortunately, the September 6th POS was cancelled due to an overcast sky.

The TCAA adult education course, *Night Sky Watch*, began on September 11th at Heartland Community College with six adult students – two couples and two individuals – in attendance. Several of the group showed a strong interest in amateur astronomy and Carl foresees a few new memberships from among this group so high is their interest. Carl has revised the content of the course so he can offer a fall “constellations, moon, and planets” course and then a winter “deep sky” course.

Lee Green and Carl represented the TCAA at the Bloomington Public Library’s *Conversations with Amateur Astronomers* program on the evening of Tuesday, September 16th. Ten members of the public were present for the program, as well as two BPL staff members. Lee gave a talk from the NASA Night Sky Network titled *How Telescopes Changed our Understanding of the Universe*.

The second class of the TCAA’s adult education course was held on Thursday, September 18th. Because the sky was clear that evening, class members were able to get in a bit of in-town observing. Thanks to Lee Green for setting up his 14” telescope and conducting the observing session.

An observing session for Marty Morris’ 4th grade students was held at Weldon Spring SRA in Clinton on Friday, September 19th. The event ran from 7:30 to 9:30 p.m. in the Meadowview Picnic Area despite the partly overcast sky. Dan Miller, John Werner, and Carl Wenning represented the club. Carl gave 30-minute talk followed by observing through telescopes made possible by Dan and John. These views were followed by a 15-minute Milky Way talk, and then a laser-mediated sky lecture. Some 75-80 students and their parents were in attendance, even though the sky was partly cloudy.

Mike Rodgers gave a presentation for residents of Luther Oaks Retirement Community in Bloomington on Saturday, September 20th. According to Lee Green, “Michael gave a great Starry Night presentation... Twenty-five residents joined us for the presentation and they were every bit interested in the materials. Unfortunately, the sky conditions were not good enough to hold an observing session. Michael, Dan and Lee were joined by John Littlefield and his friend Linda in representing the club.” The event ran from 7 to 9 p.m.

The third class of the TCAA’s adult education course was held on Thursday, September 25th, at the ISU Planetarium. Four class members and a guest were in attendance to learn more about celestial motions. Following the planetarium visit, the group visited Moulton Hall to see a few more of Carl’s Voyager 4 simulations.

OCTOBER E/PO EVENTS

SGNC Members Only Campout Friday, October 3 - Saturday, October 4 ☐ Attention Sugar Grove Nature Center Members! Mark your calendars now and plan to attend the Sugar Grove Nature Center Members Only Camp Out! Not a member? Join today and camp with us tonight! Camp in Funks Grove under the stars, gather around the campfire for food and fun, and explore the trails at night! Free to members; registration required. Information about this and other SGNC programs (such as MOOS) can be found on the SGNC web site at the following URL: <http://www.sugargrovenaturecenter.org/>

The **October POS** will occur on Saturday, October 4th and will run from 7 to 9 p.m. The talk this month is *Andromeda and Her “Rock” – M31*, and will be presented by Carl Wenning. A sky lecture and telescope observing will follow Carl’s presentation. The event will be canceled in the event of an overcast sky. Call Carl at (309) 830-4085 if you are uncertain about whether the session will be cancelled.

The third annual **SGNC Autumn Celebration** will be held on Saturday, October 18th. As with past Celebrations, the TCAA will hold an SGO open house, and a display booth. The event will run from 10 a.m. to 5 p.m., with set up time around 9 a.m. Last year huge crowds turned out and hundreds visited the observatory and saw either the Sun or Venus.

The **Conversations with Amateur Astronomers** program at the Bloomington Public Library will take place on Tuesday, October 21st starting at 7 p.m. Lee Green will be presenting the Night Sky Network talk *The Search for Another Earth*.

The **October MOOS** will be held on October 25th at SGNC starting around 6:45 p.m. (mid-twilight). Coordinators are William Carney and Carl Wenning.

OBSERVING PROJECT: FINDING THE MASS OF JUPITER

By Carl J. Wenning

While a number of TCAAers are involved in Astronomical League observing programs, how many are involved in replicating research? Here is a simple and simplified observing project – finding the mass of Jupiter using observations of the moon Ganymede. Observers of Jupiter might want to undertake this observing project while Jupiter is well placed for autumn observations. This is the first of a multi-part series detailing an observing project that I'm currently working on. First, the theory base...

Newton's formulation of gravity states:

$$F = \frac{GMm}{r^2}$$

where F is the force due to gravity, G a constant ($6.674 \times 10^{-11} \text{ m}^3\text{kg}^{-1}\text{s}^{-2}$), M and m the masses of the objects involved, and r the distance between the two objects.

Newton's second law of motion is:

$$F = ma$$

That is, force equals mass times acceleration, a . The acceleration of a moon (of mass m) around Jupiter (of mass M) is related to its orbital velocity, v , and orbital radius, r (assumed constant), is given by:

$$a = \frac{v^2}{r}$$

Hence, the force required to keep a moon of mass m in orbit around Jupiter would be:

$$F = ma = \frac{mv^2}{r}$$

Now, this force is provided by gravity. Therefore

$$\frac{GMm}{r^2} = \frac{mv^2}{r}$$

Because we are looking to find M , we solve the above equation for M (after canceling out one r):

$$M = \frac{v^2 r}{G}$$

Because the orbital speed, v , is equal to the circumference ($2\pi r$) of the orbit divided by the period of revolution of the moon, P , we have:

$$v = \frac{2\pi r}{P} \text{ and so } v^2 = \frac{4\pi^2 r^2}{P^2}$$

and after substituting we can solve for M getting:

$$M = \frac{4\pi^2 r^3}{GP^2}$$

This equation can then be used to find the mass of Jupiter. It assumes that $m \ll M$, and that the orbit of the moon is circular (r constant) – both very good approximations. The next article in this series will relate to making telescopic observations required for finding r and P , and provide the results of recent observations.

HISTORY OF THE TCAA

Beginning with the article, "The Origin of the Twin City Amateur Astronomers" in the May 2007 issue of *The OBSERVER*, TCAA Historian Carl J. Wenning began chronicling the history of the club. He will continue this series, culminating with the 50th anniversary of the club in 2010.

Construction of Sugar Grove Observatory

1998-2002: Part A

During the late 1990s, attention was once again turned to the construction of a club observatory. The only observatory the club had ever had was the Fissel Farm Observatory that stood near the top of the moraine on the north-northeast side of Normal from 1964 to 1977. It was a roll-off roof structure that housed an 8-inch homebuilt telescope put on loan to the club by member Bob Mayo. In the 1970s, active observers began moving their viewing sessions to Downs, IL, to take advantage of darker skies and use the observatory of club member Bob Finnegan. Bob's observatory consisted of a 14-inch Celestron telescope housed under a 10-foot Ash Dome. When Bob departed the club in 1982, observing from Downs dropped off even though Jim Jones, a short-term TCAA member who purchased this house shortly thereafter, permitted club members to observe there using the telescope Bob left in position until 1983.

During the summer of 1983, the club began efforts to work with Comlara Park officials to build a public observatory six miles north of Normal, but the McLean County Board was intransigent, not wanting anyone in the park after 10 p.m. "unless they are fishing." The club membership rightfully bulked at this condition. The ignorance of at least one Board member was revealed when he asked, "How long does it take to do astronomy anyway?" Negotiations with the Board lasted five years, and in 1988 the TCAA withdrew its proposal to build a public observatory in frustration. For nearly a decade thereafter the TCAA had no place it could call "home" other than the ISU Planetarium.

When "Toinette" Finnigan moved from her residence in Downs in 1991, she donated the dome of the observatory named in her honor to the TCAA. Bob's 14-inch Celestron telescope was removed at this time, and replaced by another 14-inch telescope owned by Mike Rogers. The purchaser of the property, Jim Jones, became a member of the TCAA and allowed the membership to continue observing at this location. Within three or four years, problems with the observatory's floor were noted. At this time President Avo Vill began efforts to secure a site for a new club observatory. He approached the leadership of Timber Pointe – the former BSA Camp Heffernon – north of Normal. By mid 1996 mention was publicly made about moving the telescope due to notification and access issues, structural problems, and light pollution. Mike's 14" was removed from the observatory during the autumn of 1997. The dome remained in place temporarily. Eventually, negotiations for an observatory site with Timber Pointe fell though due to expected problems with key holder access, a horizon blocked by trees, and a lack of suitable finances.

Around this time the Funk Family Foundation provided funding to establish Sugar Grove Nature Center on an abandoned farmstead about five miles south-southwest of Shirley, Illinois. In January 1998 President Avo Vill (assisted by the efforts of Sandy McNamara, Mike Rogers, and Duane Yockey) solicited the Funk Family Foundation with the idea of erecting a public observatory, and augmenting this with regular public programs. A formal proposal was made to the SGNC Board on February 10, 1998, with approval coming shortly thereafter. As part of the agreement, the SGNC would help with some of the construction materials. In anticipation of a long relationship with SGNC, the TCAA presented its first public observing session at SGNC during May 1999.

Following the observatory proposal approval, William Carney, Duane Yockey, Dan, and Mike disassembled the 10-foot Ash Dome in Downs moved it to temporary storage in the white barn at SGNC. William and Avo cleaned and painted the dome while it was held in storage until such time as the observatory was ready for its installation.

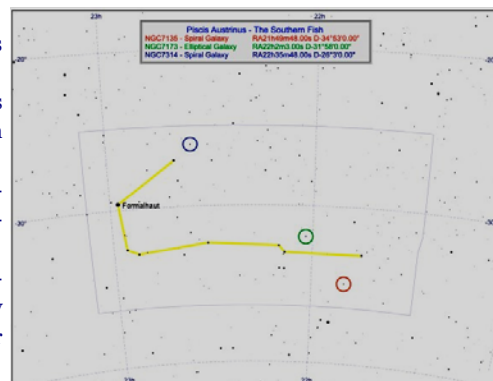
CONSTELLATION OF THE MONTH: PISCES AUSTRINUS—THE SOUTHERN FISH

Pisces Austrinus is a small constellation that lies south of Aquarius and is seen to be a fish that is drinking from the waters poured by Aquarius.

The brightest star in Pisces Austrinus is named Formalhaut, or the Fish's Mouth. From North America, Formalhaut is seen rising in the southeast when Capella, in Auriga, rises in the northeast.

Pisces Austrinus is the 60th largest constellation covering 245 square degrees. It is the 39th brightest constellation and reaches opposition on September 3.

Among the deep space objects found in Pisces Austrinus are several galaxies. NGC7135 is a spiral galaxy. NGC7173 is an elliptical galaxy that is very near the interacting galaxies NGC7174 and NGC7176. NGC7314 is another spiral galaxy that is one of the brightest in the constellation.



TCAA Treasurer's Report – September 2008

OPERATING FUND BALANCE – August 31, 2008 - \$ 2,391.47

Income

Francis Powers (dues from PayPal) - \$ 40.00
Tim Henning (dues from PayPal) - \$ 40.00
John Littlefield (sen. dues) - \$ 25.00
Wudtke family (dues) - \$ 40.00
Nancy Osterman (sen. dues) - \$ 25.00

Expenses

LYB Inc. (September Observer) - \$ 17.13

OPERATING FUND BALANCE – September 30, 2008 - \$ 2,544.34

OBSERVATORY FUND BALANCE – August 31, 2008 - \$ 2,917.53

Income

None - \$ 0.00

Expenses

Lee Green (digital projector) - \$1,000.00

OBSERVATORY FUND BALANCE – September 30, 2008 - \$ 1,917.53

TOTAL TCAA FUNDS – September 30, 2008 - \$ 4,461.87

Respectfully submitted,
L. Duane Yockey, Treasurer

Sugar Grove Observatory

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

Duane Yockey (renewed through 2008)
Michael Rogers (renewed through 2008)
William Carney (renewed through 2008)
Carl Wenning (renewed through 2008)
Brian Barling (renewed through 2008)
Christopher Franklin (renewed through 2008)
David Osenga (renewed through 2008)
Josh Lindsey (renewed through 2008)
Andrew Morrison (February 2008)
Dan Miller (renewed through 2008)
Lee Green (April 2007, renewed through 2008)

UPCOMING EVENTS

October 18—SGNC Autumn Celebration

October 21—*The Search for Another Earth*, BPL

October 25—MOOS

WELCOME NEW MEMBER

John Littlefield

The OBSERVER

Newletter 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/