

The OBSERVER

The Newsletter of the Twin City Amateur Astronomers, Inc.

July 2005 Volume 30, Number 7



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UPCOMING ILLINOIS STAR PARTIES

The July Members-Only Observing Session will take place on Saturday, July 2, at Sugar Grove Observatory. This event is for TCAA members and their guests, and features extensive observations with the 12-inch telescope. Observing is informal, and will begin at around 9:30 p.m. In the event of an overcast sky, the event will be cancelled. If uncertain about whether or not this event will be cancelled, contact the coordinators for this event, Mike Rogers or Duane Yockey. See the first column of page 2 in this issue of *The Observer* for contact information.

The July Public Observing Session will take place on Saturday, July 9, at SGNC and running from 9:00 p.m. to 11:00 p.m. The topic for the evening will be Messier 8, the emission nebular in Sagittarius. Sunset occurs at 8:28 p.m. that evening. A 15-20 minute talk will commence at 9:00 p.m. and will be presented. This talk will be followed by a laser-mediated sky lecture beginning at about 9:30 p.m. Telescope viewing will commence at about 9:45 p.m., and will continue until 11:00 p.m. In the event of an overcast sky, the event will be cancelled. If uncertain about



TCAA Calendar of Events

- July 2: Members Only Observing Session at Sugar Grove Nature Center
9:30 p.m.
Coordinators: 1. Michael Rogers, 2. Duane Yockey
- July 9: Public Observing Session at Sugar Grove Nature Center,
9:00 p.m., "Emission Nebula M8"
Coordinators: 1. Michael Rogers, 2. William Carney
- Aug 6: Members Only Observing Session with Picnic at SGNC
6:30 p.m. Picnic
9:00 p.m. Observing

The Observer

Newsletter of the TCAA, Inc.

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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**Observer Editor/
TCAA Education Coordinator**

Rebecca Wenning 21 Grandview Dr. Normal, IL 61761 309-454-4164 rwennin@ilstu.edu	Submissions must be received by the 1st of each month.
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Membership Dues

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

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

Duane Yockey
508 Normal Avenue
Normal, IL 61761

whether or not the event will be held, contact Carl at 309-830-4085 (cell) or Michael at 309-825-6454.

To download a PDF-based brochure showing the complete schedule, along with a treasure trove of other valuable information relative to the club's public observing sessions, visit the TCAA website by accessing the following URL: <http://www.twincityamateurastronomers.org/>.

Astrofest 2005 will be held September 8 through 10, 2005 at Vana's Pumpkin Land just east of Kankakee, IL, on Illinois Route 17. Visit the Chicago Astronomical Society website at <http://www.chicagoastro.org/> for details and to register.

The Prairie Skies Star Party will be held at Camp Shaw-Waw-Nas-See near Kankakee, IL, from September 29 through October 2, 2005. As anyone who has been to Camp Shaw knows, its rustic character and natural setting provide a warm and friendly atmosphere for a star party. Visit the Prairie Skies Star Party web site at <http://www.prairieskies.org/> for details.

The Illinois Dark Skies Star Party for 2005 will be held October 6 through 9. Sponsored by the Sangamon Astronomical Society and the St. Louis Astronomical Society, the Fourth Annual Illinois Dark Skies Star Party will be held October 6 - 9, 2005 at the Jim Edgar Panther Creek State Fish and Wildlife Area. The park is located about 25 miles northwest of Springfield, Illinois, in eastern Cass County. Visit <http://www.sas-sky.org/> for registration and other information.

***TCAA BOARD MEETING
MINUTES, 6/22/05***

~by Michael Rogers, Sec. ~

The Board of Directors met at Lewis, Yockey and Brown on 22 June 2005. In attendance were President Lyle Rich, Treasurer Duane Yockey, Director William Carney, and Secretary Michael Rogers. Jonathan Rogers was a guest. The meeting was called to order at 6:05 PM. The first order of business was to approve the meeting minutes from the 5/4/05 meeting. Next, the Members Only Observing Session (aka MOOS) and Public Observing Session (POS) schedules were fleshed out, as follows:

MOOS Schedule:

2 July — Michael, Duane
6 August (Picnic) — Kal,
William
3 September — Michael, Kal
1 October — William, Kal
5 November — Michael, Dan
3 December — Carl, Duane

POS Schedule:

9 July — Emission Nebula, M8;
Michael, William
13 August — Planetary Nebula
M57 ; Lyle, Neale
10 September — Open Cluster
M11 ; Dan, Michael
8 October — Venus and Galaxy
M31 ; Carl, Duane

Because of the anticipated wide interest in the Mars opposition, it was decided to make the November 5 MOOS into a POS (Public Observing Session).

It was noted with satisfaction that Dr. Roger Philips will be the speaker for our Annual Banquet, scheduled for the 11th of February, 2006.

Several public outreach programs are either scheduled or being researched. Duane is going to investigate requests from the East Bay Camp, and the Festival of Trees (at the Interstate Center). Michael will investigate Girl Scout Camp opportunities (11/12 July and 18/19 July), and a query from Barnes & Noble about participating in the Harry Potter Festival.

Because of Comet 9P/Tempel 1's unimpressive magnitude, and because of the timing (4 July), it was felt that we should not have a public program related to Deep Impact: instead, we will keep it as a members-only event. William will ensure that *Cartes du Ciel* has the comet's coordinates, and Duane will write an article for the newsletter.

A need for better communication with area science teachers was discussed. Lyle will write a general letter of introduction to superintendents in Unit 5, District 87, Olympia, Tri-Valley, and Ridge View school districts, and Michael will write a letter aimed at science teachers. These letters will describe the club, and opportunities for teachers to have observing sessions at our observatory or programs at their schools.

It was unclear whether or not new members packets were being delivered in a timely manner. Duane will provide Michael with a list of new members, William will acquire new member packets from the observatory, and Michael will deliver them.

William will write an article for the next issue of *The Observer* promoting key holder training.

It was felt that more emphasis on publicity is necessary. The brochure

will be updated, and generated in color (rather than just printed on marigold-yellow paper, as is done now). The importance of getting news of our POS's out to the media was stressed. Finally, Michael will investigate the possibility of the TCAA hosting an occasional radio show, on WGLT Radio, devoted to astronomy.

On the 30th of June, Lyle and Michael will distribute POS schedules to various locations — the libraries, the Challenger Learning Center, the Planetarium, the YMCA/YWCA, and Barnes & Noble.

Michael described an "Observing Cheerleader Program". Each week when observing is not precluded by the moon phase, a designated "observing cheerleader" for the week will actively encourage others to go observing. An article for *The Observer* on the subject will be forthcoming.

Our insurance rates have gone up, but our liability insurance has increased to \$1,000,000. As a cost-saving measure, it was suggested that *The Observer* be distributed electronically, for those who prefer receiving their newsletters via e-mail. Duane will discuss this with Rebecca.

The Sugar Grove Nature Center is open to the possibility of our constructing a second observatory on the site. At the next MOOS, we will scope out various locations, and then get back to the SGNC people.

Regarding the ISU Planetarium fund raiser, in the form of a telescope raffle, several board members said that they would chip in, and Lyle will e-mail a note to the club.

Finally, Lyle suggested that we form a committee to discuss ways

in which we can meet the needs of our youngest members. Many of our members have children, and it is not clear that our standard programs interest them. A committee of members interested in this issue will be forming shortly.

The next BOD meeting was sent for August 10, 2005, at 6 PM, at Lewis, Yockey and Brown. The meeting adjourned at 7:50 PM.

UPDATE ON TELESCOPE RAFFLE

~by Carl Wenning~

An anonymous donor, a good Friend of the ISU Planetarium, has donated a new Argonaut 6-inch Maksutov-Newtonian OTA (optical tube assembly) for the purpose of a raffle to benefit the planetarium. The telescope was purchased from Orion Telescopes and Binoculars (item 09068) by the original owner about five years ago and has never been used. The OTA, to be raffled without a pier (the original purchaser did not buy one), lists at \$1,799.

Because the winner of the telescope would have to provide his or her own mount for the telescope, as well as eyepieces and adapters, this might cause some members to shy away from purchasing raffle tickets. Don't let this be the case. Consider the fact that you might win the telescope. You could then donate the telescope to the TCAA taking advantage of a tax-deductible charitable contribution to the TCAA which is a Federally recognized 501(c)3 not-profit corporation. A donor could thereby convert a single winning \$20 ticket into a \$1,799 tax deduction that could have an actual cash value to the donor of 15% to 33% of the full value of the

telescope.

If you are interested in vying for this valuable, top-quality telescope, you should know that only 50 tickets will be sold. Each ticket will be sold to astronomy club members for a price of \$20 each, raising \$1,000 for the ISU Planetarium. The drawing for the telescope will occur only after all 50 raffle tickets have been sold. If 50 tickets cannot be sold to the TCAA membership, then additional tickets will be sold to other amateur astronomers in the area. As of Friday, July 1, 30 of the 50 tickets have been sold.

Raffle tickets are available through mail order only, and are sold on a first-come, first-served basis prioritized by postmark date. To purchase your numbered ticket(s), send \$20 per ticket to Carl Wenning. Please do not send cash, and be certain to make your check payable to Illinois State University Foundation/Planetarium. Send your request for tickets (along with your return address) to Carl Wenning at 21 Grandview Drive, Normal, IL 61761-4071. If you would like to arrange to see the telescope before purchasing your raffle ticket(s), feel free to contact Carl by phone at

(309) 454-4164 or via e-mail at wenning@phy.ilstu.edu.

ISU Planetarium Director Tom Willmitch reports that support is critically needed to replace the foundering audio playback system and the now completely failed annual motion power supply. He has provided the following report by special request.

"The Illinois State University Planetarium faces many challenges with its 40-year-old star projector and aging multi-media system. Beyond maintaining decades old equipment, this means replacing technologies that were once innovative, but are now obsolete. At the heart of the Planetarium sits a 1964 Spitz A3-P star projector. Early this year the Planetarium had Spitz rebuild the star-lamp's power supply for a little under \$1,000. However, further repairs have yet to be made to the lamp system that will cost several hundred additional dollars. Beyond this, the star projector's annual-motion system has failed. This is the system that simulates the motion of the Sun, Moon, and planets across the sky over days, weeks, and years. Spitz estimates that this system will also cost close to \$1,000 to repair.

At the same time several major components of the Planetarium's multi-media system are failing. This system is used to present nearly all of the Planetarium's public and school programs. Of greatest concern is the failing Tascam Portastudio 424 tape deck. This provides both the sound and time source for the multi-media programs presented under the Planetarium's dome. This once popular piece of equipment is no longer used by most planetaria. Over the past decade the Fostext

VF160EX digital audio system has come to prominence. This key piece of equipment eliminates the need for magnetic audiotapes and costs around \$900. Thus, it is critical that the ISU Planetarium raise funds beyond its day-to-day operating needs to both continue to present programs to audiences of all ages and move into the future."

As you can see, our help is greatly needed to keep the ISU Planetarium afloat. Won't you help out today by purchasing one of the 20 remaining raffle tickets or making a direct donation to the ISU Planetarium? Contact me, Carl Wenning, if you would like to receive a donation form or if you have any questions.

PLANETARIUM PRESENTS COSMIC CATASTROPHES

The Illinois State University Planetarium is proud to offer *Cosmic Catastrophes* that will run from now through July 22. Show times are Wednesday and Friday evenings at 7:30 PM. In a sci-fi setting, *Cosmic Catastrophes* explores many potential threats to the Earth. These dangers range from the effects of man-made pollution to the threat of huge asteroids wielding past the Earth.

Admission to the ISU Planetarium's public programs is \$3 for adults, \$2 for children ages 5-12 and seniors, and \$1.50 for children ages 3-4. Planetarium members are admitted free of charge. Tickets may be purchased in the Planetarium Gift Shop, next to the Planetarium, beginning 20 minutes before each show. For more information about the planetarium, visit the planetarium's web page at <http://www.phy.ilstu.edu/planet.html>.

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SKYLINE FOR JULY '05

~ by *Tom Willmitch* ~

ISU Planetarium Director

July means warm nights and the rhythmic chirp of crickets. This is a time to bid farewell to the fleeting stars of spring and welcome the bright stars of summer. Hidden from sight, the new moon occurs at 7:02 AM CDT on July 6. Visible in the afternoon and evening sky, the first-quarter moon occurs at 10:20 AM on July 14. Rising at sunset and setting at sunrise, the full or Native American buck moon occurs at 6:00 AM on July 21. Finally, visible in the morning sky, the last-quarter moon takes occurs at 10:19 PM on July 27.

July opens with faint Mercury and brilliant Venus side-by-side a short distance above the western horizon shortly after sunset. Venus can easily be seen late in evening twilight. However Mercury, less than 2-degrees to the left of Venus, will require the aid of binoculars. The evening of July 8 will find a thin crescent Moon, located just above Mercury and Venus an hour after sunset. Over the week follows, Mercury will slip below Venus and vanish from sight below the western horizon.

During the first few days of July Saturn shines faint on the western horizon, just to the right of Mercury and Venus, as the evening sky grows dark. However, Saturn will be a challenge to see even with binoculars and will soon be gone. Unmistakably bright Jupiter can be found to the southwest as darkness falls. Located in the constellation of Virgo the Maiden, the King of the Planets is visible from late twilight until it sets after shortly after

midnight.

Finally, throughout July Mars rises at about the same time as Jupiter sets. The Red Planet is growing brighter from night to night and is located on the border between the constellations of Pisces the Fishes and Cetus the Sea Monster. This summer Mars will put on a show rivaled only by the Red Planet's appearance in 2003.

The seven bright stars of the Big Dipper can be found overhead and to the northwest just after dark. Make a line between the two stars at the end of the Dipper's cup, opposite the handle. Follow this line out the open end of the Dipper's cup and it will lead to a bright star that sits alone. This is Polaris the North Star and end star in the handle of the Little Dipper. Following the curve of the Big Dipper's handle you will eventually encounter the bright star Arcturus. To the south of this you will encounter bluish-white Spica, with brilliant Jupiter just to the right. Finally, rising to the east are the three bright stars of the Summer Triangle. These are the stars Vega, Altair, and Deneb. These three unmistakable stars will be located high overhead as the sky darkens by late next month.

DEEP IMPACT: FIRST LOOK INSIDE A COMET

~ by *Duane Yockey* ~

What's deep inside a comet? Comets are time capsules that hold clues about the formation and evolution of the solar system. They are composed of ice, gas and dust, primitive debris from the solar system's distant and coldest regions that formed 4.5 billion years ago. Deep Impact, a NASA Discovery

Mission, will be the first space mission to probe beneath the surface of a comet and reveal the secrets of its interior.

On July 4, 2005, the Deep Impact spacecraft will arrive at Comet Tempel 1 to impact it with an 820 pound mass. On impact, the crater produced is expected to range in size from that of a house to that of a football stadium, and two to fourteen stories deep. Ice and dust debris will be ejected from the crater revealing fresh material beneath. Sunlight reflecting off the ejected material will provide a dramatic brightening that will fade slowly as the debris dissipates into space or falls back onto the comet. Images from cameras and a spectrometer will be sent to Earth to cover the approach, the impact and its aftermath. The effects of the collision with the comet will also be observable from certain locations on Earth and in some cases with smaller telescopes. The data will be analyzed and combined with that of other NASA and international comet missions. Results from these missions will lead to a better understanding of both the solar system's formation and implications of comets colliding with Earth.

The Mission – The Deep Impact mission has lasted six years from start to finish. Planning for the mission took place from November 1999 through May 2001. The result, which was built and tested, was a two-part spacecraft. The larger "flyby" spacecraft carries a smaller "impactor" spacecraft to Tempel 1 and will release it into the comet's path for a planned collision.

On January 12, 2005, a Delta II rocket launched the combined Deep

TCAA Treasurer's Report – June 2005

OPERATING FUND BALANCE – May 31, 2005 - \$ 1,691.77

Income
Prakash Muduli (Dues) - \$ 40.00
Sothilingam family (Dues) - \$ 40.00
Joe DeHoff (Dues Renewal) - \$ 40.00

Expenses
Astronomical League (Annual Dues) - \$ 255.00
Abram Planetarium (Sky Calendars) - \$ 132.00
Carl Wenning (June Observer) - \$ 53.30

OPERATING FUND BALANCE – June 30, 2005 - \$ 1,371.47

OBSERVATORY FUND BALANCE – May 31, 2005 - \$ 957.54

Income
Keyholder Fee (Sothilingam) - \$ 10.00

Expenses
None - \$ 0.00

OBSERVATORY FUND BALANCE – June 30, 2005 - \$ 967.54

TOTAL TCAA FUNDS – June 30, 2005 - \$ 2,339.01

Respectfully submitted,
L. Duane Yockey, Treasurer
Sugar Grove Observatory

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

Duane Yockey (April 2001, renewed through 2005)
Michael Rogers (August 2001, renewed through 2005)
William Carney (March 2002, renewed through 2005)
Carl Wenning (January 2004, renewed through 2005)
Brian Barling (February 2004), renewed through 2005
Lenore Trainor (December 2004, renewed through 2005)
Lyle Rich (renewed through 2005)
Kevin Brown (May 2005)
Sothilingam family (June 2005)

Impact spacecraft, which left Earth's orbit and was directed toward the comet. The combined spacecraft, during its approach to Tempel 1, has and will continue to collect images of the comet before the impact. 24 hours before impact, the flyby spacecraft will point high-precision tracking telescopes at the comet and release the impactor on a course to hit the comet's sunlit side.

The impactor is a batter-powered spacecraft that operates independently of the flyby spacecraft for just one day. It is called a "smart" impactor because, after its release, it takes over its own navigation and maneuvers into the path of the comet. A camera on the impactor will capture and relay images of the comet's nucleus just seconds before collision. The impact will not be forceful enough to make an appreciable change in the comet's orbital path around the Sun.

After release of the impactor, the flyby spacecraft will maneuver to a new path that, at closest approach will pass 300 miles from the comet. The flyby spacecraft will observe and record the impact, the ejected material blasted from the crater, and the structure and composition of the crater's interior. After its shields protect it from the comet's dust tail passing overhead, the flyby spacecraft will turn to look at the comet again. The flyby spacecraft will take additional data from the other side of the nucleus and observe changes in the comet's activity. While the flyby spacecraft and impactor do their jobs, professional and amateur astronomers at both large and small telescopes on Earth will observe the impact and its aftermath, and results will be broadcast over the Internet.

Comet Tempel 1 will not be visible from Illinois at the time of impact. However, TCAA members are encouraged to look at Tempel 1 at the MOOS on July 2 and then observe it the evening after impact. It is expected that the magnitude of the comet will increase by 1 or 2 in brightness.

Comet Tempel 1 – Comet Tempel 1 was discovered in 1867 by Ernst Tempel. The comet has made many passages through the inner solar system, orbiting the Sun every 5.5 years. This makes Tempel 1 a good target to study evolutionary change in the mantle or upper crust. Comets are visible for two reasons. First, dust driven from a comet's nucleus reflects sunlight as it travels through space. Second, certain gases in the comet's coma, stimulated by the Sun, give off light like a fluorescent bulb. Over time, a comet may become less active or even dormant. Scientists are eager to learn whether comets exhaust their supply of gas and dust to space or seal it into their interiors. They would also like to learn about the structure of a comet's interior and how it is different from its surface. The controlled cratering experiment of this mission will hopefully provide some answers to these questions.

Technical Implementation – The flyby spacecraft carries a set of instruments and the smart impactor. Two instruments on the flyby spacecraft observe the impact, crater and debris with optical imaging and infrared spectral mapping. The flyby spacecraft uses an X-band radio antenna (transmission at about eight gigahertz) to communicate to earth as it also listens to the impactor on a different frequency. For most of

the mission, the flyby spacecraft communicates through the 34-meter antennae of NASA's Deep Space Network. During the short period of encounter and impact, when there is an increase in volume of data, overlapping antennas around the world will be used. Primary data is transmitted immediately and other data will be transmitted over the following week. The impactor spacecraft is composed mainly of copper, which is not expected to appear in data from a comet's composition. For its short period of operation, the impactor will use simpler versions of the flyby spacecraft's hardware and software (and fewer backup systems).

The Team – The Deep Impact mission is a partnership among the University of Maryland, the California Institute of Technology's Jet Propulsion Laboratory and Ball Aerospace and Technology Corp. The scientific leadership of the mission is based at UMD. Engineers at Ball Aerospace designed and built the spacecraft under JPL's management. Engineers at JPL control the spacecraft after launch and relay data to scientists for analysis. The entire team consists of more than 250 scientists, engineers, managers and educators. Deep Impact is a NASA Discover Mission, eighth in a series of low-cost, highly focused space science investigations. Deep Impact offers an extensive outreach program in partnership with other comet and asteroid missions and institutions to benefit the public, educational and scientific communities. For more information visit: <http://deepimpact.umd.edu> or <http://deepimpact.jpl.nasa.gov>.

**Announcing New
TCAA Members**



Sothilingam Family
Renewal Date: 200606

Welcome!



The OBSERVER

Newsletter of the TCAA, Inc.

Rebecca Wenning, Editor
21 Grandview Drive
Normal, IL 61761-4071

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