TWIN CITY AMATEUR ASTRONOMERS, INC.

The OBSERVER

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BOARD OF DIRECTORS' MEETING SLATED

The TCAA Board of Directors will hold their next semi-monthly meeting on Tuesday, September 13th, in the offices of Lewis, Yockey & Brown in downtown Bloomington. The meeting time is 6:30 p.m. and it is expected that the meeting will continue until about 8:00 p.m. Members of the TCAA are invited to attend this open meeting where they have a voice – but no vote – in compliance with state guidelines for non-profit 501(c)3 educational associations such as our own. The meeting will take place at 505 North Main Street in Bloomington, across the street from and just south of Common Ground grocery and The Chocolatier confectioners.

Agenda items include, but are not limited to, such things as a donation to SGNC to pay for materials used to build our new storage area, policy statements relative to the use of SGO, etc.

RECENT AND UPCOMING E/PO EVENTS

The main event starting off August was the regularly scheduled public observing session held on Saturday, August 6th. The evening's coordinator, Dave Osenga, presented *Small Bodies – Large Impacts* as part of "Vesta Fiesta". There was an 8-day-old moon in the sky. There were some 20 members of the general public in attendance as well as the following TCAA members: Duane Yockey, Carl Wenning, William Carney, Lee Green, Tony Cellini, Don Cooper, Tom and Carolyn Weiland, Mark Honzell (plus wife Janet and mother Arline), Dave Osenga, Bob Finnigan, and Larry Leetzow.

A few lucky observers who arrived early were able to view Saturn against a blue background. Other scopes were pointed at the moon which made a segue for crater formation in our discussion on Vesta and Ceres later. Dave started the evening's program at around 8:45 p.m. and continued for about 30 minutes. Dave gave an excellent presentation on the Dawn mission and ion drives with current photos of Vesta and then we moved on to viewing. At the end of the presentation, youngsters in attendance latched on to a number of free items provided by the club by Tom Weiland and Carl Wenning. Carl then gave a 10-minute constellation talk that captured most of the visitors' attention; viewing then followed despite the partly cloudy and hazy sky and the presence of a first quarter moon. Bob had a crowd of people at the observatory who made requests and viewed real-time images from around heavens while Larry assisted with the movement of the dome. Outdoors, the public moved from scope to scope as each was pointed toward something different for the viewers. A lot of oohs and aahs ensued. The occasional "Wow, what is that?" and an overall satisfaction by both viewers and presenters was heard. As the night went on and the public visitors began to thin out, there was a bit of independent observation which presented those who stayed later with more unique objects such as 8.3-magnitude Comet Garradd and galaxies outside our own. Additionally, several were presented views through binoculars. Mark noted later, "I could hear from the comments this may have been the perfect finish because binoculars are an easy and inexpensive way to get started in astronomy." Our guests remained until around 10:30 p.m. with most club members packing it in by around 11:30 p.m. Mark and Bob remained a bit longer for visual and photographic observations respectively. Mark reported that the ground level fog was getting worse and that it soon shut him down. Bob, operating above the fog, was able to stay longer.

Carl provided glimpses of the waxing gibbous moon, Saturn, and a few other celestial objects using his CPC 11-inch telescope at Weldon Springs SRA near Clinton, IL, on the evening of August 11th. This was part of the park's meteor observing program that was held despite the presence of a nearly full moon. Members of the general public roasted marshmallows and shared refreshments watching for the rare brighter Perseid meteors that did show from time to time.

The next-to-last POS for 2011 is slated for Saturday evening, September 3rd, beginning at 7:30 p.m. The topic of the program will be *Phases of the Moon* presented by Carl Wenning. With the first-quarter moon dominating the southern sky, this will be a most appropriate time to speak about this topic.

Cub Scout Pack 38 is scheduled to camp out at SGNC on Friday, September 16th, and the TCAA has agreed to support them with a sky tour. If the sky is clear, we will be pointing out constellations and providing telescopic views. If the sky is overcast, Mark will spend some time talking about how telescopes work and perhaps we will open the SGO for a brief tour as well. Coordinator: Mark Honzell; assisting will be Lee Green and Carl Wenning.

And then there was one.... After these events, we are now down to the last remaining POS scheduled for 2011. Details are as follows: October 1st: Jupiter's Moons (4 day old moon) Coordinator: *Tom Weiland*

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.

STAR PARTIES

The Sangamon Astronomical Society will host the 10th Annual Illinois Dark Skies Star Party will be held at the Jim Edgar Panther Creek State Fish and Wildlife Area (JEPC), 25 miles northwest of Springfield, Illinois. The dates of the event are September 29th through support October 1st. For details, check out the SAS webpage at http://sassky.org/wp/?page_id=120.

The Quad Cities Astronomical Society is hosting an observing weekend on September 30-October 2 about 20 miles northwest of Davenport, IA. The event is held at St. Ambrose University's Mencke Observatory at the Wapsi River Environmental Education Center just north of Dixon Iowa. The event is free of charge, but a small camping fee does apply. For more information, visit http://www.qcas.org.

MACHU PICCHU IN DECEMBER?

Dan Miller continues to develop plans for a trip to Peru running from December 26th through January 2nd. Several club members are thinking about going on the trip, as well as a number of teachers who Carl W. has been able to marshal together. (Hoping to participate in this trip are Ken Wester and his daughter Keely, Jeff Velassio and his son, Carl Wenning and his daughter Teresa, Carol Thompson, Karen Castle, Linda Richardson, Bob Finnigan, Dan Miller, and perhaps a few others. If you are interested in participating in this adventure, be certain to inform either Dan or Carl.)

ANOTHER VOICE FROM THE TCAA'S PAST

During August former TCAA member William (Bill) Zaffiri was cruising the Internet when he came across the TCAA web site and club history. A few days later, on Tuesday, August 9th, Bill wrote web master Lee Green noting how he had read Carl Wenning' *History of the Twin City Amateur Astronomers: 1960-2010* and how he had enjoyed it. Carl has subsequently been in contact with Bill and has asked him for his early recollections of the club. (Bill was a member of the club before Carl joined and moved out of town in the early 1980s.) If anyone would like to contact Bill via email, he may be reached at the following email address zaffiriw@pcsb.org.

HOW TIME FLIES

TCAA Historian Carl Wenning will provide monthly updates about the history of the club going back to intervals of 50, 25, and 10 years ago. 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

September 1961 – The club is working on a 10-inch mirror for a homebuilt telescope destined for a club observatory. It is hoped that the town of Normal will help with the construction of the observatory on city property. It was further reported the Professor Brace is retiring from IWU, and that the school's observatory would soon be shut down. A September 16th public observing session had a "low turnout" of about 50; still, the club gained two new members as a result.

25 Years Ago

September 1986 – The monthly meeting of the TCAA was held at the ISU Planetarium on September 6th. Carl Wenning played an audiotape of an interview with Weldon Schuette speaking about the history of the club. Weldon had died a month earlier. A week before that, on September 13th, Mike Miller led the club on a field trip to the Henry Crown Space Center at the Museum of Science and Industry in Chicago. On September 10th and 17th the club hosted a two-part adult education course in ISU's Moulton Hall.

10 Years Ago

September 2001 – Mike Rogers resurrected the TCAA's former mirror-making course. The club's first mirror-making courses were held in the earliest years of the club and several small reflecting telescopes were completed. Those early mounts were assemblies of iron pipe mounted on wood frames. The TCAA Readers Group was meeting regularly to discuss selections on a monthly basis.

PROFILES IN AMATEUR ASTRONOMY: MARK HONZELL

In 1975, I discovered Jupiter and its four main moons.... While looking at a bright spot in the sky with a pair of binoculars, I was wondering why this oversized, brilliant star had gone unnoticed for so long. This experience was probably the same as Galileo the first time he actually witnessed Jupiter in the sky and felt the urge to see Jupiter better. This moment of curiosity was before the advent of the Internet and popular astronomy magazines with color photographs exhibiting the detail we see today. I, also, was curious and found I could not brush it off. I started investigating books in my high school library only to find this bright object was well known and much more interesting than I had ever imagined.

How many other planets could I view? If Jupiter was simply a spot that appeared abnormally bright, then I should be able to find more. I had a sudden burning desire to see the rings of Saturn. Soon, I had found both Mars and Saturn, but the detail of seeing the rings was out of range for the binoculars. It was winter, and for Christmas, guess what was on the top of my wish list: a telescope! Alas, my father did not see the value in such a whimsical, expensive toy. I needed to get my head out of the clouds.

I was 16 years old and decided to write my own future. Since I was working mid-shift at a nursing home, going to school during the day and dating at night, I was the typical teenager with no money to spare. But for this purchase, I found myself saving money and soon bought a 60mm refractor. That night, I watched in awe as the rings of Saturn passed overhead.

This observation was followed by watching sunspots, an eclipse, and meteor showers. At the time, high school books were not filled with nebulae, galaxies, clusters and comets and astronomy was thought of as being related to astrology and few knew the difference. My life was overly busy with marriage to my wife, Janet, at the age of 18. I had joined the Navy, had two children, and was traveling about the world to protect the USA through the art of nuclear power and detente. I must have loved it all as I spent the next 22 years making holes in the ocean while traversing the deeps within nuclear powered submarines.

During that time, I pursued the study of electronics. I built my first computer from parts with a by mail class and found that programming languages were to be a second fascination in my life. I pursued them voraciously! In my dreams, this would be my next career. I wrote and sold two programs: a checkbook accounting program and a simple game. The Internet was operating at about 300 baud, computers had 4KB of memory and 5.25" floppy disks were all the rage.

But, after 13 years into my naval career, I thought it was time to get serious and found myself changing gears. I pursued a degree in Psychology through the University of the State of New York, again, by mail. Upon completion, my degree resulted in my promotion in the Navy, a few more years of service, and several more moves about the nation. Despite my fascination with the human psyche, I never practiced in this line of work.

I eventually lived in New York and found my third inner craft: wood working, on a big scale. With a portable saw mill, a friend of mine, Galen, and I would cut down trees, turn them into lumber and then build low cost housing for the elderly. Again, this talent would be realized in my spare time. (I do not do plumbing.) I learned enough about woodworking to not only build houses, but the finer side as well resulting in some furniture.

While I was in New York, in the late 90's, I observed my first comet, Hale-Bopp, with the naked eye. Most uniquely I remember showing it to others and understanding why it was easier to see when not looking at it directly. This was like teaching students and I was experiencing the eureka moment as others discovered the same wonders I was trying to reveal. Yes, I was a teacher of 10th grade Science in my spare time, as well. Finally, my naval career drew to a close and I entered the commercial nuclear power community. I continued to move about and ended up in Illinois about eight years ago. The stars began calling to me again.

A little over 30 years after first seeing Saturn's rings, I chanced to notice Saturn was up there, again. I found a 4.5" reflector up for grabs at a local garage sale for $50 and that night I was under the stars revisiting this magnificent planet. The scope was in sad shape, but my desire was much stronger. I held that scope together for almost a year with baling wire and duct tape as I watched the planets drift overhead.

Then, it happened.... A magazine on the rack with a beautiful picture of Saturn leaped into my hands and found its way to my home. Inside was a treasure trove of objects I never even considered looking for in the heavens. I had seen many of these in textbooks and the Internet over the years, but they never called to me. Okay, maybe I should be a little concerned.

With renewed vigor, I went looking for M57 with that 4.5" reflector and then I realized I had found it. A small circlet had appeared; not a star, nor a planet, but something very unique. I needed to see this little guy much closer, but magnification was my enemy with this scope. I was reading again, insatiably trying to figure out the link between focal length, f-stops, magnification, surface brightness, star tests, 1/10 wave, Strehl numbers, collimation; another entire vocabulary to learn. The Internet was suddenly alive with a multitude of answers and a path to success. I needed a bigger scope.

After a lot of research, I came to the conclusion that a 12" Dobsonian was going to satisfy my growing hunger. I went the local astronomy club, TCAA, and participated in my first night ever at a public viewing. Despite all the research, I struggled to find even one object on my own. But, I did find one object through a 10.1" scope that was made available to me by that local astronomy club. And, then, another. I learned more in that night than all the book facts could ever teach me.

Alas, fate dictated that a little more was needed than I originally thought, and a 16" scope was finally delivered. The first object in my new scope: Saturn. What a truly wondrous sight. Then, M57, and the path was set when that luminous ring filled the entire eyepiece and continued to show exquisite detail with a hint of bluish-green light.

Apparently, there are awards for pursuing particular groups of objects. That may lie in my future, but I've already got my goals broken down into several spreadsheets that include some famous names: Messier, Herschel, Abell, Caldwell, IC, NGC, Double Stars, SAO, etc. I'll probably pursue some of these awards, but I find more satisfaction in knowing I finished the task. And the ultimate prize, showing someone else how to find the wonders I have discovered.

Mark Honzell

SEPTEMBER SKY GUIDE

03 Mercury is at greatest western elongation (18°), 1 A.M.

08 Mercury passes 0.7° north of Regulus, 9 P.M.

09 Mars passes 6° south of Pollux, 9 P.M.

10 The Moon passes 6° north of Neptune, 4 P.M.

13 The Moon passes 6° north of Uranus, 1 P.M.

16 Asteroid Ceres is at opposition, Noon

The Moon passes 5° north of Jupiter, 1 P.M.

23 The Moon passes 5° south of Mars, 3 A.M.

Equinox (northern autumn/ southern spring begins), 4 A.M.

25 Uranus is at opposition, 7 P.M.

28 Mercury is in superior conjunction, 3 P.M.

OBSERVERS' LOG FOR AUGUST 2011

August began with observers working past midnight at SGNC. The next two days were brutally hot and humid as we returned to the summer of 2011 heat wave. By the evening of August 3rd the heat wave abated. Despite the hot weather, Lee Green spent the first three nights conducting a photographic survey of Barnard dark nebulae. These apply toward the AL Dark Nebula observing club that can be performed photographically and requires 70 objects to be recorded. On August 3rd, Bob Finnigan turned his attention to photographing the North American Nebula as well as 8.9-magnitude Comet Garradd (C/2009 P1). The comet was passing near M15 in Pegasus. Tony Cellini and Brian Barling were also there making visual observations leading to AL observing club awards.

Despite a partly overcast sky, Mark Honzell, and Bob F. were at SGNC on August 4th for additional observing. Mark reported that they were watching, but that they had observed no aurora as had been hoped from two recent coronal mass ejections from the sun directly aimed at Earth. Mark, using his new 16-Meade Dobsonian, was able to view the following objects: Comet Garradd; nebulae M8, M16, M17, M20; open clusters M18, M21, M23, M25; globular clusters M15, M22, M28, M54, M55, M69, M70, M75; non-Messier objects NGC 6638, 6652, 6544, 6553; and the Milky Way star field M24. Bob continued his photographic work of Comet Garradd that same evening.

On Tuesday, August 9th, Tony C., Lee G., and Bob F. took advantage of the incredibly clear – if not terribly dark – sky despite the presence of a waxing gibbous moon. They continued with their observing programs as usual. The clear skies near the beginning of the month turned into partly cloudy skies and midmonth. Despite this fact, Bob Finnigan was able to photograph the Wizard Nebula, NGC 7380, on the evening of Wednesday, August 17th.

On Friday evening, August 19th, Mark H., Tony C., Lee G., and Bob. F. did manage to sneak in a couple hours. Mark reported that it was a "very clear night up until the moon rose. [After that, the sky became] a bit turbulent. I left about midnight because I could no longer see the really dim objects in my nemesis: Ursa Major." Here is what Mark reported he was able to observe: Jupiter ("not so good because it was directly under the moon"); globular clusters M4, M80, M107, M10, M12, M14, M9, M3; galaxies: M101, M94.

Mark reported that 8/21 was "probably the best viewing night since I started: cloudless, low moisture, excellent transparency. The result: I beat Ursa Major and found all those dim objects, and then some." Also attending that night and sharing in Mark's observations were William, Tony, and Bob. Mark noted that some had not seen them before. Mark's observations consisted of the following: open clusters: M6, M7, M11 (interesting!), M26, M29, M34, M39; globular clusters: M5, M19, M56, M62; the galaxy M63; nebulae: M76, M97, M106, M108, M109; the odd Messier M40 (double-star); and non-Messier globular clusters: NGC 6287, 6284, and 6293. (All these observations confirmed by William.) Also observed that evening was Comet Garradd. Mark reported that it is, "starting to sprout a tail".

On the evenings of Thursday, August 25th and Friday, August 26th, Bob F. spent a considerable amount of time under dark and clear skies at SGO photographing the recent supernova in M101, as well as Comet Garradd at is was passing by M71. See Image 1 for a view of the close approach of the comet and cluster on Friday evening, and Image 2 of the supernova in M101.

Image 1

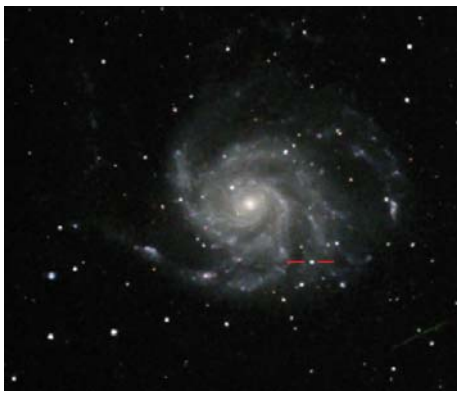

Image 2

Mark, like others, spent August 26th with a frustrating evening of viewing. He noted, "The first hour was a matter of dodging some large clouds. I had gone with a mission of capturing the Virgo Clusters just after sunset, but was resoundingly denied. Overhead remained clear, for the most part, and we attempted to find IC 1296. But, seeing was transient with the moisture. At midnight, the moisture created a reflected sky glow of local light pollution up to the 45-degree altitude [circle] in all directions. Distinguishing galaxies in this area was nearly impossible. Above

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OBSERVERS' LOG FOR AUGUST 2011 (CONT.)

(Continued from page 4)

this demarcation line, galaxies were easily found making William's photos of Garradd successful. So, it turns out that William, Bob and his wife Cheryl spent the time doing astrophotography while Mark spent time doing visual observing. Mark noted that Bob turned 70 years old at two minutes to midnight that evening, and that he added 6 new objects as the result of a 5-hour viewing session.

Saturday, August 27th was the MOOS, now considered the time for technical training session. In addition to Bob, William, Carl, Tony, Paul Pouliot as well as Eve and Amber, three prospective members showed up from Seneca, IL. Bob and Lee Lange and their college son Kevin stopped by to see how Bob F. and Tony took astronomical photographs. Bob L. is an accomplished amateur astronomer in his own right with a 10-foot observatory, Takahashi refractor, and Losmandy mount, who uses DSLR (a Canon 50D camera), to see how its really done using R, G, B, H-alpha, Oiii, and Sii filters and using the MaximDL computer program to drive both camera, telescope, and guider. They all left mightily impressed thanks to Bob and Tony. Unfortunately, the sky turned mostly cloudy shortly after sunset and several left shortly after 9:30 p.m. Others remained behind in hopes that the sky would soon clear.

This month's **Observers' Log** might seem a bit "skimpy" in light of the long run of nearly cloud-free skies. This can be explained not by a lack of observer interest. It is explained by the fact that Carl W. who compiles these observations was traveling for part of the month, and then spent additional time recuperating from surgery that took place on his left arm and hand on August 17th. Despite the presence of some 25 stiches, he is doing well and will continue with his newsletter duties as time permits. Thankfully, Mark Honzell has taken up much of the slack. In fact, he has acquiesced to Carl's request to take over this particular column. Look for his articles in this issue – as well as in future issues – of *The OBSERVER*. Thanks, Mark!

REVIEW: MEADE 16" LIGHTBRIDGE REVIEW

By Mark Honzell

In an endeavor to benefit others who follow me, I am writing a review of my new telescope after some limited use: two nights with dark skies, two nights with a full moon and a little bit of daytime practice. While there are many reviews from those who own several scopes, or pursue this dream as a profession, I hope my review is understood to be from the prospective of a fledgling amateur. I believe this helps my comments stand out with more emphasis as these are the attributes that really stood out to me without really knowing what to expect.

I have found that this scope captures so much light, you'll think you've turned on a light bulb when looking at Jupiter. The view of dim nebulae is excellent, showing great detail. And, when disassembled, this scope (after making a new base) easily fits into my Hyundai Elantra making it truly transportable.

You will easily spend another $200 upgrading this scope. (See below.) But, with the price required compared to other scopes of this size, you cannot beat the price for performance.

The main components are ready for use out of the well-packed boxes. But, some items you may want to consider upgrading before first use:

Standard eyepiece:

While this suffers some coma when you look away from the center of the eyepiece, the field of view is phenomenal and makes finding objects as simple as point in the right direction, then adjust to center. Now, I need to find a 2" EP with a shorter focal length so I don't have to swap the adapter in and out. I have quickly made this my primary eyepiece.

Mirror:

Star testing indicates multiple concentric circles with no aberrations or astigmatism of either mirror. The secondary mirror's outer surface is very visible in the eyepiece, "paint" it black.

Scope Construction:

Built to take the wear and tear of disassembly and travel! But, everything is white and shiny. In particular, the UTA and LTA rings should be black. (Paint them black.) The truss supports are shiny aluminum. With a little moon, or city lights, this creates a lot of stray light. Cover the struts with pipe insulation. Secondary adjustment screws are difficult to operate. Replace with knobbed screws instead of the allen head screws. Primary mirror is heavy and will shift when moving scope from vertical to horizontal enough to move collimation laser return beam by 1-4 mm at the eyepiece even with stop screws tightened down. Possibly heavier springs are needed. This is a truss tube design: To minimize dew and scattered light, buy or make a shroud. This will likely also require a counterweight to rebalance the scope. Using the provided bearing clamp instead of counterweights will likely damage the aluminum altitude bearing with use.

Viewfinder:

The reticule can be adjusted in brightness, but even the lowest setting of nine is too bright for use at night as it washes out the view. After the first night of use, I replaced this with a Telrad.

Rocker Base:

Way too big (32" diameter), overly heavy (56 lbs), and not moisture resistant (some edges are not treated.) Had to trash the base before I did anything with the scope as it would not fit through the door, or into my car. All the non-wood hardware is transferable to the new base. New base, home-built, is over 25 lbs lighter and fits in my car while still completely stable. Metal cylinder bearings for azimuth make this extremely easy to spin despite tightening. May become a problem with some wind.

Overall, this is well built out-of-the-box and ready to serve the owner with some grand views. The comments above should indicate that in a matter of a couple of uses, I found ways to make this scope even better and that the main components related to optics appear to be very good quality. An excellent bargain for the price.

TCAA POKER ROOM

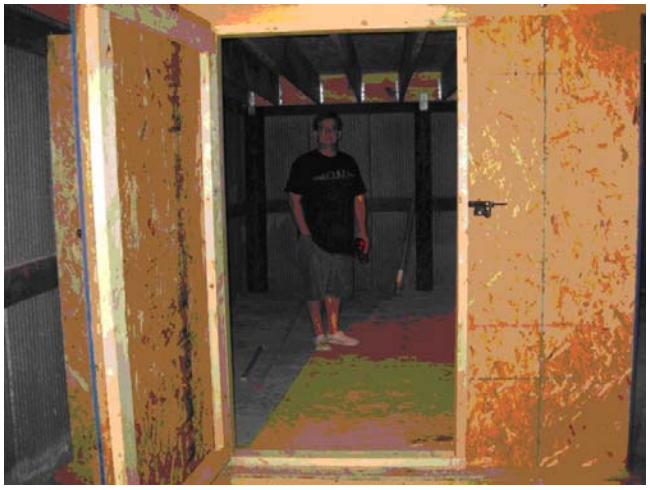
By Lee Green

It has been a lot of work over the summer, but the shed at the Sugar Grover Nature Center has nearly been completed. The effort was headed up by George Farnsworth and Doug Oehler who have been working on the project for nearly years. Their original efforts last year to improve the shed's storage area into a work area by installing a workbench and hangers for tools were immediately effective and provided a usable workspace. Initial efforts to patch the roof to limit rain water were less successful and that led to the decision to add a new aluminum skin that was installed this spring.

George worked up a plan for improving the larger part of the building. The plan envisioned having two levels to amply supply storage space for the Nature Center and for the several groups active there. This phase of construction started in mid-June and continued through August. A new drain installed on the east side of the building has solved the water drainage problem. The floor was covered with a crushed limestone base and concrete supports were poured for the support beams. Joists we hung on each side to frame the spaces and a floor for the "mezzanine" was laid upon them. Stairs were installed and doors were cut to improve access. Shelving installed upstairs takes up a small part of the vast amount of storage area the Nature Center now enjoys. While additional work remains, the building is substantially complete.

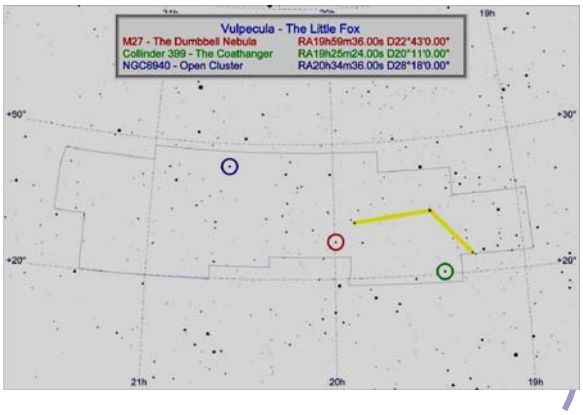
The space allotted to the TCAA was treated with extra steps. Ours is the only area that contains a floor, walls and a door. Because of these extra considerations, our space was jokingly called the "Astronomer's Poker Room." The extra storage space will help to relieve some of the cramped quarters on the first floor of our observatory.

Along with George and Doug, Bill Hickman, Gerry Armstrong, Jerry Erb and Julian Westerhout were all regular workers. Several TCAAers also helped out with the construction tasks including me, Tom Weiland, John Werner, Dan Miller, Chris Miller and Diana Miller.



CONSTELLATION OF THE MONTH: VULPECULA—THE FOX

Vulpecula, like its sly and elusive namesake, the Fox, is a small, dim and hard-to-locate constellation located directly south of Cygnus. The brightest star in Vulpecula is a rather dim 4.4 magnitude. Vulpecula was not recognized as a separate constellation by the Greeks or Romans and was introduced by Johannes Hevelius.



Astronomically, Vulpecula is the 55th largest constellation covering 268 square degrees and is the 60th brightest. Vulpecula reaches opposition on July 23.

Because Vulpecula lies in the Milky Way, we find a large number of open clusters and rich star fields. NGC6940 is a group of over 125 stars in a ½° area. Another cluster called Collinder 399 resembles a coat hanger and is known as The Coathanger or Brocchi's Cluster. A number of planetary nebulae exist including the famous M27, the Dumbbell Nebula. Several galaxies are visible in the eastern portion of Vulpecula.

THE BEAUTY OF THE NIGHT

By Carl J. Wenning

Editor's Note: *Carl is now writing a quarterly column for the Friends of Weldon Springs SRA Foundation newsletter. He has agreed to share his reflections here for those members of the club who are not quite so familiar with the night sky as the rest of us are.*

When we take the time to travel leisurely through our state and national parks we often note the beauty of nature that seemingly has for so long gone unappreciated. As a former planetarium director I have often heard people who have just returned from some of this nation's great western parks note how dark the sky was at night, and how the stars "seemed to come down and almost touch the earth." It's not that these stars aren't there every night, for indeed they are. It's just that these visitors take pause and notice – some for the first time – the beauty of the night. Granted, the skies out west are generally much darker at night than they are here in central Illinois. Nonetheless, that's no reason not to step out into our night sky to see the beauty that hovers over our heads. Not only does the dark night sky appear beautiful, it can be much more impressive when one strips away the various layers of the night.

The first layer of the night as I see it is the starry firmament itself. Careful inspection of the night sky will show stars of varying colors that twinkle and appear to dance about if viewed with a pair of steadily held binoculars. Stars long ago were arranged in more recognizable patterns that we today call constellations. Anyone familiar with the night will know that "the friendly stars" truly surround us as Martha Evans called them more than a century ago. Careful watching of the brighter points of light over a period of days or weeks will show that some of them appear to move relative to the fixed background. These are the "planetes" or wanderers – the planets. Observing on a dark moonless night will reveal a streak of light here and there from time to time – meteors. Of course, the moon will make it's appearance and motion clearly evident who cares to watch but, unfortunately, the full moon has a way of brightening the sky so much as to make all but the brightest stars, planets, and meteors all but invisible

The next layer of the night is made up of the star stories that underlie the stars and constellations. During the evenings of summer and even into the autumn the sky is dominated by the Summer Triangle, a large triangle of three bright stars – Vega, Altair, and Deneb – that are each the brightest star in their respective constellations. (To better visualize these stars, download a free sky map at http://www.skymaps.com/.) Vega is part of Lyra the harp, the mythical harp of Orpheus. Altair is the brightest star in the constellation of Aquila the Eagle – a constellation that really does look very much like the name implies. This star marks the Eagle's head. Deneb marks the tail of Cygnus the Swan, whose body, neck, and beak split the Milky Way into eastern and western halves.

The third layer of the night is the science that underlies what we see in these constellations. Vega shines blue-white indicating that it is much hotter than white, yellow, and orange stars that can be seen here and there across the sky if one looks very carefully and especially if aided with a pair to binoculars or a small telescope. These are both able to gather more light into an observer's eyes and make the color more evident. Vega is the 5th brightest star in the night sky and the 2nd brightest star in the northern celestial hemisphere, after ruddy Arcturus that now hangs low in the west. Vega is a relatively nearby star at only 25 light-years from Earth. The next brightest star in the summer triangle, Altair, is the 12th brightest star in the night sky and is found at a distance of 17 light years. Telescopic studies show that Altair rotates rapidly, with a velocity at the equator of approximately 165 miles per second. As a result of this rapid rotation, Altair is not spherical, but is greatly flattened at the poles due to its high rate of rotation. The 3rd brightest star of this trio, Deneb, might look dimmer still but it really is a stellar powerhouse. While Deneb is the 19th brightest star in the night sky, it is also one of the most luminous nearby stars. It shines with the brilliance of some 60,000 suns! It is also one of the most distant stars that can be seen with the unaided eye. It is located some 1,550 light years distant.

The beauty of the night increases the more that one knows about it. I suspect that's the main reason that naturalist Carol Thompson writes her weekly newspaper column about the comings and goings of birds and insects, the ebb and flow of the seasons, at Weldon Springs SRA. By more fully understanding the world that surrounds us, the more likely we are to both appreciate and respect it and want to share our love of it.

Take some time away from your everyday frenetic pace of existence. Take pause and come appreciate the beauty of the night.

UPDATES ON STORAGE SHED CONSTRUCTION

Tom Weiland, John Werner, and Lee G. assisted with refurbishment of the SGNC storage shed on Thursday, August 4th. They continued prepping for the stairs and started placing the flooring on the upper deck. Back to work on Monday, August 8th, Tom reported, "We worked yesterday and are scheduled to work again tomorrow. Dan Miller and John Werner have also been able to help on a more limited basis. We have limited our work to 3 or 4 hours on various mornings to avoid the extreme heat. At this point the supporting structure is all in place and the installation of the decking in the loft is well under way. As of Monday (8/8) the stairs had been installed allowing for easier access to the loft. As we complete the loft, we will be installing a railing around the section open to the ground level. We will then need to construct the individual storage cages for the various groups. The TCAA storage area will be entirely enclosed 'room' due to the valuable and more delicate nature of our equipment. This modification to the barn adjacent to our observatory will provide us with much needed additional storage."

On Monday, August 22nd, Lee reported that great progress has already been made on the storage area for the TCAA a within the refurbished barn. He indicated, "We have floor and a wall... [It's] going to be a very useful space. The newly created loft is ready being utilized by the staff at SGNC." It shouldn't be long now before we gain access to our new storage space.

On Friday, August 26th Lee reported, "Great News! We have completed the new storage space in the Nature Center shed. Over the last week, Tom and I helped George Farnsworth, Doug Oehler and Bill Hickman install our storage area's floor and walls. We still have electrical and other work that can be performed, but we now have a usable area. Take a look next time you are at the Nature Center."

Thanks to all who contributed sweat equity to this project. At the next Board of Directors' meeting on September 13th, the Board will consider a contribution to SGNC to cover expenses associated with our new storage unit. Stay tuned for details.

THE FLEDGLING ASTRONOMER—SEPTEMBER 2011

By Mark Honzell

In the month of June, 2011, I was walking through the local *Barnes and Noble* when I came across a copy of the magazine *Astronomy*. On the cover was a beautiful picture of Saturn in ultra-fine detail with turbulent clouds and massive rings encircling the planet and I found I could not resist the temptation to pick it up. It was back and that astronomy bug that comes and goes with me was about to finally take its largest bite.

My first interests in space were driven by the Apollo Moon program. I followed every launch, splash down, and casualty. And, ultimately, I sat mesmerized as Neil Armstrong stepped foot on the moon. I could not help it; I found myself looking at the stars at night attempting to learn something about the heavens so that I might one day travel in those same footsteps.

At the age of about fourteen, I moved with my family into a country abode and suddenly found a sky full of stars. They were absolutely fascinating. I spent numerous nights sitting on the back porch just pondering the possibilities up there when I noticed a very bright, steady star. It turns out this was Saturn and the astronomy bug bit hard. I went so far as to purchase a simple department store refractor scope for a whopping $150 to be amazed by my first close-up views of Jupiter and Saturn. But, life gets busy and I was drawn away over the years.

Several events tried to draw me back such as Voyagers, Mars Rover, Space Shuttle missions, COBE and Hubble Telescopes, but time did not permit this excursion beyond a brief encounter. Then, in the summer of 2010, I came across a simple 4.5” reflector telescope at a garage sale for $50 and took it home to look at those mysterious planets one more time.

I have found that technology has changed dramatically in the intervening thirty years. Now, I can find every star, cluster, galaxy and nebulae online without every looking up at the sky. The detail and depth of the photos is phenomenal, but there is something missing. I’m not sure how to describe it. The sensation of being close to these objects is not there in a photo. I would compare it to a photo of the Leaning Tower of Pisa (or some other dream location) and standing on the same location in person. It is this sensation that I best define the astronomy bug to be.

So, that magazine that caught my eye was not for an immersion into the brilliant planet of Saturn found on its cover, but for the hope of finally traveling closer to the cosmos. This was my starting point as the fledgling astronomer. A guide to the stars and a catalog of possibilities on how to get there was in my hand. My journey of research had begun and the first item needed on this trip was a telescope to replace this crippled garage sale telescope. With this telescope, I would reach unimaginable distances and

JUNO

(EXCERPTED FROM THE NASA JUNO WEBSITE)

The primary scientific goal of the Juno mission is to significantly improve our understanding of the formation, evolution and structure of Jupiter. Concealed beneath a dense cover of clouds, Jupiter, the archetypical "Giant Planet," safeguards secrets to the fundamental processes underlying the early formation of our solar system. Present theories of the origin and early evolution of our solar system are currently at an impasse. Juno will provide answers to critical science questions about Jupiter, as well as key information that will dramatically enhance present theories about the early formation of our own solar system.

Juno will carry a color camera to give the public its first detailed look at Jupiter’s poles. This distant image was captured by NASA’s Cassini spacecraft, which visited the giant planet in 2000 on its way to Saturn.

Credit: NASA/JPL/University of Arizona

In 2016, the spinning, solar-powered Juno spacecraft will reach Jupiter and enter into a highly elliptical polar orbit that skims only 5000 kilometers above the planet's atmosphere. Building on the results of previous missions, Juno will provide new information to help us determine how, when and where this giant planet formed. Answering these questions for Jupiter is essential for an understanding of the origin of the solar system itself because Jupiter contains more mass than all the other planets combined. Juno will seek these answers with instruments that can sense the hidden world beneath Jupiter's colorful clouds while other experiments investigate the external effects that world produces.

Jupiter has no solid surface. Instead its hydrogen and helium dominated atmosphere grows steadily denser with depth. Ultimately, but we don't know exactly where, the atmosphere must become a fluid in which hydrogen acts like an electrically conducting metal. Still deeper there may be a core of heavy elements and somewhere, somehow, an intense magnetic field is generated. The invisible external tendrils of that field guide charged particles that crash into the polar ionospheres, producing the most intense auroras (the northern and southern "lights") in the solar system. Juno will study these and other characteristics that make Jupiter one of the most fascinating planets in the solar system.

To answer our fundamental questions about origins we especially need to know Jupiter's internal structure and global water

(Continued on page 9)

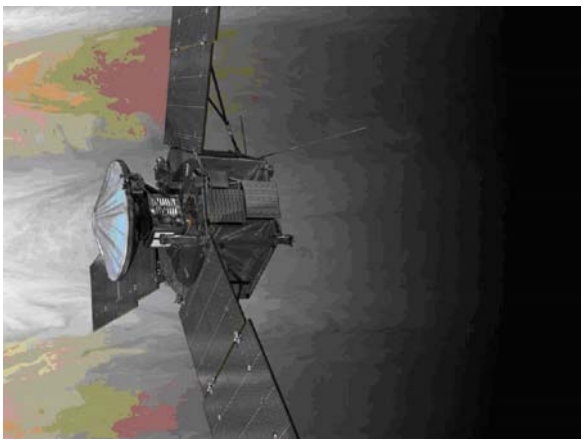
TCAA Treasurer's Report – August 2011

OPERATING FUND BALANCE – July 31, 2011 -		$ 1,549.85
Income		
	Marsha Fogarty (Dues) -	$ 41.00
	Josh Lindsey (Student Dues) -	$ 25.00
	Dennis Ready (electronic Dues) -	$ 26.00
Expenses		
	LYB Inc. (Observer copies & postage) -	$ 35.06
	PayPal (Marsha Fogarty) -	$ 1.20
	PayPal (Dennis Ready) -	$ 0.87
OPERATING FUND BALANCE – July 31, 2011 -		$ 1,604.72
OBSERVATORY FUND BALANCE – July 31, 2011 -		$ 2,753.85
Income		
	Interest -	$ 0.00
Expenses		
	None! -	$ 0.00
OBSERVATORY FUND BALANCE – August 31, 2011 -		$ 2,753.85
TOTAL TCAA FUNDS	– August 31, 2011 -	$ 4,358.57

Respectfully submitted,
L. Duane Yockey, Treasurer

JUNO (CONT.)

(Continued from page 8)



abundance. Juno will map the internal structure by studying its influence on the planet's gravitational field with unprecedented accuracy. The water abundance will be determined by microwave radiometers that will detect thermal radiation from deep atmospheric layers, a completely new approach. Water ice brought most of the heavy elements to Jupiter. Knowing the water abundance will tell us the original form of that ice and hence help define the conditions and processes in the original cloud of dust and gas that led to the origin of Jupiter. Those same conditions and processes were forming other planets too. Because this enormous planet contains most of the water in the solar system we can expect this investigation to help us understand the origin of the life-giving water on Earth.

The launch of the Juno mission on August 5, 2011 begins a five-year journey back to Jupiter, to investigate the remaining unanswered questions beneath the surface of the mysterious gas giant.

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@yahoogroups.com. Unsubscribing is just as easy. To unsubscribe, just send a blank email to TCAA-unsubscribe@yahoogroups.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. It has been recently updated to include an extended sky calendar of events as well as additional space weather and satellite viewing links.

TCAA RECEIVES DONATION

Robert Meeker has donated some equipment to the TCAA, including a 90mm Orion Mak/Cas telescope with tripod and a pair of 20x80 Oberwerk binoculars! Robert has been an active observer for many years but is not a club member. Robert mentioned that Sandy McNamara-Wolford had helped to get him interested in astronomy. His donations are stored at the observatory and are available for use by club members.

Thank you Robert for this very generous donation to the TCAA!

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