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September 2010

The First "Reach for the Stars" Astro Camp a Success!

By Bunnie Tomes

For three July evenings - which included one overnight - the EIOLC teemed with the energy and activity generated by 21 area 4th and 5th grade Girl Scouts. Cloudy weather on the final evening forced shuffling of the planned schedule. Thanks to John Leeson's eagle eye on computer weather updates, volunteers were able to make sure that there would be at least limited telescope time for the campers. At the end of the first day attendees glimpsed Venus through the 24" B & C telescope. The views sent the girls home full of enthusiasm for MORE STARS.



Campers learned the basics of astronomy and stargazing, gained a better understanding about the vastness of space and the solar system, and learned how to identify several constellations in the summer sky. Evaluations filled out by campers reflected very positive reactions - with a majority indicating that the camp was "too short" and many lamenting cloudy skies!

Many thanks go out to both planning and participating volunteers, with hopes that more will sign on for the next event. Camp volunteers included: Diane McAfee, Audrey Bradford, Wendell Clifton, Marj Grimm, John Leeson, Dottie Peterson, Helen Potthoff, Carol Stegink, Annette Taylor, Bunnie and Forrest Tomes and Noreen Tonkin. Lynn Reihman and Jerry Warner were "on call" to staff telescopes if the skies were clear. Several other CAA members also attended planning sessions, helping to identify activities and resources. Many thanks to Brent Studer for designing the Camp Flier.

Dates have been set for the 2011 camp, for the three days preceding the July Public Night. It is hoped that evening can be targeted as a "young family night" so campers can bring parents and siblings to show off their new found knowledge.



Noreen Tonkin's "Handy Sky Measures" Session teaches the Scouts how to measure angular separation with the hands.



Audrey Bradford and Dottie Petersen teach Scouts about the relative sizes of the planets.

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MEETING MINUTES

CALENDAR



CAA Monthly Meeting Agenda – September 2, 2010

Please be informed that CAA President Wendell Clifton will be taking a much needed vacation out of state from August 24 - 31 and will be unable to access email or other communications. If you have a pressing need to contact a CAA officer during this time please refer to the alternative contacts on the Calendar page of The Prime Focus.

The September 2nd meeting has no planned program. Section reports, old and new business, and of course astronomy will be discussed.

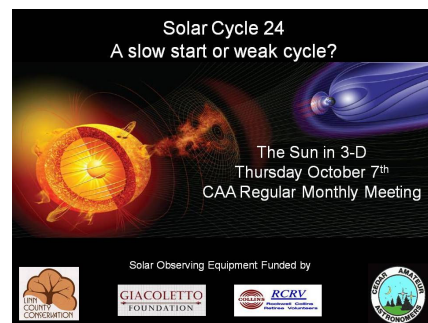
This month's CAA meeting will be held at the St. Luke's Hospital Resource Center in the Formal Lounge, at 7pm.

Don't Miss the October CAA Monthly Meeting

CAA member Carl Bracken Presents: *Solar Cycle 24 A slow start or weak cycle?*

Solar Cycle 24 is currently underway with very little evidence so far. Please join our Thursday, October 7th meeting for a review of the 2010 day time solar presentation given in July highlighting the current cycle and showcasing current ground based and space based solar observing platforms. Solar science has advanced significantly in the last 20 years along with advances in computer power. Our ability to view the sun with amazing detail is unrivaled in history. This presentation will include amazing archival solar detail in full 3-D. Red / Blue 3-D glasses will be provided for this show!

Please note once again this presentation is scheduled for the October 7th regular meeting held at the St. Luke's Hospital Resource Center in the Formal Lounge, at 7pm.



Reach for the Stars Day Camp Report

Submitted by Bunnie Tomes

Camp Dates: 6 - 9 pm July 28 & 29, July 30 from 7pm - 8:30 am July 31.

Total of 21 girls attended, with 3 adult leaders. Total volunteers: CAA - 14 actively involved plus 3 community volunteers. Special thanks to CAA members Carol Stegink, Helen Potthoff, Diane McAfee, Noreen Tonkin, Toni Taylor, John Leeson, Forrest Tomes and Wendell Clifton for their help, as well as to Community volunteers *Audrey Bradford, Dottie Peterson and Marj Grimm*.

Fee per camper was \$30, the camp was self supporting financially, and is planned to be repeated for summer 2011. Girls attending were aged 9 - 11. A repeat of the camp is planned for July 27 - 29th, 2011.

Activities were focused on beginning astronomy education and activities - the Solar System, Reason for the Seasons, Space distances, Solar Telescopes and spotters, the planets, relative sizes and distances, and Stars and constellations. All learned basics of using binoculars, sky maps and planispheres, and had brief opportunities to view the night sky thru the B & C. Cloudy skies were a big disappointment.

Slide show played during the monthly meeting reflects the variety of activities during the event.

Camp Planning (18)

Forrest & Bunnie Tomes
Carol Stegink,
Diane McAfee
Helen Potthoff
Toni Taylor
Noreen Tonkin
Wendell Clifton
Judy Ellyson
Corely Washburn
Brent Studer
Barb Morck
Rita Hampton
Michele Cariveau
Don Schwartzentruber

During Camp (13)

Forrest & Bunnie Tomes
Carol Stegink,
Diane McAfee
Helen Potthoff
Toni Taylor
Noreen Tonkin
Wendell Clifton
Judy Ellyson
John Leeson

Telescope & activity guys "on call"

Jerry Warner
Lynn Reihman
Brent Studer

Planned Visit to Hobbs Observatory - Unplanned visit to the Northwoods

By Doug Slauson

I stopped by the Hobbs Observatory, a few miles east of Eau Claire, WI, on our way back from Lake Superior last Friday (Aug. 13) to do some late meteor watching. It turned out that I stumbled upon Northwoods Starfest held annually at the observatory. There were more telescopes than you can shake a stick at! I didn't know about the Starfest in advance of my arrival, so I was caught quite surprised by the number of cars, campers, tents, and telescopes set up everywhere on the observatory grounds and in the nearby wooded area.

The sky was clear, having been scrubbed clean by a strong line of thunderstorms that passed through the area a couple of hours earlier. Many telescope were still covered and you had to watch out for big ponds of water on the observing grounds while stepping around in the dark. The two domes on the observatory building were closed; no doubt because of the recent storms. These domes housed a 14-inch Celestron and a 24-inch reflector on an alt-az mount that incorporates both a Newtonian and Nasmyth focus.

Technically, I crashed the star party since I was unregistered but, on the other hand, the Chippewa Valley Astronomical Society's website states the observatory is open to the public every weekend. As a result, I guess I was covered by their policies. ;o)

As it was quite dark I was able to move freely about incognito. Since the surroundings were DARK, I could not tell which dark shape moving in the dark was a member of the host club. No one wore any light-colored ID tags that I could see. The multitude of astronomers were simply dark shapes that were moving around, circling the telescopes, along with their bobbing red flashlights. This experience provided evidence that we should perhaps wear *large* IDs and/or "Ask Me!" buttons at Palisades-Dows when we have visitors. Also, I didn't see any green laser pointers in use. Perhaps those devices were discouraged because of the high density of observers and astrophotographers.

At the invitation of its unidentified owner, I looked through a portable 12-inch truss-tube Dobsonian telescope at Jupiter, but otherwise stuck to a one-man program of meteor observing. Meteor observing was my motivation for driving to the observatory from our hotel room in Eau Claire.

I stopped by the mess hall during their break for refreshments - not to eat, but to hang back and scan the faces in the crowd. However, since I didn't see any familiar faces, I returned to the observing grounds to restore my dark-adapted eyes.

After about 1.5 hours at the observatory, I returned to Eau Claire after observing a half-dozen Perseids over a 30-minute period (one every 5 minutes).

Images of the 2010 Northwoods Starfest are at <http://freemars.org/mnfan/CVAS/2010-08-NWSF/> and the CVAS website is at <http://www.cvastro.org/> where you will find photos of the observatory and its two telescopes.



Photos from the Viola Gibson Summer Day Camp Program visit to the EIOLC in August. The group numbered 56 - and presented a challenge with the broad range of ages - from K - 5th grade. It was also VERY VERY hot. The kids enjoyed looking through the solar scopes and using the sun spotters and learning that they should NEVER look directly at the sun. CAA volunteers: Helen Potthoff, John Leeson, , Carol Stegink, Vern Jackson, Noreen Tonkin, Annette Taylor, and Forrest and Bunnie Tomes. The group was to have enjoyed picnic lunches outdoors but moved indoors because of the extreme heat.

For Sale

CAA member Jim Feickert is listing the following items for sale:

- Meade D 90 mm/f1000 refractor with tripod
- Collimator for Newtonian in box
- Brand new in box glass solar filter
- Under scope plate for eyepieces and other odds and ends

If you're interested in any of the above items please contact Jim via email at:

sfeickert1@gmail.com

Touring the Skies

By Jim Bonser, jbonser@usa.net

I hope you were able to get out to see some of the Perseid meteors last month. I spent just a short time on my back porch watching, and I saw several spectacular meteors! Most left a sparkling, glowing train like the wand Tinkerbell waved at the beginning of the Walt Disney Show – anybody remember that? Fond memories, to be sure – both the show and the shower! I watched from about 9:35 until about 10:20 and saw 18 Perseids and 2 meteors that were not part of the shower but one was quite spectacular, traveling from the southeast overhead and finally disappearing in the northwest. It was not a storm, by any means and reports I have heard say that once again European watchers saw many more than we did, but it was a beautiful night and I was bothered by only one mosquito the whole time I was out, which was awesome!

This month we don't have any spectacular meteor showers to look forward to, although September is known for very high sporadic rates. Sporadics simply means random meteors not associated with any particular shower. We do have a very nice opposition of Jupiter to observe, however. You may remember from past articles that Jupiter takes twelve Earth years to make one complete trip around the sun. Like the Earth, Jupiter's orbit around the sun is not a perfect circle, but instead is slightly elliptical. That means that there is always one year during Jupiter's 12 year orbit when we are lined up between Jupiter and the sun (known as opposition) and Jupiter is at the closest point in its orbit to the sun (known as perihelion). This happens to be the case this month! Jupiter reaches perihelion on September 21 and reaches opposition on September 22. This combination will make Jupiter appear unusually bright for the few days before and after that date, and in a telescope, Jupiter will appear about as big as it ever gets; about 49.7 arc seconds. That may not mean much to you if you don't use a telescope very much, but believe me, for a planet that is huge! Be sure to get out to a local star party and take a look at the giant planet this month as close to the 22nd as you can. It will be worth it, I promise!

At the same time Jupiter is reaching opposition, another of the gas giants is also reaching opposition and happens to be located very close to Jupiter. This is the pretty pale blue planet known as Uranus. On September 21 at about 10:58 am Uranus will reach opposition and will be only 50 arc minutes away from Jupiter! Of course it will be daylight for us then, but by evening they will not have moved apart that much and the view will still be beautiful! In fact, both planets will be visible in a wide field telescope or binoculars AND both will be about as big and bright as they get! I hope it's clear that night so I can get a picture!

Mars and Venus are still close to each other in the early evening skies for a few days at the beginning of the month. Look to the west shortly after sunset to see bright Venus forming a nice triangle with Mars and the bright star Spica (pronounced spike – ah). Venus will be at its brightest toward the end of the month, but it will set soon after the sun and so will not be as impressive as it would if it were higher in the sky. In a telescope, Venus will look like a miniature quarter or crescent moon this month. I was able to find it during the day (about 5 o'clock in the afternoon) with the help of two of my friends, Drew Sorenson and Ron Gardner on August 21 using an 8 inch Orion Dobsonian telescope. Venus looked so beautiful with the blue sky in the background! In fact it looked better in the daylight because it did not dazzle my eyes like it does when the sky is dark. It was an almost perfect first quarter phase and looked very three dimensional. Well, that's it for this month. I was sad to hear that Jack Horkheimer 'Stargazer' on Public Television passed away on Friday August 20 at the age of 72. Jack was an inspiration to me when I first became 're-introduced' to the hobby of astronomy in the early 90's. I got to meet Jack at an Astronomical League convention in Kansas City where he spoke on comets in history. I was honored to talk with him for a while and get my picture taken with him. Jack always ended his shows by saying 'Keep Looking Up!' In his honor, I would like to close this month's article the same way – take a few moments whenever you step outside and "Keep looking up!"

Clear skies!



Jim held a point and shoot canon camera to the eyepiece - its rim the black curve at the left edge. I kind of like it, it gives an idea of scale to the shot. The telescope was an 8" dobsonian with a 12mm eyepiece. The camera was Nikon Coolpix L18.

The Turbulent Tail of a Tiny Galaxy

By Trudy Bell and Dr. Tony Phillips

Next time you hike in the woods, pause at a babbling stream. Watch carefully how the water flows around rocks. After piling up in curved waves on the upstream side, like the bow wave in front of a motorboat, the water speeds around the rock, spilling into a riotous, turbulent wake downstream. Lightweight leaves or grass blades can get trapped in the wake, swirling round and round in little eddy currents that collect debris.

Astronomers have found something similar happening in the turbulent wake of a tiny galaxy that is plunging into a cluster of 1,500 galaxies in the constellation Virgo. In this case, however, instead of collecting grass and leaves, eddy currents in the little galaxy's tail seem to be gathering gaseous material to make new stars.

"It's a fascinating case of turbulence [rather than gravity] trapping the gas, allowing it to become dense enough to form stars," says Janice A. Hester of the California Institute of Technology in Pasadena.

The tell-tale galaxy, designated IC 3418, is only a hundredth the size of the Milky Way and hardly stands out in visible light images of the busy Virgo Cluster. Astronomers realized it was interesting, however, when they looked at it using NASA's Galaxy Evolution Explorer satellite. "Ultraviolet images from the Galaxy Evolution Explorer revealed a long tail filled with clusters of massive, young stars," explains Hester.

Galaxies with spectacular tails have been seen before. Usually they are behemoths—large spiral galaxies colliding with one another in the crowded environment of a busy cluster. Tidal forces during the collision pull gas and stars of all ages out of these massive galaxies to form long tails. But in IC 3418, the tail has just young stars. No old stars.

"The lack of older stars was one tip-off that IC 3418's tail isn't tidal," says Hester. "Something else must be responsible for these stars".

Hester and eight coauthors published their findings in the June 10, 2010, issue of *The Astrophysical Journal Letters*. The team described the following scenario: IC 3418 is speeding toward the center of the Virgo cluster at 1,000 kilometers per second. The space between cluster galaxies is not empty; it is filled with a gaseous atmosphere of diffuse, hot hydrogen. Thus, like a bicyclist coasting downhill feels wind even on a calm day, IC 3418 experiences "a stiff wind" that sweeps interstellar gas right out of the little galaxy, said Hester—gas that trails far behind its galaxy in a choppy, twisting wake akin to the wake downstream of the rock in the babbling brook. Eddy currents swirling in the turbulent wake trap the gas, allowing it to become dense enough to form stars.

"Astronomers have long debated the importance of gravity vs. turbulence in star formation," Hester noted. "In IC 3418's tail, it's ALL turbulence."

To many astronomers, that's a surprising tale indeed.

See other surprising UV images from the Galaxy Evolution Explorer at <http://www.galex.caltech.edu>. Kids (and grownups) can play the challenging new Photon Pileup game at <http://spaceplace.nasa.gov/en/kids/galex/photon/>.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



In the ultraviolet image on the left, from the Galaxy Evolution Explorer, galaxy IC 3418 leaves a turbulent star forming region in its wake. In the visible light image on the right (from the Sloan Digital Sky Survey), the wake with its new stars is not apparent.

The Stories Behind the August Perseids

By Mike Simonsen, *Simostronomy*, <http://simostronomy.blogspot.com/>

It's August, so for better or worse, two stories will be making the rounds in the blogosphere. First, is the Mars Hoax email that will not die. I've written about this before (<http://simostronomy.blogspot.com/2008/08/like-bad-penny.html>), so we won't go there again. Second, is the Perseid meteor shower, which occurs every August.

The Perseids are my favorite meteor shower because the late summer weather is a lot easier to tolerate than some of the cold winter nights other annual showers happen to occur, like the Leonids in November and the Geminids in December.

Every August that the Moon promises not to interfere, we are reminded that this will be the best meteor shower of the year. But there is more to the Perseids than meets the eye and there are some interesting stories behind the Perseids that don't generally get told. I'd like to share some of them with you here.

Let's start with where do meteor showers come from?

We know today that there are streams of particles, called meteoroids, in orbit around the Sun. When the Earth encounters one of these streams, these mostly dust sized particles are trapped by Earth's gravity and burn up as they descend through the atmosphere. The result of this flame-out is a meteor, or what people commonly refer to as "a shooting star."

But where do these streams of meteoroids come from?

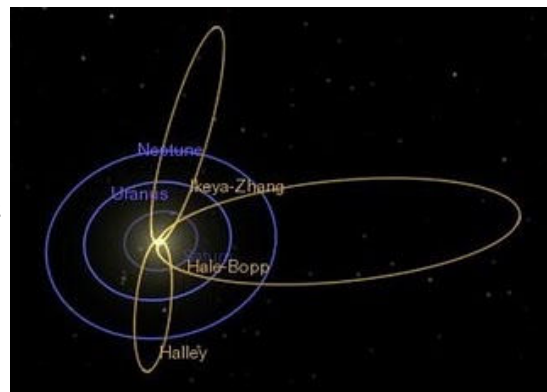
In the 1800's Giovanni Schiaparelli was the first to suggest that meteor showers were associated with periodic comets. Schiaparelli noted the orbits of some periodic comets coincided with the orbits of streams of particles responsible for meteor showers. One of these, Biela's comet, discovered in 1826, was identified by Austrian astronomer Wilhelm Baron von Biela as a periodic comet that returned every 6.6 years.

Biela's comet put on quite a show on subsequent returns after its discovery. It was seen to break apart into two pieces in 1846, and in 1852 the two fragments returned as twin comets! The remains were assumed to have disintegrated entirely since the comet was never seen again. In 1872 and 1885, however, when Earth crossed the path of the comet's known orbit, bright meteor showers known as Andromedids (or Bielids) were observed. This seemed to prove the idea that meteor showers are composed of fragments of disintegrated comets. Schiaparelli was also the first to show that the Perseid and Leonid meteor showers were associated with comets.

Today we know several annual meteor showers and their connection to periodic comets. The eta Aquarids and Orionids are associated with the famous comet 1P/Halley. The Southern Taurids are associated with comet 2P/Enke. I've already explained that the Andromedids come from comet 3P/Biela, the comet that broke into two pieces and then disintegrated entirely. The Leonids come from debris left behind from comet 55P/Tempel-Tuttle and, getting back to our August astronomy story, the Perseids occur when Earth encounters the stream of dust left behind from comet 109P/Swift-Tuttle.

And here is another story within a story, the naming convention for comets. What is all this IP/ and 2D stuff all about?

The exact rules for comet nomenclature (<http://www.cfa.harvard.edu/icq/cometnames.html>) are pretty involved, but essentially the letter P stands for a periodic comet with a period of less than 200 years. C stands for a comet that is not periodic, and D stands for a comet that has broken up or been lost, a dark comet. The names associated with comets are most often the discoverer or co-discoverers of the comet, although some of them, like Halley's Comet are named after the astronomers who first calculated their orbits rather than their original discoverers. The number corresponds to the order and number of discovery of that type of comet. 109P/Swift-Tuttle, the comet responsible for the Perseid meteor shower each year, is therefore the 109th periodic comet known, and it is named after its co-discoverers, Swift and Tuttle; which leads us to two more stories behind the story of the Perseid meteors.



Who were Swift and Tuttle?

(Continued on next page)

The Stories Behind the August Perseids (Cont'd)

Lewis Swift was born in Clarkson, New York on February 29, 1820. Swift was a farmer and hardware store owner by trade. Between 1866 and 1892 he discovered thirteen comets, making him one of the most prolific comet discoverers of all time. Lewis Swift's life story is one of pain, perseverance, disappointment, delight, fame and fortune.

According to Swift, he first really became interested in astronomy after observing the Great Comet of 1843. This comet was so bright it could be seen in broad daylight and its tail extended 40 degrees across the sky!

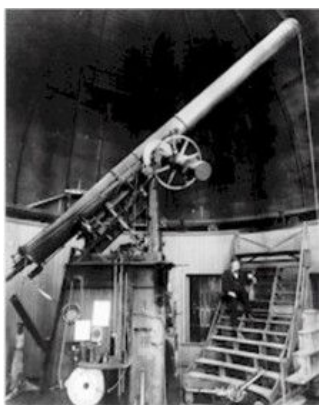
Swift made his first telescope, a 3-inch refractor with a lens purchased for \$5.00 from the Spencer Optical Company. In 1858 the 3-inch was accidentally broken, so Swift purchased a 4 1/2-inch 'comet seeker' from the American optical craftsman Henry Fitz. This was the telescope he made all but one of his comet discoveries with. His early observatories weren't much more than small platforms built on the roof of his barn, accessed through a hole cut in the roof.

His first comet discovery, and the one he is most famous for, was actually quite by accident. Upon hearing of the discovery of a comet in the northern sky, near Polaris, the North Star, Swift decided to observe the comet one July evening in 1862. After less than five minutes he came across a beautiful comet that he took for granted was the comet he had been looking for. After following the comet for several nights it became clear that this was actually a different comet. In fact, it was the same comet that Harvard astronomer Horace Tuttle had independently discovered a few days after Swift.

It was in 1866 that Giavonni Shiaparelli announced that comet 1862III (Swift-Tuttle) traveled in an orbit virtually identical to the Perseid meteor stream. Swift and Tuttle argued bitterly for years over who deserved credit for this important comet's discovery.

In 1872, Swift moved to Rochester, New York and opened a hardware store. He became well known for discovering comets with his 4 1/2-inch telescope from the roof of a local cider mill. As his popularity increased, he began to give lectures on astronomy and often held what we now call star parties, showing people comets and other celestial wonders in Lake View Park.

In 1879, Swift found a generous patron in Rochester patent medicine businessman Hulbert Harrington Warner, who financed the building of an observatory for Swift. Warner assured "Professor Swift" as he had become known, that if Swift could raise the money to purchase a large telescope, Warner would build an observatory for it. The original estimate for construction of the observatory was \$20,000.



Swift was able to fulfill his part of the bargain by collecting donations for a 16-inch Alvan Clark & Son telescope from the people of Rochester, NY. When the observatory opened it was the fourth largest telescope in the United States. The plans for the observatory also called for an astronomical library, an elevator and a residence for Professor Swift and his family. Ultimately, the Observatory cost Warner \$100,000.

The observatory itself was the first observatory in the world to encourage visits by the general public. All a visitor had to do was buy a ticket for 25 cents at Warner's business on St. Paul Street. It became so well known that it was included in travel guidebooks.

Soon after the observatory opened in 1882, Swift closed his hardware store and became, for all intents and purposes, a professional astronomer. Swift's attentions soon turned from comets to nebulae. While Charles Messier had considered them to be mostly annoyances to the discovery of comets, Swift believed they were worthy of study in their own right. By the end of his career he had discovered over 1200 objects, ranking him third behind the Herschels and number one among American observers.

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The Stories Behind the August Perseids (Cont'd)

He was awarded an honorary Ph.D. from Rochester University, and received more medals than any other astronomer of his time, including three from the Imperial Academy of Science in Australia, four from the Astronomical Society of the Pacific, and the Laplace Medal from the French Astronomical Society. In 1897 he was the first person awarded the Jackson-Gwilt Medal of the Royal Astronomical Society.

In 1893, motivated largely by the construction of an Episcopal church next door to the observatory that blocked his view to the sky, Swift relocated the 16-inch telescope to Lowe Observatory on Echo Mountain in California, where he spent the remainder of his career. Swift discovered his last comet in 1899 at the age of 79. Although some of his comet discoveries can surely be said to be lucky, most were the result of persistent, systematic, tireless observations. Swift was known to remark often, "One cannot discover comets lying in bed."

The second half of the story behind the discovery of Comet Swift-Tuttle is Horace Parnell Tuttle. Born March 17, 1837 in Newfield, Maine, Horace's life story is a bit more of a mystery.

Charles Wesley Tuttle, Horace's older brother, was an amateur astronomer who constructed his own telescope, and upon visiting the Harvard Observatory so impressed observatory director, William Bond, he was hired as an assistant observer. This was Horace's connection and eventual inroad to working at Harvard Observatory later on.

Charles was eventually replaced at Harvard by his younger brother Horace as an observatory assistant. Horace became attached to the observatory's four-inch Merz comet seeker, which he used on the balconies of the observatory of the 15-inch refractor, spending night after night in search of new comets. While not as prolific as Swift, Horace Tuttle proved to be a successful comet hunter.

He discovered or co-discovered numerous comets, including 55P/Tempel-Tuttle, parent body of the Leonid meteor shower, 109P/Swift-Tuttle, parent body of the Perseid meteor shower, and the "Great Comet of 1860." Other comets that bear his name are 8P/Tuttle, parent comet of the Ursid meteor shower, 41P/Tuttle-Giacobini-Kresak and C/1861 Y1 Tuttle. In 1859 he was awarded the Lalande Prize of the French Academy of Sciences for discovering of two comets in one year (1858).

With the outbreak of the Civil War, Horace Tuttle enlisted in the 44th Massachusetts Volunteer Infantry and served at New Bern, North Carolina. He continued to make astronomical observations during the war, reporting on the appearance of Comet Tempel 1864 II.

The war had taken Tuttle out of comet seeking for three and a half years, so his discovery of comet 1866 I at the U.S. Naval Observatory on January 5th, 1866 must have felt pretty good after such a long hiatus. This was Comet Tempel-Tuttle, first discovered by the French astronomer, Tempel, more than two weeks earlier. Tuttle received a lot of press for this discovery since it was only the second comet ever discovered at the Naval Observatory.

In 1887 Tuttle obtained a 6.5-inch broken-back reflecting comet seeker, made for him by John Brashear. It was installed on the roof of the Naval Observatory, where he made his last comet discovery, a recovery of Comet 1888V Barnard.

Tuttle lived in the Washington, D.C. area from about 1884 until his death in 1923. In his final years he was feeble and blind. His gravesite is unmarked and its location is unknown.

Comet Swift-Tuttle itself is a pretty interesting story. It is the largest object known to make repeated passes near the Earth. It is also one of the oldest known periodic comets with sightings by the Chinese as far back as 68 B.C. The best estimate of when it will return is July, 2126.

The first attempt at computing a definitive orbit was made in 1889, when F. Hayn determined the orbital period to be 119.64 years. In 1971, Brian Marsden and Zdenek Sekanina took 212 positions obtained during the period of July 22 to October 22, 1862, applied perturbations by all nine planets, and came to a similar conclusion, 119.98 years.

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The Stories Behind the August Perseids (Cont'd)

A couple of years later, Marsden considered the possibility of linking Swift-Tuttle to an earlier comet. He found two in the 18th century that looked promising--1737 (Kegler) and 1750 (Wargentin). The 1750 comet appeared at just about the right time, but the 1750 comet seemed to be moving too fast to fit the orbital calculations. The 1737 comet actually exhibited a motion consistent with what would have been expected for Swift-Tuttle but the comet's period would have to have been some 10 years longer than was indicated by the observations in 1862.

Marsden made two predictions for a forthcoming return. First, using the definitive orbit calculated by Sekanina and himself, he suggested a perihelion date of September 16, 1981. Second, he suggested that if the link to the comet of 1737 was valid, Swift-Tuttle would most likely return to perihelion on November 25, 1992.

Initial searches for the comet began in 1980, which was within the error range given by calculations, and more rigorous searches were conducted in 1981 and 1982, but the comet was not recovered.

On September 26, 1992, Tsuruhiko Kiuchi, from Japan, discovered a comet and reported it to the National Astronomical Observatory in Tokyo. Several observers were able to confirm the comet within the next 24 hours and the direction and rate of motion were consistent with what would be expected for Swift-Tuttle. The long lost parent of the Perseid meteor shower had indeed returned.

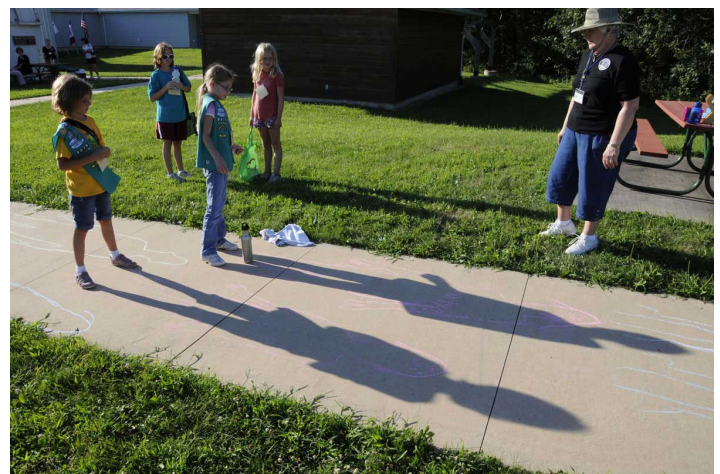


After refining the calculations of its orbit and looking at predictions of its next return, there was some concern that Swift-Tuttle might actually collide with Earth in 2126!

The comet has a diameter of 10 kilometers, and if it did hit the Earth going 60km/sec, it would be catastrophic. The collision would be 1 billion times more powerful than the atomic bomb dropped on Hiroshima. An impact similar to this is believed to have caused the extinction of the dinosaurs. Swift-Tuttle crashing into the planet could create a cloud of dust that would block out the sun, killing all plant life, and causing an ice age.

What are the chances it will hit? It's difficult to estimate. The comet will only collide with the Earth if the two bodies occupy the same space within a narrow three and a half minute window of their orbits. A difference of one hour would cause the comet to miss the Earth by about 100,000 kilometers. Considering the last calculations were off by 10 years, you can imagine how difficult it is to be sure one way or the other.

We haven't heard the last of comet 109P/Swift-Tuttle. In less than 120 years our ancestors will be learning about Professor Swift's comet as it makes another pass through the inner Solar System, leaving a trail of meteoroids behind to delight another generation with August meteor showers for another 130 years.



Girl Scouts Camp attendees learn about the Earth's rotation by outlining their shadows and observing how the shadows lengthen as the time goes by.

Upcoming Public Night Programs at Palisades-Dows Observatory

All the events below are at Palisades-Dows Observatory at 1365 Ivanhoe Rd., located just south of the Cedar River, a short drive SW of Mt. Vernon, IA. The observatory is just 2 miles west on Ivanhoe Rd. from IA Highway 1.

September 11, 2010
at 8:00 p.m.



Iowa's Astronomical Rocket Program

Presenter: Asst. Professor Randall McEntaffer, The University of Iowa

The University of Iowa has a long tradition of suborbital rocket flights. Recently, Dr. Randall McEntaffer has joined the Department of Physics and Astronomy and continues this tradition in the area of astronomy. His talk will concentrate on NASA's suborbital rocket program, the results from recent astronomical flights, and plans for upcoming missions. Weather permitting, observing through CAA telescopes will follow.

October 9, 2010
at 7:30 p.m.



Astronomy in the Hawkeye State

Presenters: Doug Slauson and Brent Studer

Many people are familiar with the name of James Van Allen, but Iowa's astronomical heritage goes back long before the pioneering space physicist helped usher in the Space Age. Tonight, Brent and Doug will talk about astronomical events in Iowa's history, provide a brief history of astronomy at The University of Iowa and around the state, and describe upcoming events that will be of interest to tonight's audience and their descendants. Weather permitting, observing through CAA telescopes—including the 24-inch Boller & Chivens formerly owned by The University of Iowa—will follow the presentation.

The dates for the 2010 Iowa Star Party have been announced **Thursday - Sunday, September 2-5, 2010.**



More detailed information at <http://www.iowastarparty.com/>

This star party is being sponsored jointly by the Ames Area Amateur Astronomers (<http://www.amesastronomers.org/>) and Whiterock Conservancy (<http://www.whiterockconservancy.org/>). Meals will be provided and accommodations ranging from tent camping to full B&B will be available. Advanced registration is required. If you have any questions contact Trent Milam (712-684-2964 ext 112, resort@whiterockconservancy.org).

Astrofest 2010

The Chicago Astronomical Society invites you to attend our annual star party, Astrofest, which will be held September 10-11, 2010 at Vana's near Kankakee, Illinois. Registration forms and related information are available at http://www.chicagoastro.org/index_files/Page345.htm

The theme for this year's event is "The Link Between Astronomy and Particle Physics." In addition to our usual line-up of astronomers, Astrofest 2010 will include presentations by scientists involved in research with such contemporary topics as dark matter and dark energy. Our star party will be held on Vana's 20+ acre field, with plenty of room for camping and telescopes; each attendee will be invited to use our 14-inch observatory telescope. Other activities include: astrophotography contest; telescope contest; door prize raffle.

We hope to see you at Astrofest 2010. If there are any questions, please contact Jim Cuca at jamescuca@comcast.net.

CAA Meeting Minutes August 5, 2010

By John Centala

The meeting was called to order at 7:00 pm by president Wendell Clifton. He announced that Corely Washburn would not attend tonight, and may resign as secretary of the CAA. John Centala volunteered to take the meeting minutes.

Treasurer's Report – Carl Bracken: General Fund \$1447, Internet Connectivity Fund \$991, RCRV Educational Materials Fund \$510. The other funds were mostly unchanged in the last month. Gary Couch donated \$500 to fund the purchase of club patches, and requested a matching contribution from Pepsi.

Corrections to the July minutes:
John Centala pointed out 3 typos.

Section Reports:

Deep Sky – Lynn Reihman noted that the globular clusters M13, M15, and M92 are well placed for viewing. He also mentioned observing 2 planetary nebulae, the Blue Snowball in Andromeda and the Blinking Planetary in Cygnus. Keith Erickson and Steve Brunner are planning to attend next week's Nebraska Star Party.

Stellar – John Centala is continuing to do CCD photometry of Epsilon Aurigae.

Solar, Lunar, and Planetary – Jim Bonser reminded us of the planetary grouping visible in the west during the early evening. John Leeson and Lynn Reihman reported that Jupiter is becoming well placed for observing. It was noted that while the sun is blank now, it had a spot on it a week or two ago.

Equipment – John Centala mentioned some of the equipment on display at the recent MidWest AstroImaging Conference. Greg Frohner said that we now have a set of Baader 2-inch color filters specifically for the B & C telescope. Lynn Reihman has a new 90 mm camera lens. John Centala delivered Keith Sippy's 8 inch F6 Newtonian telescope to the rolloff roof observatory. He also noted 2 books he recently acquired, To Measure the Sky, and Electronic Imaging in Astronomy. Someone said a 40 mm Televue Wide Field eyepiece is now at the observatory. Jim Bonser bought a new laptop computer, which should speed up his image processing, and described the problems he had with a new Gemini Go To system for his Losmandy G11 mount.

Meteor and Aurora – Wendell Clifton reminded us that the peak of the Perseid meteor shower is on the night of August 12/13, and that the Kappa Cygnids will peak on August 18 with a rate of 3 per hour. An aurora is possible tonight. John Centala saw 2 Perseids between 3:30 and 4:15 this morning.

Imaging – Lynn Reihman was clouded out in his recent attempts at astrophotography.

Computer – Carl Bracken talked about a wireless network. John Centala got a new laptop computer with a backlit keyboard.

Upcoming Events – Potluck and swap meet tomorrow at 7 pm at Pal-Dows. Greg Frohner will bring a charcoal grill.

Past Events – Bunnie Tomes reported on the recent 3-day Girl Scout Day Camp at Pal-Dows. 21 girls attended, along with parents, and 13 club members showed up to help. Unfortunately it was cloudy on Friday night, the only night they were there. The Day Camp proved very popular, so a similar event can be expected next year.

Break – John Leeson and Greg Frohner brought a large variety of food and drinks.

Funds	7/1/2010	7/31/2010	net gain(loss)
Robotic Telescope	\$ 310.48	\$ 310.48	\$ -
Internet Connectivity	\$ 1,047.36	\$ 991.72	\$ (55.64)
Jim Rutten Memorial	\$ 652.70	\$ 652.70	\$ -
Keith Sippy Memorial	\$ 769.00	\$ 769.00	\$ -
Equatorial Mount	\$ 535.24	\$ 535.24	\$ -
Endowment	\$ 6,184.99	\$ 6,184.99	\$ -
General	\$ 487.47	\$ 1,447.63	\$ 960.16
E.I.O.L.C Facility	\$ 1,781.33	\$ 1,629.59	\$ (151.74)
RCRV	\$ 1,423.12	\$ 510.52	\$ (912.60)
Lady Astronomers	\$ 250.00	\$ 250.00	\$ -
AEGON Transportation Fund	\$ 4,958.00	\$ 4,958.00	\$ -
Totals	\$ 18,399.69	\$ 18,239.87	\$ (159.82)

Jim Bonser projected photos recently taken with his Canon 30D camera and 102 mm refractor: M11, M14 (yellow-orange stars), M27 (blue green), and M107.

Carl Bracken demonstrated a CMOS video camera, 5 frames per second, wide field of view; it is not for really faint stuff.

EIOLC Report – Greg Frohner reported that a new lamp has been installed in the digital projector in the presentation room at Pal-Dows. Forrest Tomes said that last month set a record for usage of the observatory facilities, with 8 groups events, 2 public events, and a member night. The next public night is August 7, with a program by UI Professor Robert Mutel.

Gary Couch asked if we should entertain people standing in line for the B & C. After considerable discussion, Carl Bracken agreed to look into the cost and feasibility of TV monitors to display something astronomical in the north-south hallway to the dome.

Observatory Committee – Lynn Reihman will look into getting better walkway lighting and report back next month. He gave out 3 sets of keys to the observatory.

Robotic Telescope Committee – John Centala reported the June and July activities on this project. John Leeson plans to install a new version of ACP tomorrow or shortly thereafter, to work with a new version of Maxim DL that he recently received.

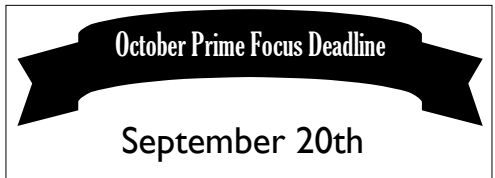
Program Chairman – Don Palmer wants someone else to take over this job. He also described a plan and procedure to recognize deceased members who were very active and contributed significantly to the club. There was considerable discussion on this topic, but nothing was finalized.

The meeting adjourned at 9:44 pm.

Calendar of Events

2nd — CAA Monthly Meeting.
 4th — CAA Members Night
 11th — Public Program at Palisades-Dows Observatory starting at 8:00p.m.
 Asst. Professor Randall McEntaffer, The University of Iowa
 Presents: *Iowa's Astronomical Rocket Program*

2nd-5th — Iowa Star Party Information available at <http://www.iowastarparty.com>
 Phone: **Connie Goode** - 712-684-2964 or **Tolif Hunt** - 712-684-2697 (Whiterock Resort)



September 2010

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			☾ 1 Moon 0.8° South of Pleiades (M45). Venus 1.2° South of Spica	2 CAA Monthly Meeting.	3 Moon 0.2° South of M35.	4 Members Night at Palisades-Dows. Mars 2.0° North of Spica.
5	6	7	● 8	9	10	11 Public Night at Palisades-Dows. Venus 0.3° North of Moon; occultn.
From very dark sites location, beginning on the 5th, try observing Zodiacal Light in east before morning twilight during the next two weeks.						
12	13	14	☽ 15	16	17	18
19 Mercury greatest elongation West (18°).	20	21 Jupiter and Uranus at opposition.	22 Jupiter 0.9° South of Uranus.	23 ☉ Venus greatest illuminated extent. Autumnal Equinox	24	25
26	27	28 Moon 1.1° South of Pleiades (M45).	29	30 Moon 0.5° South of M35.		

CONTACTS

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