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## BREAKING NEWS: BIG REPLACEMENT TELESCOPE COMING TO SGO

On August 4<sup>th</sup> former club President Bob Finnigan donated his unused C14 classic telescope to the TCAA. Carl Wenning received the telescope optical tube assembly and mount on behalf of the TCAA and now has them in his garage. Bob is retaining the original 2-inch tailpiece for use with his new 11-inch CGEM telescope, but Carl has one that he can loan to the club on an indefinite basis. The TCAA already has Dan Miller's unused C14 wedge and tripod at SGO. The TCAA also has a good set of 2-inch eyepieces. The telescope needs cleaning and repair work, but once this is done we will be able to install it at SGO. The only things that Bob asked for in return are the following: (1) a name plate on the telescope after it is installed in SGO recognizing the contribution from Bob and Cheryl Finnigan, and (2) some assistance with his current CGEM mount problem (problem resolved by Lee Green). As to the status of the telescope:

1. It is clear that the telescope has been stored for some time under less than ideal conditions (e.g., significant amounts of moisture). As a result, the telescope is rather dirty outside.
2. While the interior is relatively clean, the primary mirror appears to have "growths" of some sort on its surface; it is suspected that the secondary is in no better state. There is a bit of "orange rust" (for lack of a better term) at the very edge of the primary mirror. It is also suspected that the mirror can be cleaned fairly easily – assuming it has a silicon monoxide overcoat. This is a 1973 version of the C14, but Bob assured us that he paid extra to have the overcoat on the mirror. Despite this fact, the telescope mirrors might still need to be removed and sent out for cleaning, re-aluminization, and over coating. It will be worth it though; the telescope's optics were excellent when used earlier.
3. The same sort of "growths" appear on the interior and exterior of the corrector plate. It is suspected that these can be cleaned up rather easily.
4. According to Bob, the two drive motors were fine when they were last used; it's just that one of the transformers on the motherboard burned out years ago and he replaced it with a new transformer currently "dangling" outside the motor housing. Again, we can likely fix this problem, replacing the original transformer with one of identical size, at a small cost.
5. Otherwise, the telescope appears to be in fairly good mechanical shape. Only a complete disassembly and cleaning and lubricating will tell us differently.

TCAA Board of Directors will now have to determine how to proceed with refurbishing the telescope and mount, and placing it in the SGO dome. Look for results from the September Board meeting. Thanks and a tip o' the hat to Bob and Cheryl Finnigan for making this important and valuable acquisition possible.

## STAERKEL PLANETARIUM UPDATES

Unlike the ISU Planetarium that has not seen a major equipment upgrade since 1964, the William Staerkel Planetarium at Parkland College in Champaign has just installed a new all sky projector – the second such projector since 1987. They are re-opening on September 10<sup>th</sup> with a new digital projection system. The Zeiss star projector installed a few years ago will be staying!

The Parkland College Planetarium was closed for June, July and August to install the Digistar 4 full-dome projection system from [Evans & Sutherland](#). They removed the slide projector boxes and the pit that is situated just north of the Zeiss star machine.

Though the actual installation took two weeks, the staff was faced with a steep learning curve on the new equipment. Plus they are in the process of replacing their school shows. They also have a new 5.1 sound system from [F&G Lighting & Sound](#) and a new LED lighting system from [East Coast Control Systems](#). Be sure to visit their web site <http://www2.parkland.edu/planetarium/> and see their slide show (featuring Karen Klemzynski from Evans and Southerland – and ISU Physics graduate.)

This changeover has great potential for a TCAA field trip. Our last such field trip (to see the new Lakeview Museum Planetarium in Peoria) was very well attended, and included many club members who had not been otherwise engaged in direct viewing of the heavens.

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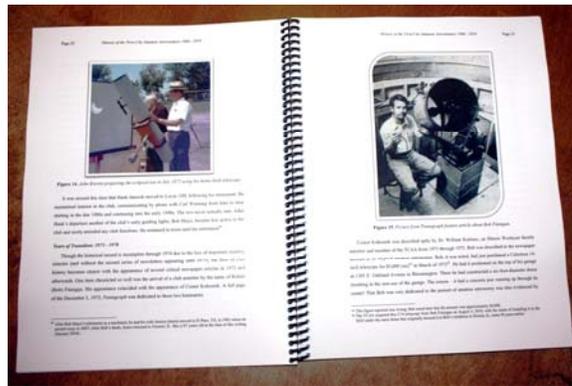
Submission deadline is the first of each month.

**Membership Dues**

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

To join the TCAA, send your name, contact info and dues payment to  
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 508 Normal Avenue  
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**DRAFT TCAA HISTORICAL VOLUME PUBLISHED**



TCAA Historian Carl Wenning reports that an all-color spiral bound examination copy of the club's 50<sup>th</sup> anniversary historical volume has been printed. He finished the main body of the work in mid August and went to the printer on August 19<sup>th</sup> to have the draft printed. The draft became available the next day. It is now available for inspection, and orders will be taken through September 15<sup>th</sup>.

The full-color publication contains 58 photographs and 139 pages. The soft cover book is the culminating work of more than 30 years of effort. It chronicles the work and the club and its individual members over the past fifty years.

It is anticipated that only fifteen (15) copies of *History of the Twin City Amateur Astronomers 1960 – 2010* will be printed during September. The cost for each will be \$49.50. Copies will be disseminated to club members who expressed a possible interest in them, the TCAA library, and the McLean County Historical Society. Carl will retain three copies for himself. This leaves two to five copies available for future purchase. Should you wish to examine the proof copy or acquire one of these books, contact Carl at [wenning@phy.ilstu.edu](mailto:wenning@phy.ilstu.edu) or (309) 830-4085. When these copies of the book run out, they will no longer be available at the indicated price. Additional copies can be printed with a minimum order of 10, but potentially at a considerably higher unit price.

**HISTORIAN MEETS WITH FORMER TCAA PRESIDENT**

On Monday afternoon, August 2<sup>nd</sup>, TCAA Historian Carl Wenning received a phone call out of the distant past so to speak. On the other end of the line was Bob Finnigan, past TCAA president and ardent observer from the club's early middle years. (The SGNC Ash dome came from his original Marie-Antoinette Observatory in Downs, IL. See the club history for details.) Bob and Carl agreed to meet the next morning to look at Bob's new Celestron 11-inch telescope on a CGEM mount. The focus was also on Bob's recollections from his time in the club, much of which occurred prior to Carl's arrival in town in 1978.

The two met over breakfast the next morning at Blair House in Normal. This meeting was seminal in several ways. It was great for the duo to see each other after 28-years. Bob talked about his experiences with the TCAA during the 1970s, and Carl took notes. Bob also showed Carl several historical volumes that he had assembled and had printed by StarNet Digital Publishing and other services. Bob offered to help with the club's 50<sup>th</sup> anniversary volume, and Carl quickly agreed given the degree of professionalism Bob had shown in this area. Over breakfast Bob also noted that he no longer uses his Celestron 14-inch telescope that was originally housed under the Ash dome at Downs, IL. He suggested that he could donate the telescope to the club, and did so the next day.



Shortly after this meeting, Bob assisted Carl with revisions of images to be included in the publication *History of the Twin City Amateur Astronomers 1960 – 2010*. Bob was also instrumental in retrieving some additional early TCAA pictures from France that now have been entered into the historical record of the club.

Of late Bob has been viewing with several TCAAers and has attended a viewing session at SGNC. Bob plans to work with his 11-inch Celestron to show residents at Blair House in Normal objects in the night sky. He also plans to spend more time doing astrophotography. Bob has expressed appreciation to Lee Green, William Carney, Tony Cellini, and Carl Wenning for assisting him getting to know amateur astronomy once again. We look forward to seeing and hearing from Bob a lot more in the coming years.

## PROFILES IN AMATEUR ASTRONOMY: BOB FINNIGAN

Bob Finnigan became interested in the night sky as a youth living in Shirley, IL. There he used a 3-inch Moonscope reflector to view the sky. He remembers distinctly showing his mother the Orion Nebula with that 'scope. After he grew up and married, Bob eventually moved to Bloomington where he started several businesses. Shortly thereafter, he bought a used 6-inch refracting telescope (which he still has) from Don Erlenbusch. Within a few years he was able to purchase a telescope big time. In early 1973 he acquired a Celestron 14-inch Schmidt-Cass. He installed it on his Oakland Avenue garage roof under a 6-foot dome constructed by a local carpenter. There he successfully observed and photographed comets. A large feature article about him appeared in the *Pantagraph*.

Constant bothered by the electric twilight of town, Bob moved to Downs with his family. There he built a small observatory with the assistance of TCAAer Bill Zaffiri. He named the new structure the Marie-Antoinette Observatory after his wife. Within a short time, Bob felt that he had outgrown the 6-foot dome and subsequently bought a 10-foot Ash dome. That dome was later donated to the TCAA is now sits atop the Sugar Grove Observatory at SGNC. Bob retained possession of the C14 telescope for many years and it found its way to the TCAA in August 2010 though his generous donation. He now operates with an 11-inch Celestron on a CGEM mount.

Over the years, Bob used the C14 to advantage, successfully photographing among other things comets. Bob notes, "With the Celestron, I took pictures in 1973 of Comet Kohoutek that were used in the *Pantagraph*. In 1976, the *Pantagraph* also used my picture of Comet West. This picture was taken in Downs. The *Peoria Journal Star* printed a set of two photos of Comet Kobayashi-Berger-Milon showing a 3-day movement relative to the stars."



Bob was treasurer of the club for two years, vice president for one year, and president for two years back in the mid to late 1970s. While with the TCAA, he organized multiple trips to study the Cahokia mounds Woodhenge site near St Louis. Later he planned another trip to the atom smasher in Batavia. He recalls fondly a trip to Ohio Wesleyan University where a group of TCAAers stayed overnight at Perkins Observatory viewing through the 32-inch telescope.

Bob notes with justifiable pride that he also restarted the Messier club within the TCAA (David Williams having been the first years before). He spent one year of weekend evenings at the home of Art Grebner, a Peoria Astronomical Society member living in Metamora. There he made observations of 110 Messier objects, with each observation verified by Art. Shortly thereafter other TCAA members followed Bob's lead with him serving as a verifier of observations. Weldon Schuette was among the first to complete his Messier certificate under Bob's watchful eye. This initiated the pursuit of AL observing club awards that has now become a strong tradition within the TCAA.

Art was then grinding a 24-inch mirror that is now at Jubilee Park in Brimfield, west of Peoria in the dome that he donated to the Peoria Astronomical Society. That observatory now bears his name as the Decker-Grebner-VanZandt Observatory.

Recently, following a 28-year hiatus from the TCAA, Bob is back. He is now helping Carl Wenning to finish the TCAA history and assist in its photo editing and publication. Details about Bob's earlier times in the TCAA are chronicled in the *History of the Twin City Amateur Astronomers 1960 – 2010*. Welcome back Bob!

## SGO UPDATE: PROPERTY MANAGER'S EFFORTS

During May, property manager William Carney began systematically repairing the Sugar Grove Observatory – the first significant update since the observatory opened in 2000. William painted the inside stairs as well as the entrance way door and frame. He also filled in some rock by the door. Starting in early July, he began removing, repairing, turning, and re-affixing the wood siding at SGO. Over the course of July and August he continued working on the project, including staining the siding, and painting the dome. He plans to give the dome another coat before winter.

A partial list of his repairs include fixing the vinyl floors and molding, painting walls and stairs, repairing the top landing, caulking and painting the inside of the dome, sanding and painting the door, replacing the rock near the door to improve drainage, scraping algae from the exterior of the dome, painting the dome, replacing mulch around the building, removing the siding from the building, sanding and repairing the siding and replacing it inside out for a better seal, re-staining the siding and replacing those pieces which were bad. He reported that he had spent over 140 hours over the course of 35 days.

By the end of July, William reported that he had finished repairing the outside siding. He noted, "The uppermost section of small siding panels just under the dome on the West side actually had no vapor barrier at all. Luckily there was no water damage. In fact, I only found two small areas on the entire structure that had water-rot damage on the outside wall behind the siding and they were small. Letting the siding go for several more years or just doing minor work would have led to some major outer wall rot and possible structure damage. This work could not have waited. Only a few minor things are left to do now, like some cleaning." William reported that Josh Lindsey and Lee Green helped from time to time with the work.

## AUGUST EDUCATION/PUBLIC OUTREACH

### SEPTEMBER SKY GUIDE

<b>01</b>	Venus passes 1.2° south of Spica, 1 P.M.	
<b>04</b>	Mars passes 2° north of Spica, 9 A.M.	
<b>09</b>	The Moon passes 8° south of Saturn, 5 P.M.	
<b>11</b>	The Moon passes 5° south of Mars, 3 A.M.	
	The Moon passes 0.3° south of Venus, 8 A.M.	
<b>19</b>	Mercury is at greatest western Elongation (18°), Noon	
<b>20</b>	The Moon passes 5° north of Neptune, 11 A.M.	
<b>21</b>	Jupiter is opposition, 7 A.M.	
	Uranus is at opposition, Noon	
<b>22</b>	Jupiter passes 0.9° south of Uranus, 2 P.M.	
	Equinox (northern autumn/ southern spring begins), 10 P.M.	
<b>23</b>	The Moon passes 7° north of Jupiter, 6 A.M.	
	The Moon passes 6° north of Uranus, 6 A.M.	
	Venus is at greatest brilliancy, 3 P.M.	
<b>29</b>	Venus passes 6° south of Mars, 1 A.M.	
<b>30</b>	Saturn is in conjunction with the Sun, 8 P.M.	

The Peoria Astronomical Society held a public viewing event at the Jubilee College State Park on August 7<sup>th</sup>. Two TCAA members, Lee Green and Paul Pouliot, attended the event and had a chance to meet many of the members of the nearby club. It was a good event that had 12 telescopes set up with lots of observing, sharing of techniques and discussions. Approximately 30 people besides the club members were present and all enjoyed the many views afforded them. We look forward to joining with the PAS again in the near future.

Weldon Springs State Recreation Area at Clinton, IL, hosted a Perseid meteor watch on the evening of August 11<sup>th</sup>. About 65-75 members of the public showed up for the event over the course of the evening. Carl Wenning provided 3-hours of observing opportunities with his CPC1100 telescope. About a third of those who attended the meteor watch found their way to Carl's more remote observing site.

The TCAA's public observing session for August was held at SGNC on the 14<sup>th</sup>. Despite the high temperature index and a partly cloud sky, approximately 55 members of the general public showed up as did the following TCAAers who staffed six telescopes: William Carney, Lee Green, Duane Yockey, Paul Pouliot, Tony Cellini, and Carl Wenning. Also in attendance was former TCAA president Bob Finnigan. The program started with views of the planets and the waxing crescent moon. At 8:45 p.m., Carl presented a 15-minute talk about "Planets and the Zodiac" and followed up with a 10-minute sky lecture showing only the Big and Little Dippers and the Summer Triangle. While it was not generally known, famed wildlife and nature photographer Robert Shaw as among those members of the general public who took the opportunity for a "peek at the Milky Way". Members of the public stayed until around 10 p.m. – departing relatively early due to the nearly overcast sky. Shortly thereafter the sky began to clear and several TCAAers stayed on to continue observations of the night sky.

Bobby Arn had a spectacular photograph of his appear in Astronomy Picture of the Day on August 21<sup>st</sup>. It shows Perseid meteors above an active thunderstorm. Check it out at the following URL: <http://apod.nasa.gov/apod/ap100821.html>. The caption read as follows: "Storms on the distant horizon and comet dust raining through the heavens above are combined in this alluring [nightscape](#). The scene [was recorded](#) in the early hours of August 13<sup>th</sup> from the Keota Star Party site on the [Pawnee National Grasslands](#) of northeastern Colorado, USA. Looking east across the prairie, [the composite](#) of 8 consecutive exposures each 30 seconds long captures the flash of [lightning](#) and a bright Perseid [meteor](#). On the right, even the clouds can't block the light from brilliant [planet Jupiter](#), whose mythological [namesake](#) knew how to handle both lightning bolts and meteors. Of course, this meteor's streak points back toward the [shower's radiant](#) in the heroic constellation Perseus, sharing a starry background that includes the [Pleiades](#) star cluster poised above the storm clouds. Just above the bright meteor lies the faint [Andromeda Galaxy](#)." Congratulations, Bobby!

Dave Osenga hosted an informal night sky viewing session on Friday, August 27<sup>th</sup> in the parking lot of the East White Oak Bible Church, near Carlock, Illinois. There were 6 adults and 10 kids of various ages in attendance. Dave sat up his 8" reflector and had two pairs of binoculars available. One of Dave's friends who has an 8" Dobsonian joined the group as well. Dave gave a short tour of the constellations, then showed the crowd several star clusters, two galaxies, and several binocular targets especially in Sagittarius. They gave quite a bit of time to observing Jupiter and the four Galilean moons. The south hemisphere dark cloud band was conspicuous by its absence! The big hit of the evening was the Moon. It was just a few days past full and came up well before the kids had to head home. There were a lot of oohs and aahs as some people saw the Moon through a telescope for the first time.

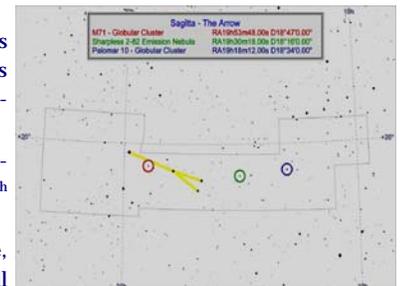
## CONSTELLATION OF THE MONTH: SAGITTA—THE ARROW

Sagitta is a very small constellation that lies south of Vulpecula and north of Aquila. While small and relatively dim, the stars of Sagitta clearly appear to be an arrow.

The arrow has been depicted in a number of mythological stories. It is variously seen to be the arrow of Cupid, the arrow that killed Jupiter's eagle Aquila, the arrow Apollo used to slay the Cyclops, the arrow Hercules used to kill the Stymphalian birds.

Astronomically, Sagitta is the 86<sup>th</sup> largest constellation (or third smallest after Equulus and Crux) covering only 80 square degrees. It is the 77<sup>th</sup> brightest and reaches opposition on July 18.

Because Sagitta lies in the Milky Way, it contains planetary nebulae, globular clusters and emission nebulae, but few galaxies. M71 is a small globular cluster that was mistaken for an open cluster until recent decades.



## OBSESSION 18-INCH FIRST LIGHT AUGUST 1, 2010

By Carl J. Wenning

As I reported in last month's issue of *The Observer*, I ordered an Obsession 18-inch f/4.5 Newtonian reflector shortly after my return from observing with a friend in Indiana who has been using a 20-inch Obsession telescope for years. My telescope arrived in 5 large boxes on July 28<sup>th</sup> and three days later I began the arduous tasks of final assembly. I had to attach the load bearing surfaces, mount the mirror box on the rocker box, install the primary mirror, mount the secondary mirror, affix the altitude axis encoder, the 8 poles, and the upper telescope assembly holding the eyepiece and Telrad finder. The process took me 4.5 hours.

The next day, on Sunday, August 1<sup>st</sup>, I finished the work of aligning the secondary mirror, balancing the primary mirror in its Kevlar strap, mounting and hooking up the Argo Navis guide system, and doing a final optical alignment using a laser collimator. I also spent an hour figuring out how to work with the Argo Navis. By around 7:30 p.m., I was ready for "first light". That came about an hour later.

When the stars first came out, I turned my telescope to Altair thinking back to my grandfather Edward T. (Frank) Feltz who got me started in astronomy back in July of 1956. I dedicated this telescope and all its future work to his memory. I sighted Altair and was surprised at how bright and how clear the image was. I then sighted on Vega to finish aligning the Argo Navis finder system. The first object I observed that evening beyond these stars was M57 – the Ring Nebula. Before the evening was out I had observed perhaps a half dozen other Messier objects: M27, M13, M92, M14, M12, M10 and several double stars. I was amazed at how many stars I could see just by sweeping the sky from my location in Normal. (Just imagine what this telescope can do from a dark-sky site!) Joining me at this first session were Carolyn, Teresa and her boyfriend Cody who graciously helped with some of the alignment work. After two hours I packed it in; it had been a long day.

On Sunday evening, August 15<sup>th</sup>, I observed with the telescope for the first time under the darker skies of SGNC. Before starting to observe, I found out that I had failed to bring along my laser collimator. Despite this fact, I started to observe anyway even though bright star images weren't absolutely stellar. Pointing the telescope first to the Moon, I was impressed by the clarity of the image, but surprised by the amount of turbulence of the image that results from having a wider light path through the atmosphere. The TCAAers present that night – William, Lee, Tony – and a couple of non-club visitors, appeared to be impressed by the capabilities of this wide-aperture telescope despite the misalignment of the optics. I spent from dusk until midnight viewing with the 18-inch, and I wasn't in the least disappointed by what I saw – even though the scope was (as I found out later) grossly misaligned. I invite the membership to join me at a future member's-only observing session to get a peek at the Milky Way. You won't be disappointed.



## AUGUST OBSERVING NOTES

The recent spate of clear skies (accompanied unfortunately by high temperature indices) during the second week of August led to lots of observing activity at SGNC. Making the most frequent appearances have been William Carney, Tony Cellini, Lee Green, Mark Cabaj, and Carl Wenning. All were working diligently on astrophotography projects, while Carl has been mostly working on AL observing club activities. William, Tony and Lee have been working on photographs; Mark has been working on videography of Jupiter and caught an amazing three moon shadows on the ball of Jupiter the night of August 12/13.

The night of August 11-12, Paul Pouliot observing from the dark sky of Blackstone was able to get good meteor counts. From 10-11 p.m. he observed 18; from 11 – 12 he observed 40; from 12 – 1 he observed 32; from 1 – 2 he observed 45. On the way home he saw two bright Perseids streak across his southern sky. Over the course of the whole night, Paul was able to observe 123 meteors. Well done, Paul!

The club's very informal Perseid meteor watch on the night of August 12-13 also brought out Duane Yockey and friends. That same evening Carl used his 22x100 Oberworks binoculars and iPad-based star maps to observe 38 binocular deep sky list objects between 9:14 PM and 3:05 AM. He now has 43 of the 60 observations required to complete the award. Carl is amazed at how easy it is to find celestial objects using iPad-based star maps (that conform very nicely to eyepiece views) and star hopping.

On Sunday, August 15<sup>th</sup>, Carl took his new Obsession 18-inch reflector to SGNC to try it out for the first time under dark skies. He was not disappointed! Arriving at sunset he took only about 10 minutes wheel the telescope out of the bed of his truck and to assemble the behemoth that stands more than 6 feet tall when pointed to the zenith. Adjusting the Telrad finder scope and calibrating the Argo Navis guidance system took a few more minutes. Within a half hour of arriving on site, Carl was ready for observations at the beginning of dusk. Despite that fact that he failed to bring along his laser collimator, he was able to get good views of celestial objects. He observed mostly with an acquaintance by the name of Will Gustafson and was able to show him views of more than a dozen M-objects by the time he took his telescope down at midnight. Also observing that evening were William Carney, Tony Cellini, and Lee Green.

With the series of clearly evenings during most of the remainder of August, viewing at SGNC continued unabated on a near nightly basis.

## HELIX SURPRISE

By Lee Green

I've continued trying to improve my photography techniques this summer and have had some modest successes. I visited the Sugar Grove Nature Center on the evening of August 5 and was able to capture this image of the Helix Nebula. This planetary nebula is just a few hundred light years away and may be the closest planetary to Earth. Due to its nearby location, we see the Helix as about half the size of the full Moon.

As I assembled the image from successive frames, I noted that one "star" didn't fit. Through the image sequence the star's position moved, so this was clearly something that was non-stellar and moving at a slow steady speed. I immediately suspected that this was an asteroid so I went looking for a way to identify it. Using Starry Nights and Cartes du Ciel, I downloaded the latest asteroid data and was able to see that the asteroid was named Undina.

Undina, discovered by Christian Heinrich Friedrich Peters on July 7, 1867, is the largest of the Veritas family of over 300 asteroids. It is 125km in diameter and it circles the Sun every 5.7 years. Its orbit is inclined to the ecliptic by  $9.922^\circ$  and it is travelling at a speed of 16.63 km/s at a distance between 2.869 and 3.511 AU from the Sun. Undina is classified as an M-type asteroid. Asteroids of this type are thought to be the metallic core of larger asteroids that have been fractured by impacts with other asteroids, these objects contain a mix of nickel, iron and stone and may be one source of the many meteors the Earth encounters.

Wikipedia tells us that Undina "may have been involved in one of the more massive asteroid-asteroid collisions of the past 100 million years." The site goes on to relate that, "David Nesvorný of the Southwest Research Institute in Boulder traced the orbits of these [Veritas] bodies back in time, and calculated that they formed in a collision of a body at least 150 km in diameter with a smaller asteroid some 8 million years ago. Veritas and Undina would have been the largest fragments of that collision."

Had I been simply observing the Helix, I would have been awed by its beauty and delicate textures, but I would have missed the passing asteroid. It was only by capturing the images over time that the movement became noticeable.



## ASTROL-LAB—COSMOLOGY: THE EXPANDING UNIVERSE

(Adapted from University of Washington Astronomy Lab Resources

by John Werner)

Here is something a bit different for the TCAA Newsletter! Periodically, members will be encouraged to contribute an "astronomy lab" hands-on activity. In this fun activity, you will use a two-dimensional comparison (the surface of a balloon) to the 3D Universe to explore the expansion of the Universe.

### Hubble's Law

Hubble's Law tells us that our Universe is expanding. Astronomers observe galaxies, find their distances and their velocities, and find that they are all moving away from us, except for galaxies found in our neighborhood, like the Andromeda Galaxy. The more distant the galaxy, the FASTER!!! it is moving away. In fact, we observe that there is a uniformly increasing velocity for galaxies as they move away from us. Hubble's constant is the ratio of the galaxy's velocity (at a given distance) to its distance from us. Knowing this, the age of the universe can be calculated by determining the time it has taken for a galaxy to reach its distance from us. If we assume that the Universe has always been expanding at the same rate, then we can determine how long distant galaxies have been traveling (age of the universe) in order to get where they are today! Very simply, the age of the universe is 1 divided by Hubble's Constant, which is about 70 km (kilometers) per second for every million parsecs that a galaxy has receded from us. One parsec is 30,000,000,000,000 kilometers. You can calculate the age of the universe from this information! Do your own Internet research to learn more about Hubble's Law.

### Procedure

1. Blow up a round-shaped balloon about half-way. DO NOT TIE IT SHUT! It is best if you have someone to help hold the balloon while you are taking measurements!
2. Using a felt tip pen, draw and number ten galaxies on the balloon. Number each of them. Mark one of these galaxies as

(Continued on page 7)



## SkyFi CONTROL OF CPC1100

By Carl J. Wenning

As I mentioned in last month's issue of *The Observer*, I recently acquired a Carinasoft SkyFi wireless controller for my CPC1100. The controller arrived on Monday, August 2<sup>nd</sup>, and I took my telescope out to SGNC on Friday evening to give it a test run. Joining me was Bob Finnigan, former TCAA president who I just found out lives only a few blocks from me. When we arrived on site, we were delighted to see Lee Green, William Carney, and Tony Cellini preparing for an evening of astrophotography. Lee most graciously assisted Bob to learn better how to run his new C11 telescope mounted on a CGEM base.

While I had worked briefly with the SkyFi wireless unit during the day, examining how it interfaced with my iPad, I had not used it with the telescope. This night constituted a learning activity for me as well. Here is a brief description of the SkyFi network and what I found out by using it.

The SkyFi network consists of three units: my CPC1100 telescope, the SkyFi unit, and an iPad. The iPad runs one of many telescope controlling planetarium programs called SkyVoyager, version 1.7. This program, available through iTunes, costs a mere \$15 and is closely related to the Voyager program I have been using from Carinasoft for many years. The SkyFi unit, also by Carinasoft, is attached to the CPC1100 hand controller through a cable. SkyFi is then powered by either 4 AA batteries or from a 6-12 volt feed from an external battery. As I run my telescope from a Celestron Power-Tank battery, I provide power to the SkyFi unit directly from that battery. Setting up the telescope, installing the SkyFi unit and preparing the iPad to wirelessly communicate with the telescope takes only about 10 minutes. Interfacing the units is extremely simple: 1) set up telescope; 2) conduct 2-star alignment; 3) attach powered SkyFi; 4) turn on iPad and set up communications with SkyFi wireless network; 5) initiate SkyVoyager-to-telescope connection. Nothing could be easier.

I found that the system works flawlessly. I can "click" on an object on my iPad screen and tell the telescope to GoTo the object. In a few seconds the object is centered in the eyepiece's field of view. If it is off a bit, keys on the SkyVoyager screen allow me to center the object more precisely.

What is really neat about this system is that I can operate it from a distance. This allows me to move the telescope without having to push my way through a crowd of observers during public observing sessions. I can also go to my truck on a cold winter's night to warm up, decide what I want to view using SkyVoyager's extensive database, send the telescope to the object I want to view, and then pop out to take a look before returning to the truck. Using the much larger iPad, will make it easier than using the keypad associated with the CPC1100, especially when one is wearing gloves.

Two non-TCAA visitors spent about 30 minutes with me, and it was nice to be able to show them exactly what to look for using my iPad before they actually peered into the eyepiece. The SkyVoyager images can be flipped horizontally and vertically so what is seen on the iPad exactly matches the field of view and orientation of the field. A user-define circle shows the boundary of the field of view in the telescope's eyepieces. What wonderful features these are.

So, how do I assess the telescope-SkyFi-iPad connection? It's flawless and a great assistance to observers, both casual and expert. No messy configuration of the system is required; it's all done automatically. The only significant drawback that I see is the "align" function on SkyVoyager does not work with the Celestron series of telescopes. So it is with Carinasoft's Voyager software that runs on computer. Despite this problem, I strongly recommend SkyFi for anyone who has a GoTo telescope. I would also recommend a cover for the iPad. Even though SkyVoyager has a night mode, the unit is still too bright to hold when observing at the eyepiece (even when brightness is set to minimum). A padded cover will protect the iPad if dropped, and also allow the holder to reduce the light emission of the iPad to a bare minimum by covering its screen when viewing through the telescope.



## TCAA Treasurer's Report – August 2010

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OPERATING FUND BALANCE – July 31, 2010 - \$ 1,407.57

Income

Larry Leetzow (Dues) - \$ 26.00

Expenses

LYB Inc. (August Observer) - \$ 40.74

Paypal (Larry Leetzow dues) - \$ 0.87

OPERATING FUND BALANCE – August 31, 2010 - \$ 1,391.96

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OBSERVATORY FUND BALANCE – July 31, 2010 - \$ 3,176.13

Income

None - \$ 0.00

Expenses

None - \$ 0.00

OBSERVATORY FUND BALANCE – August 31, 2010 - \$ 3,176.13

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TOTAL TCAA FUNDS – August 31, 2010 - \$ 4,568.09

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Respectfully submitted, L. Duane Yockey, Treasurer

### Sugar Grove Observatory

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

Duane Yockey (renewed through 2009)

William Carney (renewed through 2010)

Carl Wenning (renewed through 2009)

Brian Barling (renewed through 2010)

David Osenga (renewed through 2010)

Josh Lindsey (renewed through 2010)

Dan Miller (renewed through 2009)

Lee Green (renewed through 2009)

## SEPTEMBER TCAA EVENTS

- ☆ September 4<sup>th</sup> – The September Members-Only Observing Session begins at dusk at Sugar Grove Nature Center.
- ☆ September 7<sup>th</sup> – A meeting of the Board of Directors is scheduled for the office of Lewis, Yockey, and Brown in downtown Bloomington at 6:30 pm. All members are invited to attend.
- ☆ September 11<sup>th</sup> – Our September Public Observing Session will be held on Saturday September 11<sup>th</sup> at Sugar Grove Nature Center. John Werner will coordinate this event. He will lead us through our topic that takes a look at Stars of Red, White, and Blue. We will explore the different types of stars to see how and why they appear in a variety of colors. We will also have a laser-guided sky tour to point out the constellations followed by telescope observing of selected celestial objects.
- ☆ September 17<sup>th</sup> – A Cub Scout group has arranged to camp at SGNC on Friday evening with a nature program the next morning. The TCAA will present a program and viewing (sky permitting) the evening of the 17<sup>th</sup>. Carl Wenning is serving as coordinator; William Carney will assist.
- ☆ September 29<sup>th</sup> (30<sup>th</sup> as a rain date) – Alex Kashner from Metcalf School is holding an outdoor education program for sixth graders at East Bay Camp. Lee Green is serving as coordinator.

## OTHER EVENTS FOR SEPTEMBER 2010

Several members of the club might well be going to the Illinois Dark Sky Star Party September 9-12. The event is held at Jim Edgar – Panther Creek State Park, about 30 miles west-northwest of Springfield. To learn more, visit <http://www.sas-sky.org/> and click on Star Party 2010. Astrofest will occur this same weekend at Vana's just west of Kankakee, IL. See their website for details: <http://www.chicagastro.org/>

### 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](mailto:TCAA-subscribe@yahoogroups.com). Unsubscribing is just as easy. To unsubscribe, just send a blank email to [TCAA-unsubscribe@yahoogroups.com](mailto: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](http://www.phy.ilstu.edu/~wenning/observing_page.htm). It has been recently updated to include an extended sky calendar of events as well as additional space weather and satellite viewing links.

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### The OBSERVER

Newsletter of the TCAA, Inc.

Erin Estabrook, Editor  
314 Covey Court  
Normal, IL 61761

Are your dues due?



### The Dues Blues?

**If you see a check in the box above, it means your dues are due. To retain membership, please send your dues renewal to our esteemed Treasurer:**

**Duane Yockey  
508 Normal Avenue  
Normal, IL 61761**