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## 2012: A PREVIEW

Here are a few noteworthy events worth watching during 2012. The club might want to seriously consider holding a public observing session to view the transit of Venus that occurs on June 5th. The event will begin around 5:05 p.m. locally. Venus will set along with the sun near mid transit, at around 8:22 p.m. This will be a "mirror image" of the sunrise transit that was viewed locally back on June 8, 2004. The "moon illusion" phenomenon will make Venus and the Sun appear extraordinarily large making the event visible to the unaided – but still protected – eye.

### EVENING SKY:

- March 3, Mars at opposition
- March 4, Mercury's greatest eastern elongation (18o) – best evening apparition of the year due to steep inclination of the ecliptic after sunset
- March 26, Venus reaches greatest elongation (46 o)
- April 14, Saturn at opposition
- May 20, annual eclipse of the sun as seen from the southwestern USA
- June 5, a rare transit of Venus over the sun visible from NA
- June 30, Mercury attains greatest western elongation (26o)
- August 23, Neptune at opposition
- September 28, Uranus at opposition
- October 26, Mercury at greatest western elongation (24o) – worst evening apparition of the year due to shallow inclination of the ecliptic after sunset
- December 2, Jupiter at opposition

### MORNING SKY:

- April 18, Mercury at greatest western elongation (27o) – worst morning apparition of the year.
- June 4, Moon is partially eclipsed, visible with difficulty low in the west-southwest at moonset – very similar to the lunar eclipse of this past December 10th
- August 15, Venus at greatest western elongation (46o)
- August 16, Mercury at greatest western elongation (19o)
- November 27, Saturn in conjunction with Venus (0.8o)
- December 4, Mercury at greatest western elongation (21o) – best morning apparition of the year.

## BOARD OF DIRECTORS TO MEET

The next Board of Directors meeting is slated for Tuesday, January 10<sup>th</sup>, at a location to be determined at 6:30 p.m. Among the agenda items to be addressed are plans for February's Annual Meeting (the club's 51<sup>st</sup>) including the election of a new board of directors for the 2012-13 year. If you are the least bit interested in running for elected position on the Board, please contact one of the board members. See the first column on the second page of this issue of *The OBSERVER* for contact information. In addition, discussion will cover such topics as proposed changes at Sugar Grove Observatory and the possible creation of a roll-off-roof observatory outfitted with research grade equipment, as well as the June 5<sup>th</sup> transit of Venus across the face of the sun. Be certain to be in attendance if you want to be involved in these efforts.

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

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Submission deadline is the first of each month.

### Membership Dues

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

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

## TCAA PUBLISHES 2012 POS SCHEDULE

The TCAA Board of Directors has approved the following POS schedule and topics for 2012. The new 2012 brochure is now available on the TCAA website at <http://www.tcaa.us/>. All events are on Saturday evenings, and this coming year feature a moonless sky most evenings. Additional prominent sky objects such as planets, nebulae, star clusters, and galaxies will be viewed when visible. Thanks to Carl and Lee for arranging the new schedule.

Date (Sat.)	Time	Sunset	Topic
Mar 24	7:30 PM ~ 9:30 PM	7:12 PM CDT	Reasons for the Seasons
April 21	8:00 PM ~ 10:00 PM	7:41 PM CDT	Mars, the Red Planet
May 19	8:30 PM ~ 10:30 PM	8:09 PM CDT	Saturn, the Ring World
June 16	9:00 PM ~ 11:00 PM	8:29 PM CDT	Arc to Arcturus and Speed to Spica
July 21	8:30 PM ~ 10:30 PM	8:21 PM CDT	Asteroids, Meteors, and Meteorites
Aug 18	8:00 PM ~ 10:00 PM	7:50 PM CDT	Clusters and Nebulas of the Milky Way
Sep 15	7:30 PM ~ 9:30 PM	7:06 PM CDT	Stories of the Constellations
Oct 13	7:00 PM ~ 9:00 PM	6:20 PM CDT	Uranus and Neptune

## HOW TIME FLIES

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

### **50 Years Ago**

January 1962 – The membership heard a talk about the Orion Nebula at the January 4<sup>th</sup> meeting. Information was also shared about the Quadrantid meteor shower. Observations of the variable star delta Cephei continued as did work on telescope mirrors.

### **25 Years Ago**

January 1987 – The January 17<sup>th</sup> meeting was led by TCAA President Carl Wenning who used the resources of the ISU Physics Department to conduct a laboratory activity for members. Carl announced at this meeting that he was going to start a chapter of Young Astronauts through the ISU Planetarium. (Carl is still corresponding with one of those early members – Diane Lewis who now lives in Texas – to this day!) Controversy was continuing about whether to first purchase a large telescope for the club or to build an observatory given the fact that we could not afford both.

### **10 Years Ago**

January 2002 – The club is anxiously waiting to order its first large telescope – 25 years after the original controversy. The telescope was nearly funded through generous donations of club members and would be ordered shortly thereafter following a bridge loan provided by Dan Miller. The 12-inch Meade LX200 would replace Mike Roger's old Celestron 14 loaner telescope then occupying the SGO dome.

## AL OBSERVING PROGRAM STANDINGS—QUARTERLY

Below is a listing of the status of active TCAA observers pursuing AL observing programs reported as of December 31<sup>st</sup>.

- ☆ Dave Osenga used the club's newly donated 20X80 binoculars and Carl's observing stand to capture a few more binocular Messier objects. He now has 56 Binocular Messier objects logged. He's waiting for clear skies to finish off the remaining 3 telescope Messier objects, two of which are located in the spring sky.
- ☆ Carl Wenning recently reviewed his Herschel II observing records and noted that he earlier failed to report 19 observed objects; he also completed an additional 17 observations recently. His count is now officially at 256 with 144 observations to go. He was able to get one more observation in for his Planetary Nebula Club leaving 5 yet to be observed. Each of these is a very difficult object due to their size, southerly location, and/or faintness.
- ☆ Mark Honzell has been observing with his 16" telescope recently and has picked up a few more Messier Club objects.
- ☆ William Carney added one new asteroid to his observing club recently.

If you would like to have your information included in next April's listing, be certain to forward your observing totals to Carl by the end of March. Be certain to get your completed observing records to our ALCor, Duane Yockey, as soon as an observing program is complete so that you might be appropriately recognized on a timely basis. Our next award presentation will be at the February Annual Meeting.

Astronomical League Observing Club	Brian Barling	William Carney	Mark Honzell	Lee Green	Dave Osenga	Carl Wenning	Duane Yockey
Asteroid Club Reg25/Gold100		(53)					
Binocular Messier 50		(100)		(72)	56**	(78)	49
Caldwell 109						34	
Comet Club Silver12/Gold30		(31)				4	
Dark Nebula Imaging 70				63			
Deep Sky Binocular 60		60*		43		(60)	
Double Star Club 100	29		47	100*		(100)	
Earth Orbiting Satellite 28		5					
Globular Cluster Club 50				(55)		(65)	
Herschel Club 400	288	(400)		(400)		(400)	
Herschel II Club 400						256	
Lunar Club 100	(100)	(100)		(100)	(100)	(100)	
Lunar II Club 100		34					
Open Cluster Club B100/25// A125/50				95		2	
Planetary Nebula Club B60/ A110		1				(105)*	
S. Skies Binocular 50					25	(50)	(50)
S. Sky Telescope 50						(52)	(50)
Telescope Messier Pro70/ Hon110	(110)	(110)	76	110**	107*	(110)	31
Master Observer (10 clubs)	2	8		7	2	(10)	2
Urban Club 100		(100)		(100)		(100)	
Outreach Award B10/S60/ M160				(*, **), ***		(*, **, ***)	

\* Program or first award level now complete. \*\* Second award level now complete. \*\*\* Third award level now complete. AL recognition (certificate and/or pin) will be given at the next general membership meeting if available. Numbers in parentheses (#) indicate that the associated pin and/or certificate has been received.

## OBSERVER'S LOG FOR DECEMBER 2011

### JANUARY SKY GUIDE

- |    |  |   |
|----|--|---|
| 02 | The Moon passes 5° north of Jupiter,<br>9 P.M. |    |
| 04 | Quadrantid meteor shower peaks                 |    |
| 13 | Venus passes 1.2° south of Neptune,<br>1 A.M.  |    |
| 14 | The Moon passes 9° south of Mars,<br>1 A.M.    |    |
| 16 | The Moon passes 6° south of Saturn,<br>1 P.M.  |    |
| 25 | The Moon passes 6° north of Neptune,<br>6 A.M. |    |
| 26 | The Moon passes 7° north of Venus,<br>1 P.M.   |    |
| 27 | The Moon passes 6° north of Uranus,<br>8 P.M.  |   |
| 30 | The Moon passes 5° north of Jupiter,<br>9 A.M. |  |

Bob and Lee continued to work on a problem with the “250” telescope that somehow seems to be producing streaked star images in one portion of the star field. The problem is not with the camera system, but might be associated with optical alignment or even astigmatism. These two have spent many clear and marginal evenings during December trying to identify the source of the problem and correct it. As a result, imaging has dropped off considerably at SGO this month. By the end of the month they decided to put an end to the trials and tribulations, and returned the Serial No. 2 instrument to the manufacturer for credit toward an established model of larger aperture that should prove to be far less trouble.

A total lunar eclipse took place on December 10, 2011. This was the last such event to be observed locally for the next three years. Several TCAA members observed the partially eclipsed moon as it went down below the west-northwestern horizon. Kent Ferguson reported seeing the event from the Champaign/Urbana area. Carl Wenning viewed the event from the playground of Colene Hoose School in Normal. Roy Lawry observed the event from Lincoln. John Werner caught the event photographically from his home near Downs. He reported, “I shot this at 7:06am F2.8, 200mm [using a] Canon lens, tripod mounted, 800ASA, 1/1600sec.” See the image below. Note – the brightness of the original image was increased to improve visibility of horizon.



Bob, William, and Carl spent the first night of Saturnalia, December 17<sup>th</sup>, observing at SGNC. The sky and moon finally cooperated to provide some good views of the sky. Bob shot a few photographs of the Horsehead Nebula; William toiled around with a new video camera; Carl observed a difficult planetary nebular for the AL PN observing club, and captured 12 more faint galaxies that are part of the Herschel II club. With an early “surprise” clearing of the sky, observing ran from approximately 9 to 11 p.m.

The next night, Sunday evening, Bob, Lee, and Carl were at SGNC again. Lee observed a dark nebula, and Bob focused his attention on the SGO telescopes, switching out the 250 for the 5-inch. Carl continued to observe NGC objects for the AL's Herschel II observing club, securing 5 more faint galaxies despite the wispy clouds passing overhead.

On Christmas Eve, new member Troy Berg reported via listserv, “The skies are really clear and steady tonight! What a nice Christmas present! I'm really excited because I just saw my best views of the Orion nebula and the trapezium through my 25x100 Zhumell binoculars! A little chilly, but what a nice night!” Well done, Troy. We hope that you will be joining us regularly at SGNC. You might want to borrow someone's binocular mount when you start observing the faint fuzzies.

Bob Finnigan reported photographing three planetary nebulas on the evening of December 28<sup>th</sup>. Because these are rather small objects in terms of angular size, they appeared just a tad larger than bright stars in the photograph despite the 2800mm focal length of the 11-inch telescope that he used. Nonetheless, they showed of bit of intricate detail. Bob expressed need for a considerably longer focal length telescope to image these stunningly beautiful objects.

This concludes this series of monthly *Observers' Logs*. The original intention to provide a record of what our club members are doing on individual and small-group bases has been achieved. Others who want to take up this column are welcome to do so. I hope that you have enjoyed reading these updates.

## **THE FLEDGLING ASTRONOMER**

### **By Mark Honzell**

The holidays were extremely busy. The Fledgling Astronomer will return in February.

### **E/PO FOR NOVEMBER 2011 (REPRISE)**

The following item wasn't submitted for inclusion in last month's newsletter, so it is being reported here and now. Carl Wenning gave two presentations about Greek mythology of the night sky to two sets of combined fourth grade classes in Peoria on Tuesday, November 29<sup>th</sup>. The talks were given at Glen Oak Primary School that morning; each combined class had some 55 students. Carl mesmerized students with the telling of the story of Perseus and Andromeda – from the claims of Queen Cassiopeia to the death of the gorgon Medusa. He also handed out star maps and explained how to use them to find each of the characters in the story.

### **E/PO FOR DECEMBER 2011**

Due to the busy holiday season, the demand for education/public outreach activities by way of TCAA members making presentations fell to zero. Despite this fact, Tom Weiland took it upon himself to wage a one-man battle against "aesthetically inappropriate" and the "wastefully flooding the neighborhood and sky with unnecessary light" on Tanner Street in Bloomington that is adjacent to Miller Park. A feature article about outrageously bright decorative lighting in *The Pantagraph* on December 13<sup>th</sup> (page A14) got Tom started.

Working first to obtain a consensus among club leaders, Tom wrote a letter to the editor on behalf of the TCAA decrying the waste of electrical energy and pollution of the night sky... He shared his letter to the editor with members of the Bloomington City Council. He did receive a number of replies that suggest that the town might reconsider the use of such outdoor lighting in the future. The letter was finally published in *The Pantagraph* on Thursday, December 22<sup>nd</sup>. According to Tony Cellini, a number of obnoxious responses were made online at the newspaper's online edition where he and at least one member of the general public attempted to rebut the more sensible of them. Many comments were too imbecilic to rebut.

Bob Finnigan was spotlighted in a 2-page feature article in *The Pantagraph* on Sunday, December 18<sup>th</sup>. The article, written by Scott Richardson, showed two of Bob's images – one of Comet Garradd and another of the "5-inch telescope" used to make the comet photograph. The article was "above the line" on page D1 and rolled over onto page D2. Congratulations to Bob for shinning a very favorable light on the TCAA.

Carl Wenning hosted a short observing session for relatives in Huber Heights, OH, on Christmas evening.

## **MARS SCIENCE LABORATORY CURIOSITY: NASA'S NEXT MARS ROVER**

**From [nasa.gov](http://nasa.gov)**

### Trajectory Maneuver Slated for January 11

An engine firing on January 11 will be the biggest maneuver that NASA's Mars Science Laboratory spacecraft will perform on its flight between Earth and Mars.

The action will use a choreographed sequence of firings of eight thruster engines during a period of about 175 minutes beginning at 3 pm PST (6 pm EST or 2300 Universal Time). It will redirect the spacecraft more precisely toward Mars to land at Gale Crater. The trajectory resulting from the mission's November 26, 2011, launch intentionally misses Mars to prevent the upper stage of the launch vehicle from hitting the planet. That upper stage was not cleaned the way the spacecraft itself was to protect Mars from Earth's microbes.

The maneuver is designed to impart a velocity change of about 12.3 miles per hour (5.5 meters per second).

"We are well into cruise operations, with a well-behaved spacecraft safely on its way to Mars," said Mars Science Laboratory Cruise Mission Manager Arthur Amador, of NASA's Jet Propulsion Laboratory, Pasadena, Calif. "After this trajectory correction maneuver, we expect to be very close to where we ultimately need to be for our entry point at the top of the Martian atmosphere."

The mission's schedule before arrival at Mars on Aug. 5 in PDT (Aug. 6 in Universal Time and EDT) includes opportunities for five more flight path correction maneuvers, as needed, for fine tuning.

The Jan. 11 maneuver has been planned to use the spacecraft's inertial measurement unit to measure the spacecraft's orientation and acceleration during the maneuver. A calibration maneuver using the gyroscope-containing inertial measurement unit was completed successfully on Dec. 21. The inertial measurement unit is used as an alternative to the spacecraft's onboard celestial navigation system due to an earlier computer reset.

Diagnostic work continues in response to the reset triggered by use of star-identifying software on the spacecraft on Nov. 29. In tests at JPL, that behavior has been reproduced a few times out of thousands of test runs on a duplicate of the spacecraft's computer, but no resets were triggered during similar testing on another duplicate. The spacecraft itself has redundant main computers. While the spacecraft is operating on the "A side" computer, engineers are beginning test runs of the star-identifying software on the redundant "B side" computer to check whether it is susceptible to the same reset behavior.

The Mars Science Laboratory mission will use its car-size rover, Curiosity, to investigate whether the selected region on Mars inside Gale Crater has offered environmental conditions favorable for supporting microbial life and favorable for preserving clues about whether life existed.

On Jan. 15, the spacecraft operations team will begin a set of engineering checkouts. The testing will last about a week and include tests of several components of the system for landing the rover on Mars and for the rover's communication with Mars orbiters.

The spacecraft's cruise-stage solar array is producing 780 watts. The telecommunications rate is 2 kilobits per second for uplink and downlink. The spacecraft is spinning at 2.04 rotations per minute. The Radiation Assessment Detector, one of 10 science instruments on the rover, is collecting science data about the interplanetary radiation environment.

As of 9 a.m. PST (noon EST, or 1700 Universal Time) on Saturday, Jan. 7, the spacecraft will have traveled 72.9 million miles (117.3 million kilometers) of its 352-million-mile (567-million-kilometer) flight to Mars. It will be moving at about 9,500 mph (15,200 kilometers per hour) relative to Earth and at about 69,500 mph (111,800 kilometers per hour) relative to the sun.

JPL, a division of the California Institute of Technology in Pasadena, manages the Mars Science Laboratory mission for the NASA Science Mission Directorate, Washington.

More information about Curiosity is online at: <http://www.nasa.gov/msl> and at <http://mars.jpl.nasa.gov/msl>. You can follow the mission on Facebook at: <http://www.facebook.com/marscuriosity> and on Twitter at: <http://www.twitter.com/marscuriosity>.

# TCAA Treasurer's Report – December 2011

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

Income

Angela Estes (Dues) -	\$ 41.00
Duane Yockey (Dues) -	\$ 40.00
John Werner (Dues) -	\$ 40.00

Expenses

LYB Inc. (Observer copies & postage) -	\$ 20.72
PayPal (Angela Estes) -	\$ 1.20

OPERATING FUND BALANCE – December 31, 2011 - \$ 1,770.87

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

Income

Donation (Duane Yockey) -	\$ 100.00
Donation (Carl Wenning) -	\$ 100.00

Expenses

None! -	\$ 0.00
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OBSERVATORY FUND BALANCE – December 31, 2011 - \$ 2,954.38

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TOTAL TCAA FUNDS – December 31, 2011 - \$ 4,725.25

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Respectfully submitted,  
L. Duane Yockey, Treasurer

## MISSING OUT ON TCAA ACTIVITIES & EVENTS?

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

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

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### **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**