

IN THIS ISSUE:

PRESIDENT'S MESSAGE: END OF A SEASON	1
MINUTES OF NOVEMBER BOARD MEETING	1
MINUTES OF NOVEMBER 2010 NCRAL PLANNING COMMITTEE MEETING	2
CALL FOR NOMINATIONS	3
NOVEMBER OBSERVERS' LOG	4
NOVEMBER E/PO	4
JANUARY ADULT EDUCATION COURSE	4
CONSTELLATION OF THE MONTH: ERIDANUS—THE RIVER	4
DECEMBER SKY GUIDE	4
DECEMBER MOOS & SATURNALIA PARTY	5
AL OBSERVING PROGRAM STANDINGS	5
ANNUAL MEETING REMINDER	6
STARGEEZER: CHERISHED MEMORIES	6
FIREBALL LIGHTS UP THE SKY ABOVE WESTERN CANADA	6
NASA'S GREAT OBSERVATORIES	7
HISTORY OF THE TCAA	8
YEAR END CHARITABLE GIVING	8
TREASURER'S REPORT	9
JANUARY SKY MAP	

PRESIDENT'S MESSAGE: END OF A SEASON

We've hit that time of the year where the weather is turning colder, the Sun is off on its southern vacation and precipitation hangs around for weeks. If you're like me, it hard to muster up enough motivation to get the telescope out and make the effort so you can shiver through the entire observing session. Don't feel bad, it just a symptom of that dreaded season called winter.

Just remember back to those warmer times this year. You know, when it was always warm and the skies were clear and the stars were bright. When we held so many of our public and private observing sessions. Rejoice in the knowledge that we reached out to many people to share the warm glow of astronomy.

But take heart! This month, the Sun reaches its southernmost point and begins its long trek back from the hinterlands. With the holidays so near, this is a good time to make plans to huddle together in the warmth of family and friends. Please join us to celebrate another successful year in the TCAA at our Saturnalia party at the Sugar Grove Nature Center on December 20. See you there!

MINUTES OF NOVEMBER BOARD MEETING

President Lee Green called the meeting to order at 6:41 p.m. In attendance at the offices of LYB, Inc. were Board members William Carney and Dave Osenga. Board member Dan Miller was unable to attend. Also in attendance were Treasurer Duane Yockey and Secretary Carl Wenning. (Jean Memken and Michael Rogers arrived at about 7:30 p.m. to attend the follow-up 2010 NCRAL Planning Committee meeting and subsequently participated in the Board meeting.) The following items of old business were addressed first:

➤ Duane distributed a draft Treasurer's report for November 2008. The current TCAA funds are \$4,588.94. He collected additional money (\$46.20) from the sale of two copies of the book *NightWatch* used during the club's autumn adult education course at Heartland Community College.

➤ Lee reviewed upcoming club events from December through February, noting that additional events have yet to be scheduled for Grove School in Normal.

➤ A discussion about getting a professionally prepared club logo ensued. After reviewing a number of logos from other Illinois astronomy clubs, it was agreed that the TCAA logo should comply with the following requirements: simple, looks good in color and black & white, geographically specific (so as not to confuse "the other twin cities" with "our" twin cities), includes astronomical elements depicted correctly, includes title of club, includes date of establishment (1960), and uses discrete (not continuous) colors. It was further suggested that we might start with the old TCAA logo that showed an outline of Illinois and included the Big Dipper, North Star (indicating the location of the Twin Cities), and Cassiopeia. Carl was authorized to approach a graphic artist he knows to talk about the work and to obtain a quote.

➤ William noted that the SGO has shown no additional water leakage "so long as the dome is pointed in the right direction." He noted that he has not used the LX200 recently, but thinks that it should be operating properly with the exception of the GPS that has always been a problem as the telescope is housed under a metal dome. He has not gotten together yet with Dan to use a bypass approach on the hand controller.

➤ Dave noted that he had looked into purchasing SGO metal siding. After consulting with a friend who is involved with siding (Morton Buildings), Dave was informed that the club would be best if it chose merely to purchase the siding from a commercial outlet such as Menard's or Home Depot. It was noted that the discussion about siding would be put off until this coming summer as any re-siding of SGO would require approval of the SGNC board of directors.

The following items of new business were then addressed:

➤ Preparations for the Annual Meeting on February 7, 2009 were reviewed. Jean Memken has indicated that the ISU Catering Club has been scheduled and the room reserved. Carl indicated that the speaker for the evening will be Dr. Linda French from Illinois Wesleyan University. Carl then shared a draft program that was approved in concept.

➤ Carl then exhibited a draft POS brochure for 2009. It was agreed to change the title of the brochure from "Family Friendly Public Observing Sessions" to "Family Friendly Public Sky Viewing Sessions" as the latter title is more descriptive. The topics by month were also reviewed with a number of suggestions adopted for two of the dates. In addition, Lee's cell phone number will now be listed.

➤ Lee then reviewed the proposed "family astronomy" program at Bloomington Public Library for the 2009 IYA. Pro-

(Continued on page 2)

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Electronic Newsletter \$25

To join the TCAA, send your name, contact info and dues payment to

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MINUTES OF NOVEMBER BOARD MEETING (CONT.)

(Continued from page 1)

gram will be held the third Saturday of each month from 1:30 to 3:30 p.m. The focus will be on hands-on activities for students ages 10 and up. Carl will contact Linda French, Dan Miller, and the ISU Physics Club to see if they want to take charge of certain events as their contribution to the International Year of Astronomy.

- Carl reiterated that he is looking for resources to complete his history project – specifically old newsletters and photographs. He then asked about interested in purchases of a bound edition of the club's history from 1960-2010. Most members present indicated an interest.

- Lee noted that Terry Lee Wright had resigned from both the Board and the 2010 NCRAL Planning Committee. It was agreed that with no scheduled membership meeting until February 7, 2009, the Board would continue on without filling this position.

- Nominations were then sought to fill the five Board positions at the Annual Meeting. The following individuals agreed to run for office: William Carney, Dave Osenga, Carl Wenning, and Lee Green. Six additional names were fielded. Carl will contact these individuals to see if they would be interest in running for an elected position.

- Lee then spoke briefly about nominations for TCAA awards. Nominations are needed for each of the three awards: Schuette, Kieviat, and Miller. Lee noted that Jean returned the Family Award plaque, and Lee noted that Dan still retains hold of the Schuette Society plaque. These might well need updating by the time of the next Annual Meeting.

It was then noted that the next Board of Directors meeting is scheduled for Tuesday, January 27, 2009, at 6:30 p.m. at the offices of LYB, Inc. The meeting was adjourned at 7:44 p.m.

MINUTES OF NOVEMBER 2010 NCRAL PLANNING COMMITTEE MEETING

The planning committee was called to order at 7:45 p.m., immediately following the club's November Board meeting. In attendance were Carl Wenning (chair), William Carney, Dave Osenga, Lee Green, Duane Yockey, Jean Memken, and Michael Rogers. Not in attendance were Dan Miller and John Werner. The following matters were then addressed:

- Tasks and those responsible for the various duties were reviewed. It was noted that due to Terry Lee Wright's resignation, his position as marketing agent needed to be filled. Michael agreed to do so, integrating the positions of advertising and marketing. A new position was created, that of Tech. Dave agreed to take on this position. He will be responsible for computers, projectors, and room illumination during the NCRAL meeting. Michael pointed out the need to have a laptop that includes capability to handle .PPTX as well as .PPT files. Carl will be certain to confirm A/V needs with the speakers as he confirms plans with each. Mike also asked Carl to obtain permission from speakers to post PowerPoint presentations on the club's web site following the meeting.

- The meeting timeline was then reviewed. Michael noted that his input had not been integrated into the master schedule, and that Carl should check his e-mail for September 30th to find the required information. Carl will integrate this information and re-send the master schedule. Others were asked to review the timeline handout, and let Carl know of any other errors or omissions.

- A draft program was then shared with the committee. It was agreed to include four 15-minute contributed talks from amateur astronomers to fill out the schedule. Carl will build these talks into the schedule, as well as breaks and door prizes, and re-distribute the revised draft program. Lee agreed tentatively to present a 30-minute talk "Amateur Astronomy Then and Now" and Carl will ask Dan about presenting another 30-minute talk "The Itty Bitty Radio Telescope."

- The list of invited speakers was approved (Carl Wenning, Michael Svec, Lee Green, Dan Miller, astronaut Scott Altman, and a representative from the Webb Space Telescope). Back-up talks were suggested for consideration: representatives from Astrophysics, Celestron, or Meade.

- After a discussion about conference centers, it was agreed that the first choice would be Holiday Inn in Bloomington. Still in contention is Crowne Plaza in Normal. Dave will contact someone he knows from the latter to see if we can get reduced conference room rates (currently \$119) to match that of Holiday Inn (\$95). It was further agreed that Duane will contract with Holiday Inn after Friday, December 5th, if a better deal is not forthcoming from Crowne Plaza.

- Carl was asked to resolve the question with the NCRAL president about whether the "profit" generated by the 2010 meeting goes to the TCAA, NCRAL, or if it is split in some fashion. We have received contradictory information to date.

(Continued on page 3)

CALL FOR NOMINATIONS

Each year at the club's Annual Meeting, the membership elects a board of directors to serve for the next 12 months, and members are recognized for their service to the club. This year will be no different.

Nominations are needed for the Board. Five nominees are needed to "take the reins" of the club. As the TCAA is a legally incorporated body, its business is formally run by our Board of Directors under Illinois law. Its members elect the head of the Board; this person becomes president of the club. The Board then appoints members to the positions of vice president, secretary, treasurer, historian, property manager, and so on. These appointees need not be members of the Board, but are expected to attend Board meetings every other month.

Nominations are needed for the G. Weldon Schuette Society of Outstanding Amateur Astronomers. This award recognizes a TCAA member who has demonstrated great skill in observing, dedication to the club's education and public outreach efforts, and commitment to providing service to the membership. While holding the AL's Messier Award is recommended, it is not required by the Standing Rule that established this award in 1987. Dan Miller was our winner last February.

Nominations are needed for the John and Bertha Kieviet Foun-

ders Award. This award is conferred upon a TCAA member to recognize demonstrated leadership to the club. Those so recognized need not have been a president of the club. If leadership is interpreted in terms of service to the membership, this is as close as the TCAA comes to having a distinguished service citation. Duane Yockey was our award winner at the last Annual Meeting.

Nominations are needed for the Eugene and Donna Miller Family Award. This award acknowledges the strong efforts by a family to participate in the club as a unit. One or more parents are recognized for their efforts to instill within their children interest in and dedication to amateur astronomy. Michael Rogers and Jean Memken were our winners last February.

Please e-mail your nomination(s) for the TCAA Board of Directors to either President Lee Green at lee@starlightsoftware.com or Secretary Carl Wenning at wenning@phy.ilstu.edu. If recommending candidates for the Schuette, Kieviet, or Miller awards, also send your nomination(s) to either Lee or Carl. If you are recommending a candidate for one of the awards, however, a short description explaining why you feel the nominee(s) deserve(s) the award(s) is required. The current Board of Directors will make decisions about the awards after the award deadline sometime in January.

MINUTES OF NOVEMBER 2010 NCRAL PLANNING COMMITTEE MEETING (CONT.)

(Continued from page 2)

➤ Duane asked others to join him in developing a budget for the meeting. Carl volunteered his services having just hosted a joint meeting of the Illinois physics and chemistry teachers with an attendance of 130 – nearly the same as anticipated for the NCRAL meeting. Others indicated a willingness to assist, but their names were not recorded.

➤ It was agreed that there would be online registration for this meeting through the TCAA web site, with PayPal payments being sent directly to Duane. Michael will see to this arrangement. It was further agreed that the deadline for online registration would fall one week prior to the meeting. On-site registration will be possible, but there will be a 25% (or similar) late registration penalty, and no banquet meal tickets will be available at that time.

➤ Someone suggested that sponsors for breaks be obtained help keep the registration fee down in the hope of increasing attendance at the meeting. Both *Sky & Telescope* and *Astronomy* magazines were suggested as possible sponsors. It was implied that William might want to seek these sponsorships (whole or in part) as he canvasses vendors for door prizes and displays.

➤ It was agreed that AL sales also be invited to send materials for display and possible sale at the event as has been the case with several of the recent NCRAL meetings. Carl will consult the AL sales people about this.

➤ Jean will check back with the Linda Hall Library people in Kansas City (MO) about getting a Milner Library display concurrent with our NCRAL meeting.

➤ Carl banded about three possible logos for the NCRAL meeting. Several ideas seemed to pique interest, but no decisions were made at this time.

➤ William showed two draft ideas for a logo for the NCRAL 2010 meeting. The committee agreed with William that, in particular, the font he had chose for the design was very appealing. Carl will take Williams ideas with him when he contacts the graphic artist about the TCAA logo.

➤ Mike noted that the new TCAA logo and/or the 2010 NCRAL meeting logo be made available on shirts and caps for the NCRAL meeting. Undoubtedly, these would be available only if ordered in advance of the meeting so the club doesn't get "stuck" with unsold items.

The meeting was adjourned at 8:49 p.m. The next meeting will take place following the TCAA Board of Directors meeting on January 27, 2009.

NOVEMBER OBSERVERS' LOG

DECEMBER SKY GUIDE

01	The Moon passes 1.3° south of Jupiter, 9 A.M.	
	The Moon passes 0.8° north of Venus, 10 A.M.	
03	The Moon passes 1.4° north of Neptune, 9 P.M.	
04	Asteroid Pallas is at opposition, 11 A.M.	
05	Mars is in conjunction With the Sun, 4 P.M.	
06	The Moon passes 4° north of Uranus, 3 A.M.	
13	Geminid meteor shower peaks	
18	The Moon passes 6° south of Saturn, 9 P.M.	
21	Solstice (northern winter/southern summer begins), 6 A.M.	
25	The Moon passes 0.09° north of Antares, 1 A.M.	
26	Venus passes 1.5° south of Neptune, 8 P.M.	
28	The Moon passes 0.7° north of Mercury, 10 P.M.	
29	The Moon passes 0.6° south of Jupiter, 3 A.M.	
31	Mercury passes 1.3° south of Jupiter, midnight	
	The Moon passes 1.7° north of Neptune, 5 A.M.	
	The Moon passes 3° north of Venus, 3 P.M.	

The cold winds and precipitation of the approaching winter months have put a kibosh on most of the club members' observing activities, but not for everyone. David Hahn has continued to observe when ever he can and recently increased his observations of Messier objects from 82 to 101.

The club's November MOOS, held on Saturday, November 22nd, was cancelled due partly overcast sky and low temperature (in the 20s).

NOVEMBER E/PO

With public observing programs concluded in early October, and the only regularly scheduled public outreach event for November took place on the 18th. Our *Conversations with Amateur Astronomers* event was held that evening in the Bloomington Public Library's community room. Carl Wenning presented the Night Sky Watch program *Our Galaxy, Our Universe*. Sixteen persons, including Carl, Dan Miller, and Duane Yockey, attended the event.

Following Carl's 45-minute presentation and the ensuing discussion, Dan provided a rather unique feature. A live tele(phone)cast accompanying a PowerPoint presentation called *The Itty Bitty Telescope and Sidewalk Radio Astronomy*. In this program, NRAO's Sue Ann Heatherly explained how one can use a discarded TV satellite dish and an inexpensive satellite detector to observe such celestial objects as the Sun and Cassiopeia A – a task Dan has done himself for just over \$10! Sue Ann's talk was delivered thorough a cell phone link piped through a lapel microphone to BPL's sound system. Thanks to BPL librarian Brett Nafziger for helping to get this set up.

JANUARY ADULT EDUCATION COURSE

The TCAA will offer a "part 2" adult education course following on the heels of this autumn's *Night Sky Watch*. The new course, *Exploring the Milky Way*, will be held on Thursdays from 7 to 9 p.m. at Heartland Community College beginning January 29th and concluding with an optional observing session on or shortly after February 19th.

Join us as we move beyond solar system objects and the constellation to explore the denizens of the Milky Way. During this course we will take an in-depth look at stars and star clusters, their births, lives and deaths. Learn about nebulae, main sequence stars, white dwarfs, neutron stars, and black holes. Learn about the role of astronomical theory in the study of astronomy, and examine the amazing photographic results of the Hubble Space Telescope. During an optional fourth session at Sugar Grove Observatory, we will focus telescopes on a wide variety of representative deep space objects and more. Presented by the Twin City Amateur Astronomers.

The registration fee for these four sessions will be \$60 per person, and will include an array of materials to help participants better understand the Milky Way and things found in it. Details about registering for this course will be provided as they become available.

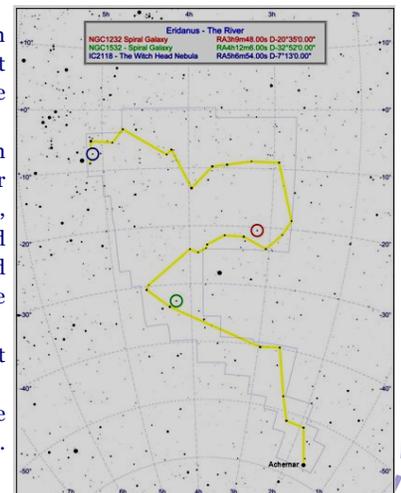
CONSTELLATION OF THE MONTH: ERIDANUS—THE RIVER

Eridanus is a large constellation that extends from the west of Orion down to the east of Phoenix, a span of nearly 60°. Except for the brightest star Achernar at the bottom of the Eridanus, none of the other stars in the constellation are brighter than 3rd magnitude.

Eridanus is often said to be the river into which Phaeton was thrown during his disastrous attempt to drive the Chariot of the Sun like his father Apollo. During the attempt, from which Apollo tried to dissuade him, Phaeton lost control of the chariot and the Sun came near to Earth and caused a great conflagration. Earth itself appealed to Jupiter for relief and Jupiter sent his thunderbolts to dislodge Phaeton from the chariot and he fell into the Eridanus.

Eridanus is the 6th largest constellation covering 1138 square degrees. It is the 9th brightest. Eridanus reach opposition on November 14.

Eridanus contains a large number of fairly bright galaxies. Among these are NGC1232 and NGC1532. Planetary nebula NGC1535 is a striking sight. Emission Nebula IC2118 is also known as the Witch Head Nebula.



DECEMBER MOOS & SATURNALIA PARTY

For the record, below is an announcement for the final 2008 Members-Only Observing Session at Sugar Grove Nature Center. This year's final MOOS is linked with the annual Saturnalia Party. Note that the observing session will be held only if the sky is reasonably clear; the December 20th club party will take place regardless of cloud cover.

2008 MOOS Dates, Themes and Starting Times	Coordinator(s)
December 20th (Saturnalia holiday party & observing session) 7:00 p.m.	Carl Wenning

TCAAers are invited to come to Sugar Grove Nature Center starting at 7 p.m. on Saturday, December 20th. Bring treats to share, and some musical selections if you like. We will gather in the "bird room" to talk about things astronomical, and undoubtedly a great many more things such as the past and future of the TCAA. This is a great way to get to know other members of the club. Especially encouraged to attend are those members who have paid due but curiously never seem to find the time to join us for our public or club observing events.

In the event of inclement weather, you will need to phone Carl at his cell phone (309) 830-4085. The event will be cancelled if the travel conditions are hazardous due to significant amounts of snow or ice on the roads. Unfortunately, the 2007 event was canceled for this very reason. Before hazarding a trip to SGNC during questionable driving conditions, be certain to phone Carl due to possible cancellation. If a cancellation notice is called for, expect to see something on the TCAA listserv in by 5 p.m. of the night in question.

AL OBSERVING PROGRAM STANDINGS

Below is a listing of the status of observers pursuing AL observing programs reported as of November 24th. 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 Wenning	Sandy Wolford	Duane Yockey
S. Skies Binocular 50						50*		50*
S. Sky Telescope 50						52*		50*
Telescope Messier Prov70/ Hon110	(110)	(110)	87*	101*	48	(110)	(110)	31
Binocular Messier 50		(100)	42			71*		16
Herschel I Club 400	221	352	400*			400*	(400)	
Urban Club 100		(100)	89			100*		
Comet Club Silver12/Gold30		(22)						
Arp Galaxy CCD Club 100							53	
Double Star Club 100	17		7			99	(100)	
Visual Planetary Nebula Club Basic60/Advanced110						37		
Globular Cluster Club 50						47		
Lunar Club 100	98	(100)	87			70		
Asteroid Club Reg25/Gold100		24						
Outreach Award Basic10/ Stellar60/Master160 hours						31 ^h - ['] 06*		
						26 ^h - ['] 07		
						44 ^h - ['] 08**		

* Program or first award level now complete. ** Second award level now complete. Both * and ** will receive AL recognition (certificate and pin) at the next TCAA Annual Meeting on February 7th, 2009. Numbers in parentheses (#) indicate that award has been both earned and received.

Those who have completed the required observations and have properly documented them will be eligible to receive AL pins and/or certificates at the club's Annual Meeting on February 7, 2009. The above observers are hereby reminded to transmit the required observing records for Astronomical League observing awards to ALCOR Duane Yockey by the end of December.

Those TCAA members who have been actively involved in the education/public outreach of the club are encouraged to review back issues of *The OBSERVER* (available online through the club's websites) to count the number of hours they have been actively involved in these activities. The outreach award is available at several levels to those who have completed 10, 60, and 160 hours of such service since 2006.

ANNUAL MEETING REMINDER

TCAAers, mark your schedules now for the club's 2009 Annual Meeting. The event will take place on Saturday, February 7th. At this meeting there will be an election of a Board of Directors, and presentation of lots of awards. In addition, we will hear from Dr. Linda French from Illinois Wesleyan University who has agreed to honor us with her presence.

As has been the tradition for about a decade now, the club will meet in ISU's Turner Hall at 6:00 p.m. for a social, and at 6:30 p.m. a banquet will be served. At about 7:15 p.m. we will hold our annual business meeting, and Dr. Linda French will address us at around 8 p.m.

This event is the club's "high water mark" of the year, and you'll not want to miss it. In addition to the business that regularly comes before the membership, this year there will be an unusually high number of service and observing awards. You'll not want to miss this event. Again, pencil us into your calendar should you like to join us. Details will be provided as the event draws near.

STARGEEZER: CHERISHED MEMORIES

By Carl J. Wenning

I hate winter! I'm not afraid to say so because I suspect that many amateur astronomers feel the same way. While the clear nights are long, comparatively dark, and very transparent compared to summer, it just "shivers me timbers" to go out observing during winter. It's not just the low temperature; it's the ever blowing wind that makes observing intolerable – chilling me to the core of my being. Nonetheless, taking advantage of such situations can make for lasting memories. For instance, I'll never forget the night in the winter of 1976 when I did photoelectric photometry using the 32-inch telescope at Perkins Observatory at Delaware, Ohio, as part of a graduate-level observational astronomy course. The temperature was around -20°F all night, and my observing buddy (Michael Bakich, now senior editor at *Astronomy* magazine) and I like to have died. I'll never forget that night. Indeed, I fondly remember it.

My bit of advice to those who fail to take the opportunity to observe the heavens (even under ideal conditions!) is to *live life today in such a way that when tomorrow comes the memories of yesterday will be cherished ones*. I attempt to live my life according to this aphorism. Near the end of each year my family and I reflect on the year just passed by writing our annual family Christmas newsletter. This provides us with an opportunity to reflect on all the successes and failures of each year –as well as to create a great family history that will be cherished in the years to come.

I encourage all TCAAer who somehow never seem to make it to club events, to redouble their efforts to do so starting with the December sky viewing session and Saturnalia party at SGNC on December 20th. If not that, then consider getting involved in the club's Adult Education course starting in January, and in attending the club's Annual Meeting in February.

FIREBALL LIGHTS UP THE SKY ABOVE WESTERN CANADA

From [astronomy.com](http://www.astronomy.com)

At about 5:30 P.M. local time November 20, hundreds of people across Alberta and Saskatchewan witnessed a brilliant fireball that lit up the darkening sky. Amateurs with digital devices as well as professionals using all-sky video cameras captured the spectacular sight. Such fireballs happen infrequently and only rarely over populated areas, making this a once- or twice-in-a-lifetime event for those under the incandescent debris.

The brief flashes of light typically seen during a meteor shower arise from pieces of interplanetary debris no bigger than a grain of sand. Bright meteors and fireballs – meteors that reach or exceed the approximate brightness of Venus – may be as big as a garden-variety pea. In contrast, the brilliant fireball over western Canada may have been a foot or two in diameter when it entered Earth's atmosphere.

No one yet knows whether any pieces of this meteor survived the fiery passage through Earth's protective blanket of air. Researchers suspect if any fragments reached the ground (where they officially would become meteorites), they likely would be found near the Alberta-Saskatchewan border. Once scientists examine the videos and determine the debris' precise path, they can narrow the search zone to a reasonable size.

Richard Huziak and Gordon Sarty are two amateur astronomers that help maintain the all-sky meteor camera on the roof of the University of Saskatchewan physics building. See their video at <http://www.astronomy.com/asy/default.aspx?c=a&id=7685>.

NASA'S GREAT OBSERVATORIES

To grasp the wonders of the cosmos, and understand its infinite variety and splendor, we must collect and analyze radiation emitted by phenomena throughout the entire electromagnetic (EM) spectrum. Towards that end, NASA proposed the concept of Great Observatories, a series of four space-borne observatories designed to conduct astronomical studies over many different wavelengths (visible, gamma rays, X-rays, and infrared). An important aspect of the Great Observatory program was to overlap the operations phases of the missions to enable astronomers to make contemporaneous observations of an object at different spectral wavelengths.

Hubble Space Telescope

The first element of the program -- and arguably the best known -- is the Hubble Space Telescope (HST). The Hubble telescope was deployed by a NASA Space Shuttle in 1990. A subsequent Shuttle mission in 1993 serviced HST and recovered its full capability. A second successful servicing mission took place in 1997. Subsequent servicing missions have added additional capabilities to HST, which observes the Universe at ultraviolet, visual, and near-infrared wavelengths.

Since its preliminary inception, HST was designed to be a different type of mission for NASA -- a long term space-based observatory. From its position 380 miles above Earth's surface, the Hubble Space Telescope has contributed enormously to astronomy. It has expanded our understanding of star birth, star death, and galaxy evolution, and has helped move black holes from scientific theory to fact. Credited with thousands of images and the subject of thousands of research papers, the space telescope is helping astronomers answer a wide range of intriguing questions about the origin and evolution of the universe.

Compton Gamma Ray Observatory

The Compton Gamma Ray Observatory (CGRO) was the second of NASA's Great Observatories. Compton, at 17 tons, was the heaviest astrophysical payload ever flown at the time of its launch on April 5, 1991, aboard the space shuttle Atlantis. This mission collected data on some of the most violent physical processes in the Universe, characterized by their extremely high energies.

Compton had four instruments that covered an unprecedented six decades of the electromagnetic spectrum, from 30 keV to 30 GeV. In order of increasing spectral energy coverage, these instruments were the Burst And Transient Source Experiment (BATSE), the Oriented Scintillation Spectrometer Experiment (OSSE), the Imaging Compton Telescope (COMPTEL), and the Energetic Gamma Ray Experiment Telescope (EGRET). For each of the instruments, an improvement in sensitivity of better than a factor of ten was realized over previous missions.

Compton was safely deorbited and re-entered the Earth's atmosphere on June 4, 2000.

Chandra X-Ray Observatory

The third member of the Great Observatory family, the Chandra X-Ray Observatory (CXO), was deployed from a Space Shuttle and boosted into a high-Earth orbit in July 1999. This observatory is observing such objects as black holes, quasars, and high-temperature gases throughout the x-ray portion of the EM spectrum.

Chandra detects and images X-ray sources that are billions of light years away. The mirrors on Chandra are the largest, most precisely shaped and aligned, and smoothest mirrors ever constructed. If the surface of Earth was as smooth as the Chandra mirrors, the highest mountain would be less than six feet tall! The images Chandra makes are twenty-five times sharper than the best previous X-ray telescope. This focusing power is equivalent to the ability to read a newspaper at a distance of half a mile. Chandra's improved sensitivity is making possible more detailed studies of black holes, supernovas, and dark matter. Chandra will increase our understanding of the origin, evolution, and destiny of the universe.

Spitzer Space Telescope

The Spitzer Space Telescope represents the fourth and final element in NASA's Great Observatory program. Spitzer fills in an important gap in wavelength coverage not available from the ground -- the thermal infrared.

The Spitzer Space Telescope was launched into space by a Delta rocket on August 25, 2003. Spitzer obtains images and spectra by detecting the infrared energy, or heat, radiated by objects in space between wavelengths of 3 and 180 microns (1 micron is one-millionth of a meter). Most of this infrared radiation is blocked by the Earth's atmosphere and cannot be observed from the ground.

Consisting of a 0.85-meter telescope and three cryogenically-cooled science instruments, Spitzer is the largest infrared telescope ever launched into space. Its highly sensitive instruments give us a unique view of the Universe and allow us to peer into regions of space which are hidden from optical telescopes. Many areas of space are filled with vast, dense clouds of gas and dust which block our view. Infrared light, however, can penetrate these clouds, allowing us to peer into regions of star formation, the centers of galaxies, and into newly forming planetary systems. Infrared also brings us information about the cooler objects in space, such as smaller stars which are too dim to be detected by their visible light, extrasolar planets, and giant molecular clouds. Also, many molecules in space, including organic molecules, have their unique signatures in the infrared.

For more information about NASA's Great Observatories, visit these sites:

Hubble Space Telescope (HST) - <http://www.stsci.edu/hst/>

Compton Gamma Ray Telescope (CGRO) - <http://cossc.gsfc.nasa.gov/>

Chandra X-ray Observatory (CXRO) - <http://chandra.harvard.edu/>

Spitzer Space Telescope (SST) - <http://www.spitzer.caltech.edu/index.shtml>

Credit: From materials on the NASA website

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.

Telescope Troubles 2001-2002

By August 2001, it was clear that trouble was brewing with the C14 telescope's declination motor. A suggestion was made to replace Mike Roger's 14-inch with a club-owned 12-inch Meade "goto" telescope. It was agreed that this route should be followed given the ease of using such telescopes. With the advent of "goto" capacity it was becoming very easy to find celestial objects using a micro-processor-driven instrument. All that would be required is pointing a telescope at two known stars, centering them in the eyepiece, pressing an "align" button, and from there the telescope would be able to automatically find any object in the system's database of thousands of objects that currently were above the horizon. This certainly was more appealing than pointing a rather cumbersome telescope via finder and then using star hopping techniques to find the object. Few members at this time were sufficiently well informed about the use of setting circles.

Fund raising for a new telescope began during December 2001. Within a month \$1,000 had been raised, and within two months a total of \$2,000 had been raised from the membership toward the \$4,250 purchase price. A short-term loan was secured from Dan Miller to provide for the rest of the purchase price as fund raising continued. The new telescope was ordered in February 2002 and arrived in March. It was installed in the SGO during June 2002, and was returned to Meade the next month due to a problem with the focuser. Michael Rogers' C-14 was reinstalled temporarily so it could be used with the summer public observing sessions. The 12-inch came back from Meade in August and was reinstalled in September 2002. Due to continuous fund raising and a very generous membership, the loan note was paid off by November of that year. All told, 13 members of the TCAA contributed at grand total of \$2,975 to the purchase of the telescope. The rest of the funding came from the club treasury.

With the opening of the observatory, problems were noted with the vibration of the pier. When the telescope was moved, vibrations were clearly visible through the eyepiece of the telescope; nonetheless, the vibration quickly stopped. Despite this fact, efforts were made to stabilize the pier. A network of steel cables was attached to the pier just under the dome floor. These cables were run to the outer wall of the observatory in the hope of reducing the vibrations. They had the unfortunate effect, however, of transmitting vibrations of people moving around inside the observatory to the telescope. The cables were removed shortly after this connection became apparent.

By the summer of 2003 Carl Wenning returned to active participation in the club. In 1994 Carl took charge of the Physics Teacher Education program at ISU. From around 1997 onward he had been overwhelmed with planetarium work in conjunction with running the growing physics teacher education program at Illinois State University. In November 2000, a new planetarium director was hired (Tom Willmitch) relieving Carl of his heavy work burden. Nonetheless, it took Carl several more years to return to active participation in the club. He did so in 2003.

Having used the SGO telescope for the first time during the summer, Carl noted in a September 2003 article for *The Observer* that the telescope's optics were not as good as he had expected. Still, it was too late to do anything about it as the warranty on the instrument had long since expired. He further noted that for a viewer working alone, the pier vibration, while unfortunate, was not all that deleterious to visual observing. He noted too that once the telescope had reached its intended target, the vibration quickly damped out and that the viewing quality – while limited by the quality of the telescope itself – returned.

Despite these concerns, certain TCAA members made regular use of the SGO to conduct visual observations. Astrophotography was "out" due to the problems associated with the pier, and the fact that the telescope used an altazimuth mount. This latter condition resulted in field rotation during long exposures making anything but the simplest forms of astrophotography impossible. Still, William Carney, Carl Wenning, and a few others observed with renewed vigor as time and sky conditions permitted. It was no longer unusual to see hitherto unviewed objects, or to see many dozens of objects during a single evening. Amateur astronomy had really begun to change with the advent of the "goto" capacity of this telescope.

YEAR END CHARITABLE GIVING

At the end of each year many of us give donations to our favorite charities. Be certain not to forget the TCAA this year. The TCAA is an officially recognized 501(c)3 non-profit educational organization. As such, donations made to the club are tax deductible to the extent permitted by Federal law.

One component of the club's 5-year plan is to develop a \$5,000 reserve for supporting the 2010 NCRAL convention that the TCAA will be hosting. If these funds are not needed to support NCRAL events, the money will support future club activities identified in the club's five-year plan. Donations by the membership will go a long way toward generating the additional sum needed to reach this goal.

If you should like to donate to this reserve fund (and we hope everyone will help achieve this goal), send your contribution to our esteemed Treasurer Duane Yockey at 508 Normal Avenue, Normal, IL 61761. Contributions in excess of \$250 will be acknowledged with an official letter for tax purposes.

TCAA Treasurer's Report – November 2008

OPERATING FUND BALANCE – October 31, 2008 - \$ 2,610.69

Income

John Werner (dues renewal) - \$ 40.00

Duane Yockey (dues renewal) - \$ 40.00

Reimbursement (2 books) - \$ 46.20

Expenses

LYB Inc. (November Observer) - \$ 20.65

OPERATING FUND BALANCE – November 30, 2008 - \$ 2,716.24

OBSERVATORY FUND BALANCE – October 31, 2008 - \$ 1,918.90

Income

Interest - \$ 0.00

Expenses

None - \$ 0.00

OBSERVATORY FUND BALANCE – November 30, 2008 - \$ 1,918.90

TOTAL TCAA FUNDS – November 31, 2008 - \$ 4,635.14

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

December 20—Saturnalia party &
MOOS

January 27, 2009—Board Meeting

February 7, 2009—Annual Meeting



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/