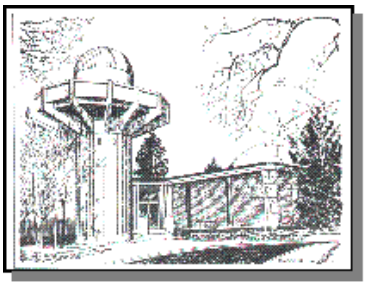
Reflections

PAC Logo



John Deere Planetarium by Paul Castle

Newsletter of the Popular Astronomy Club **January 2014**

THE PRESIDENTS CORNER

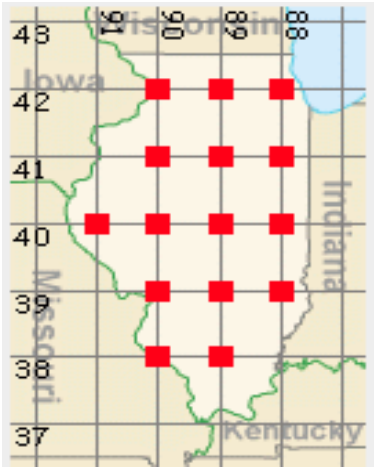
Wayland Bauer

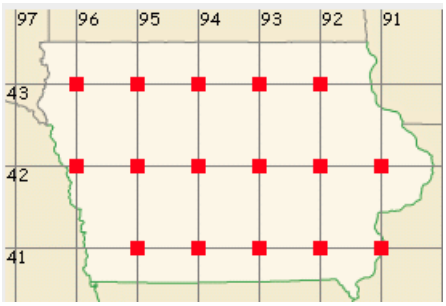
Winter seems to have officially arrived. In the last few days the high temperatures have been in the mid to low teens and the lows have dropped to single digits. Those of us that are warm weather astronomers are reading more and searching for other warm ways of entertaining ourselves.

I would like to introduce you to an idea that my daughter, Christy recently mentioned to me. While this probably will be of greater interest to geographers, I think many members of the club might accept this as a local challenge.

The idea is the "Degree Confluence Project" developed in 1996 by Alex Jarret. A confluence for this project is defined as the exact location where integer degrees of longitude and latitude intersect. He started the project because he had been talked into buying a GPS and wanted to come up with something to do with it. He thought of visiting places whose longitude and latitude were round numbers such as 43^0 00'00" N, 72^0 00'00" W.

There are 15 such sites in Illinois and 16 sites in Iowa. I have included maps of Illinois and Iowa from the website showing their confluence sites. Once you find one of these locations you are to document it by taking pictures, writing a short narrative, date and then post these to the website (www.confluence.org)





There are important guidelines to be followed and I strongly suggest you go the web site first and then use common sense (NO TRESPASSING) when attempting to get to the confluence site. When the confluence site is on private land, the website provides a letter to take with you to explain to the landowner what you want to accomplish.

The fourth quarter business meeting will have been held by the time you read this article. Unless there has been a large write-in vote, the slate presented in the October newsletter will have been elected. This means that in the last nine years there have been only two real changes on our Board of Directors.

In an effort to get more members involved and to spread the workload, I have added two new opportunities to serve (see the Sign-Up List for Volunteers). First, I created positions I am calling "Niabi Star Party Ambassadors". You don't need a telescope, just plan on being present at the star parties and circulate among our guests. Let them know what is being observed in what areas, answer their questions, and gently guide them in star party etiquette.

The second opportunity would help with the preparation for and clean up after activities at the Paul Castle Memorial Observatory. This would involve trimming weeds around the observatory, spraying the wasp nests, and making sure the porta-potty was clean, free of wasps, and supplied with necessities. In addition, this crew would make sure the garbage was hauled away after the activity.

We are constantly looking for volunteers to help with outreach efforts. If you don't think you have enough knowledge, it never hurts to say you don't know, but you will try to find out. You will be surprised by how quickly you learn!

Let's make 2014 a year of both personal growth in astronomy and growth in the Popular Astronomy Club.

ASTRONOMICAL CALENDAR OF EVENTS

(PAC Activities in Bold print)

(Possible photo Op dates shown in red)

Jan 1, 2014 – New Moon.

Jan 1, 2014 – Pluto is in conjunction with the Sun today.

Jan 1-7, 2014 – Latest Sunrises of the year.

Jan 5, 2014 – Jupiter is at opposition tonight.

Jan 7, 2014 – First Quarter Moon.

Jan 11, 2014 – Venus is at inferior conjunction with the Sun today.

Jan 13, 2014 – PAC Monthly Meeting - Augustana Planetarium, 7:00 p.m. Program: "Dark Skies" by Joel Carter.

Jan 15, 2014 – Full Moon, called the Wolf Moon.

Jan 17, 2014 – Earth travels through the ingress rock and dust trail of Comet ISON.

Jan 24, 2014 – Third Quarter Moon.

Jan 30, 2014 – New Moon.

Jan 31, 2014 – Mercury reaches its greatest elongation east 18.4° today.

Feb 6, 2014 – First Quarter Moon.

Feb 10, 2014 – PAC Monthly Meeting - Augustana Planetarium, 7:00 p.m. Program: "Observing Clubs" by Ken Boquist.

Feb 14, 2014 – Full Moon, called the Snow Moon.

Feb 15, 2014 – Mercury is in inferior conjunction with the Sun today.

Feb 22, 2014 – Third Quarter Moon.

Feb 23, 2014 – Neptune is in conjunction with the Sun today.

Mar 1, 2014 – New Moon.

Mar 2, 2014 – Mars begins its retrograde motion moving westward.

Mar 8, 2014 – First Quarter Moon.

Mar 9, 2014 – Daylight Savings Time begins today at 2:00 am.

Mar 10, 2014 – PAC Business Meeting - Augustana Planetarium, 7:00 p.m. Program: "Star Classification System" by Frank Stonestreet.

Mar 14, 2014 – Mercury reaches its greatest elongation west 27.6°.

Mar 16, 2014 – Full Moon, called the Worm moon.

Mar 20, 2014 – Earth arrives at our Spring Equinox.

Mar 20, 2014 – Saturn appears 0.2° north of the Moon.

Mar 22, 2014 – Venus reaches its greatest elongation west 46.6°.

Mar 23, 2014 – Third Quarter Moon.

Mar 30, 2014 – New Moon.

Mar 31, 2014 – Sunrise is 6:46 am and sunset is 7:26 pm.

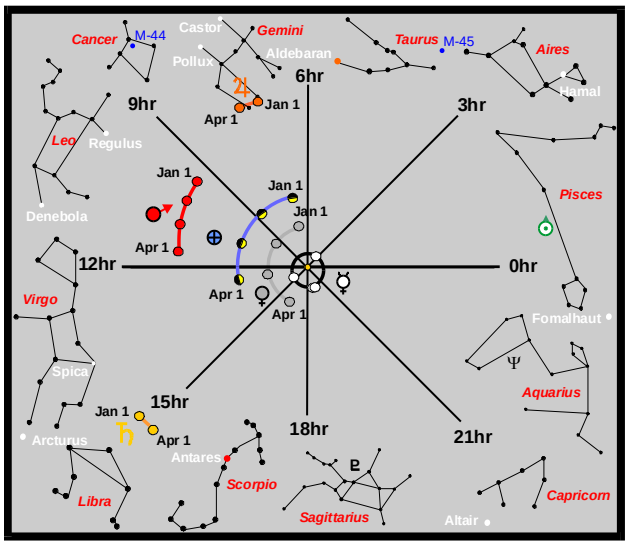
Apr 2, 2014 – Uranus is in conjunction with the Sun.

Apr 7, 2014 – First Quarter Moon.

Apr 19, 2014 – Astronomy Day at the Moline Public Library from 2:00 pm - 5:00 pm. See an article elsewhere in this newsletter.

Apr 19, 2014 – Public observing night at Niabi Zoo.

THE PLANETS DURING THE 1st QUARTER 2014



Mercury completes its 88 day orbit around the Sun, and moves the two additional earth days covered by this quarterly newsletter, hence the slightly overlapping circles on the chart shown above. Mercury makes one sidereal orbital revolution around the Sun in 87.969 of our days, but due to the motion of Earth around the Sun, its synodic period is about 116 days. This is why there are only three Mercury events on the list to the left, instead of four. Refer to the calendar to the left to view the major orbital events for Mercury during the period.

Venus: After a very nice evening apparition last quarter, Venus arrives in conjunction with the Sun on January 11, 2014. Since the springtime morning ecliptic angle rides very close to the horizon, Venus will not be an easily observable object during this period, especially if trees or other obstructions are on your eastern horizon. Venus reaches greatest western elongation on March 22nd, rising ahead of the Sun in the morning twilight.

Earth travels ¼ of its yearly twelve month orbital period around the Sun during this three month period, and arrives at our spring equinox on March 20th.

Mars has been a daytime object for almost all of 2013 but during this quarter, Earth overtakes and passes Mars, and the red planet emerges into the evening sky.

Jupiter: reaches opposition on January 5th It is a fine night time object this quarter, appearing in the constellation Gemini.

Saturn: In January 2014 Saturn becomes an early morning object rising about four hours before sunrise. By the end of this period, Saturn rises about 10:30 pm and sets just before 4:00 am.

Uranus: remains within the constellation Pisces during this quarter. At the beginning of the period, Uranus rises around noon and sets around midnight.

Neptune remains within the constellation Aquarius during this quarter. At the beginning of the period, Neptune rises around 10:00 am and sets around 9:00 pm.

Pluto remains within the star field of Sagittarius during the entire period.

PRC MEMORIAL OBSERVATORY NEWS

This section is devoted to news about activities at our PRC Memorial Observatory, with the exception of the Annual Picnic and Perseid Meteor Watch, which is always covered separately as a feature article.

Observing at our PRC Memorial Observatory October 12, 2013

John Douglas

Present were Al and Eric Sheidler, Wayland Bauer, Rusty Case, Ken Boquist and John Douglas.

It was an almost cloudless night except that it was beset by a bright moon in the eastern sky. Viewing conditions were good but the extra moonlight ruled out looking at star clusters, nebulas and galaxies. Wayland, Rusty and Ken all mounted their scopes while Al operated the club's Celestron in the observatory.

We viewed the following:-

The double clusters NGC 869 and NGC 884 in Perseus were seen through Rusty's scope and later by the club's scope. Also viewed through the club's scope was Nu Draconis, a bright white pair separated by 63 arc seconds in the constellation of Draco.

NGC 6633, an open cluster in Ophiuchus was viewed through Wayland's scope.

Through the club's scope, 4-Epsilon Lyrae and 5-Epislon Lyrae were two double stars in the same view, also known as a double double in the constellation of Lyra. This was followed by a look at the Ring Nebula, M57 in Perseus which showed up a bit hazy even under 140 power.

Albireo, the blue and gold double was viewed in Cygnus constellation.

Epsilon Bootis in Bootes was viewed through Rusty's scope, but this soon went below the observatory dome. Also viewed was Collinder 399, the Coat Hanger asterism in Sagitta.

Eta Cassiopeiae in Cassiopeia appeared to be a bright white star accompanied by a small orange star. This looked good under 15 power and more enhanced under 140 power (club scope). We also viewed NGC 457 (known as the ET Cluster) and M52, open clusters in Cassiopeia.

Lambda Arieta, a yellow and pale blue double in Aires was focused on by Wayland. He also viewed the Pleiades and Hyades, open clusters in Taurus.

From the club's scope we viewed Gamma Andromedae, a double consisting of one bright yellow and a smaller blue star in the Andromeda constellation.

By late evening the Pleiades star cluster, M45 was a little higher in the sky. This is known as the Seven Sisters, six or seven of which could be seen by the naked eye depending on darkness and viewing conditions. Among these are Alcyone, Tayget and Merope. There are actually 700 stars in this star cluster.

Camelopardalis is a northern star field looking away from the galactic plane, which reportedly has many star clusters and galaxies. Through the club scope we could see a red object. Rusty viewed U Camelopardalis, a variable star.

Since the stars in the night sky only move 30 degrees per month, it is possible to see many summer objects in early autumn. Because of this, objects set up for the October viewing overlapped with objects from previous months. From the July and August documented viewing sessions, we have already viewed the following:-

Mizar in Ursa Major
70 Ophiuchus in Ophiuchus
17 Cygni, double star and M39, open cluster in Cygnus
M4, globular cluster in Scorpius
M11, Wild Duck Cluster in Scutum
Cor Caroli, double star and M3, globular cluster in Canes Venatici
Beta Cephei, double star in Cepheus

The night's viewing session came to a close as the surrounding cold air was encroaching upon us near midnight.

ISON Observing Session at the Observatory November 3, 2013

Al Sheidler

Early this morning Rusty Case, Ken Boquist, Bryan Raser, Sara Sheidler, Eric Sheidler and Al Sheidler met at the Paul Castle Memorial Observatory to attempt to observe Comet ISON. We met at approximately 4:30 with the goal of being set up to observe the comet at 5:00 before the sunrise would cause the sky to brighten. The sky was crystal clear, the temperature was 27 degrees F and no wind, making for nearly ideal observing conditions.

We calibrated the setting circles of the observatory 6" refractor using the bright star Denebola which is very near to ISON's position. Then, using the setting circles we swung the scope to RA 11h, 26m, DEC 4deg 34' and were surprised to see a very dim, fuzzy object in the field of view exactly where it was supposed to be. Meanwhile, Rusty and Bryan were setting up their telescopes in the yard nearby. Both of them were also able to successfully draw a bead on the comet. Although ISON is only ~8th magnitude, Rusty's C8 Celestron provided a very good view of the comet. Image DSC_0484a and DSC_0484d are images of the comet using Rusty's C8 and my Nikon D90 SLR camera with 25 second exposure time at ISO3200.

The following color enhanced images definitely show a greenish hue to the comet and a nicely developing tail.

DSC 084a – NOVEMBER IMAGE OF COMET ISON

DSC 084d – NOVEMBER IMAGE OF COMET ISON

In addition to Comet ISON, we also viewed the Orion Nebula, the bright star Betelgeuse and the planets Mars and Jupiter. All four of Jupiter's Galilean moons were also visible. This was a short, but highly successful observing session. It will be interesting to continue observing ISON as it falls toward the sun on Thanksgiving Day.

DECEMBER 2013 COMET ISON UPDATE

Lee M. Farrar

All of the data from multiple sources now seem to confirm that Comet ISON did not survive its close perihelion encounter with the sun. All that apparently now remains of Comet ISON is a dust cloud that follows the predicted path of the comet after perihelion.

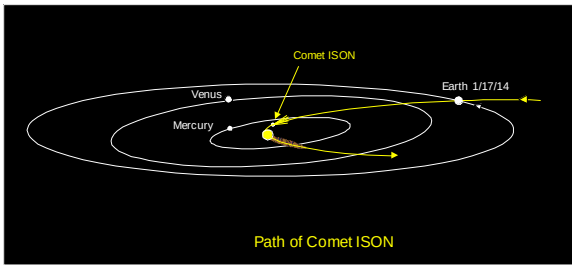
For the past four billion years or so, ISON was an Oort cloud object. The Oort cloud was formed early in our Solar System history and is a huge region of material surrounding our Solar System. In fact, the Oort cloud is so huge that it may extend about a third of the way to Alpha Centauri, the closest star system to our Sun.

Close encounters or collisions of material within the Oort cloud can eject objects on to a path into our inner solar system and will fall into two orbital categories. They can be on their first trip to the inner Solar System with pristine material, or can be on a return trip.

Comets Hale-Bopp and Hyakutake have been to the inner-Solar System before, and will be back again.

On the other hand, Comet ISON became a first-time visitor from the Oort cloud to the inner solar system, and its trajectory caused it to be a sun "grazing" comet.

As a Sun grazing comet, ISON passed within the Roche Limit as it plunged very close to the Sun's surface at perihelion. Comet ISON was no match for the extreme tidal forces, tremendous heat from our Sun, and was destroyed.



The above graphic shows the path of Comet ISON for a period of time before and after its perihelion with the sun. As we now know, ISON appeared before perihelion as a brilliant comet in the early morning sky.

I have shown the position of the Earth on January 17, 2014. Although on this date Comet ISON is gone, Earth will pass through the ingress pre-perihelion dust and debris shed by Comet ISON.

Who knows, maybe around this date in the future we'll be able to observe a new meteor shower in remembrance of Comet ISON.

NOVEMBER MEETING AND SPECIAL SPEAKER
November 11, 2013
Cindy Pippert

President Wayland Bauer called the November meeting of the Popular Astronomy Club to order at 7:00 PM.

President Bauer extended a welcome to all of our guests (the planetarium was near capacity due to our special guest speaker). Some of our guests included students from Dr. Mitchell's Astronomy class at St. Ambrose University.

After discussing some PAC business and upcoming events, Wayland turned the floor over to Roy Gustafson, who introduced Dr. William Kurth, a research scientist from the Department of Physics and Astronomy at the University of Iowa.

DR. WILLIAM KURTH GIVING HIS PRESENTATION TO PAC

Dr. Kurth has worked in the Voyager Plasma wave science investigation, the Galileo mission to Jupiter and the Cassini mission to Saturn. Currently he is following the Juno mission that is on its way to Jupiter, and the Van Allen Probes.

His speech concentrated on the Voyager I and II missions. These are twin space crafts launched in 1977. Voyager II launched first. It flew past the four large gas giants, snapping pictures as it traveled. One of the most memorable shots was named "the Picture of the Century". For this picture the camera was pointed back toward the Sun. Carl Sagan, host of the TV series "The Cosmos" urged NASA to take this picture. Carl Sagan said "We need a picture showing where we came from, and the little blue dot we call Earth." Eventually Voyager II traveled to the far reaches of the solar system.

Voyager I was launched two weeks after Voyager II on September 5, 1977. Both vehicles had instruments to measure plasma waves, cosmic rays, low energy particles, as well as the ability to detect magnetic bands, and the use of infrared and ultraviolet technology. The on board computers had 68 KB of memory. The high gain antenna is 11.6 feet in diameter and always faces toward Earth. Originally there were 11 instruments working on both space crafts, but now only half of them are working.

Both space crafts are powered by plutonium which will last 88 years. So at this point there is only 40 years of travel left, of course the farther away they get the longer it takes for the signal to travel back to Earth.

As time goes by it becomes less important for NASA to fund the project.

Dr. Kurth was most interested in the Voyager II mission. Voyager II had a plasma subsystem on board that measures thermal plasma. Dr. Kurth told us about plasma waves and emissions spewing out from the Sun. He studied the Sun's corona (lower atmosphere) and the heliopause (upper atmosphere). Dr. Kurth and his co-researchers were trying to find the edge of the heliosphere. Dr. Gurnett wrote a paper in 1995 estimating the distance 116-177 AU (1 AU is the distance from the Earth to the Sun, 93 million miles).

Dr. Kurth brought some equipment along that allowed us to hear radio waves. The pitch in sound would change when the craft detected a shock wave. The Voyager II mission has helped us learn more about exploding stars and exotic particles. By studying these emissions it helps us understand more about Coronal Mass Ejections (CME) and solar cycles. A large CME could take out the power grid and put us back into the Stone Age! Even a small CME will cause NASA to turn satellites solar panels so they are edge facing toward the Sun. NASA also alerts astronauts so they stay inside the ISS.

The Voyagers I and II will gather data and send it to Earth. Voyager I travels at 3.6 AU per year and Voyager II travels a bit slower. Voyager I has already left the solar system. Dr. Kurth estimates that we will lose contact by 2025.

Dr. Kurth discussed his role as part of the Voyager I team. His presentation included graphics and sounds transmitted back to Earth from Voyager I. He explained how the graphs and sounds provided evidence that Voyager I had crossed into interstellar space.

PAC GUESTS LISTEN TO DR. KURTH'S PRESENTATION

After answering questions, Dr. Kurth distributed posters to the audience and presented the club with a poster listing all the space programs (past and present) that the University of Iowa has been involved with.

2013 PAC ANNUAL BANQUET

The annual 2013 PAC Banquet was held in the upstairs banquet room at Jake O's Grill on Blackhawk Road in Rock Island at 6:00 on Friday evening, October 18, 2013.

At the time of our arrival at the banquet, a penumbral eclipse of the moon was in progress, but clouds prevented us from viewing it.

From 6:00 to 6:30, banquet members and guests checked in, received name badges, were given tickets for gift drawings, and had some time for informal conversation.

PRIVATE TIME FOR INFORMAL CONVERSATIONS

OUR VERY SPECIAL GUESTS FOR THE EVENING

Our very special guests for the evening were Lillian Nelson, widow of Dr. Harry Nelson, our second Popular Astronomy Club President and Professor of Astronomy and Mathematics at Augustana College, and her son Alan from Minnesota. Lillian and Alan were introduced to our speaker for the evening Dr. Robert Mitchell, Associate Professor of Physics and Astronomy at St. Ambrose University by Roy and Jan Gustafson.

LILLIAN NELSON IS INTRODUCED TO OUR SPEAKER

THE INVOCATION

At 6:30 President Wayland Bauer gave the invocation followed by some instructions for the evening.

PAC PRESIDENT WAYLAND BAUER GIVES THE INVOCATION

OUR BANQUET MEAL

The two long banquet tables were decorated with festive fall pumpkins and dishes of peanuts and M&M's.

Our banquet meal was served family style by restaurant personnel and consisted of baked ham, fried chicken, green beans, new potatoes, tossed salad with our choice of three salad dressings, dinner rolls and carrot cake dessert.

OUR BANQUET MEAL WAS SERVED FAMILY STYLE

OUR SPEAKER FOR THE EVENING

Our speaker for the evening was Dr. Robert Mitchell, Associate Professor of Physics and Astronomy at St. Ambrose University. He received his undergraduate degree in physics from St. Michael's College in Colchester, Vermont; his Master's degree in astrophysics from Rensselaer Polytechnic Institute; and his PhD from the University of Oklahoma in astrophysics.

OUR BANQUET SPEAKER, DR. ROBERT MITCHELL

Dr. Mitchell is currently the Director of the Menke Observatory. This observatory is located near the Wapsi River Environmental Education Center, and is named in honor of Monsignor Sebastian Menke, President of St. Ambrose University from 1964 to 1972 in Davenport Iowa.

Dr. Mitchell's presentation was about this facility and its history.

PAC AWARDS AND GIFT DRAWINGS

After Dr. Mitchell's presentation, the banquet program was concluded with our annual PAC service awards and drawings for gifts.

Eric Sheidler and Mitchell Milani received awards for outstanding service to PAC as youth members.

Wayland Bauer, Ken Boquist, Rusty Case, John Douglas, Lee Farrar, Dino Milani, Mitch Milani, Bryan Raser, Alan Sheidler, and Eric Sheidler were awarded certificates for observing 1/2 or more of the objects on our monthly "Challenge List" for three or more months

MITCHELL MILANI RECEIVES HIS AWARD FROM WAYLAND

JOHN DOUGLAS WITH HIS OBSERVERS AWARD

Certificates for Outstanding Service for working together in the PACMO and running the 12 inch Meade PACMO scope were presented to Mitch Milani & Eric Sheidler

ROY GUSTAFSON RECEIVES HIS OBSERVERS AWARD

OUTREACH ACTIVITIES

This newsletter section is devoted to reports about the various Public Outreach activities of the Popular Astronomy Club.

OBSERVING AT THE SHERRARD FIRE STATION
October 25, 2013
Bryan Raser

The PACMO ended its 2013 season October 25th with an invitation by Megan Crandall Cooper of the Sherrard Community Library. She later determined the Fire Department had a darker sky site. Thanks to Delbert Henry, Sherrard mayor and fire chief, we were given use of the fire station parking lot for observing and the kitchen, meeting room and restrooms.

Club members in attendance were: The Sheidler family, Rusty Case, Liz Robinson, Brad Smith and Bryan Raser. The PACMO and the club Dobsonian (fitted with a Telrad finder) were set up. Rusty Case brought his Celestron 8 and Bryan Raser brought his Nexstar 6.

We began the evening with views of the moon and Venus. PACMO showcased the fine double star Eta Cassiopeiae, Mizar, the ET cluster (NGC 457), M31 the Andromeda Galaxy, M13 the Hercules Cluster, M57 the Ring Nebula, M45 the Pleiades and Neptune. In addition, Rusty Case acquired Uranus and the Wild Duck Cluster and Bryan Raser found Hercules's other globular M92 and the planetary NGC 6781 in Aquila.

There were many young people in attendance that evening, and viewing was very good, even with the Sherrard's streetlights and the breezy, blustery night. The club scope got a lot of use that night. Hot drinks and popcorn were available in the station's public room. Sara Sheidler provided space themed coloring and worksheets. We concluded the evening thanking our generous hostess for an excellent site for future events.

OUT OF THIS WORLD AWARD APPLICATION
Al Sheidler and Wayland Bauer

At our regular PAC November 2013 meeting, we had a presentation from Dr. William Kurth, a world class scientist from the University of Iowa.

Dr. Kurth has worked in the Voyager Plasma wave science investigation, the Galileo mission to Jupiter and the Cassini mission to Saturn. Currently he is following the Juno mission that is on its way to Jupiter, and the Van Allen Probes.

See another article in this newsletter about Dr. Kurth's presentation to PAC

As a result of Dr. Kurth's visit and our many public outreach activities, Wayland and I have submitted an application to Astronomy magazine for the 2013 Out-of-this-world Public Outreach Award. The purpose of this award is to reward non-profit organizations anywhere in the world that have demonstrated excellence in astronomy outreach activities.

The $2,500 award is intended to foster development of public outreach programs and recognize a group's sustained and successful efforts to involve its local community in the science and hobby of astronomy.

For our application we have described how the PACMO has served as the centerpiece of our public outreach activity and how, if PAC is chosen as the award recipient, we would use the award to fund the purchase of equipment upgrades for the PACMO to increase outreach opportunities and improve access for groups and for visitors with handicaps. The award winner will be announced March 3rd, 2014. Let's keep our fingers crossed and hope for the best.

ASTRONOMY DAY 2014

We are celebrating Astronomy Day on April 19, 2014 at the Moline Public Library from 2:00 pm to 5:00 pm. That evening we will also have our usual third Saturday of the month star party at the Niabi Zoo.

We have received confirmation that Dr. Esteban D. Araya of the Physics Department at Western Illinois University will present a program at 3:00 pm on **Radio Astronomy: A Window to the Invisible Universe** in the meeting rooms of the Moline Library. This promises to be an interesting and educational look at radio astronomy.

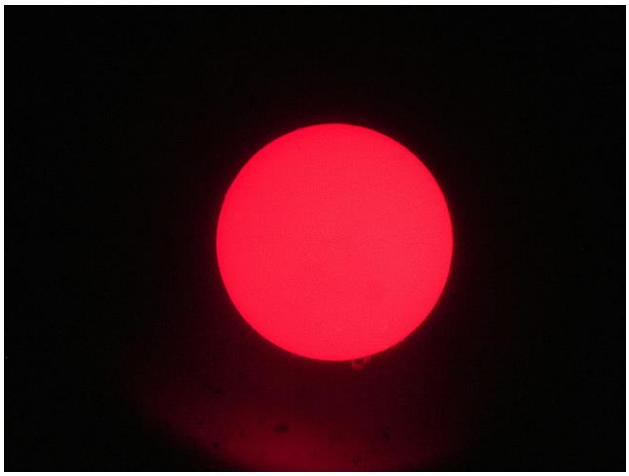
We are planning on displays, demonstrations, craft tables and solar observing at the Library that afternoon. We have received a generous donation of literature from Sky & Telescope and kids' "freebie" items from NASA's Space Place. Please mark your calendars and plan on helping at either the Moline Public Library or at our Niabi Zoo star party.

PAC MEMBERS OBSERVING FORUM

This feature column is devoted to the contributed articles from our members regarding recent observations, thoughts, and other comments about astronomical phenomena and events.

SOLAR PROMINENCE

Roy Gustafson



There was a huge prominence today seen at the bottom of the Sun's image. To me the sunspot activity is low, but huge prominences. The above photo was taken on October 8, 2013 at 12:29 pm from Orion Illinois.

AURORA BOREALIS

Paul Brooks

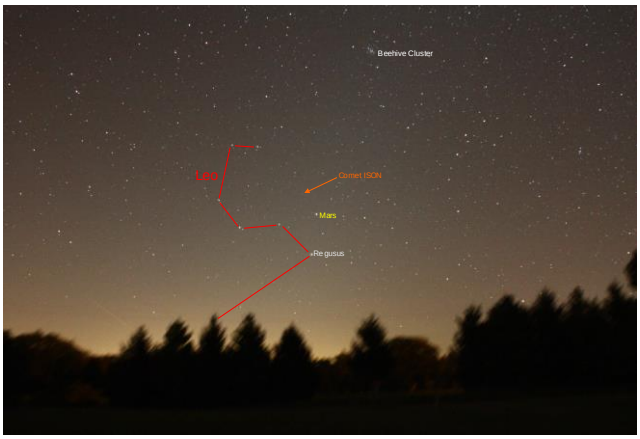
© PHOTO USED WITH PERMISSION BY PAUL BROOKS

We had an amazing Aurora Borealis display on October 1st and 2nd, 2013 from just north of Wilton Iowa that just BLEW MY MIND.....Pillars all over, and long lasting as well. Photo specs: ISO 1600, 30 second exposure, f3.5, Manual White Balance. Post Adjustments to shadows and clarity. Noise reduction in Lightroom 4.

These were PLAINLY visible to the naked eye and were reported from all over the US, Canada, and as far south as the "Mason-Dixon" Line.

COMET ISON ON OCTOBER 8, 2013

Roy Gustafson

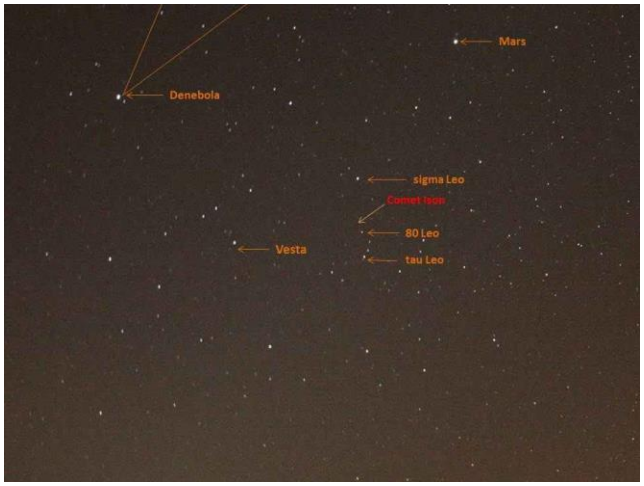


I was up at 4:00 am this morning to take a long tracked time exposure in the area of Comet ISON in the East before Sunrise. I believe I got a dim image of the comet (magnitude 9.85) and have shown this image in the above photograph. The reason I believe I have captured an image of ISON is because when I compare my photograph with the Stellarium software, I can see stars on my photograph down to less that magnitude 10. The photo shows the head of Leo, Regulus, Mars, and the Comet ISON.

COMET ISON
November 3, 2013

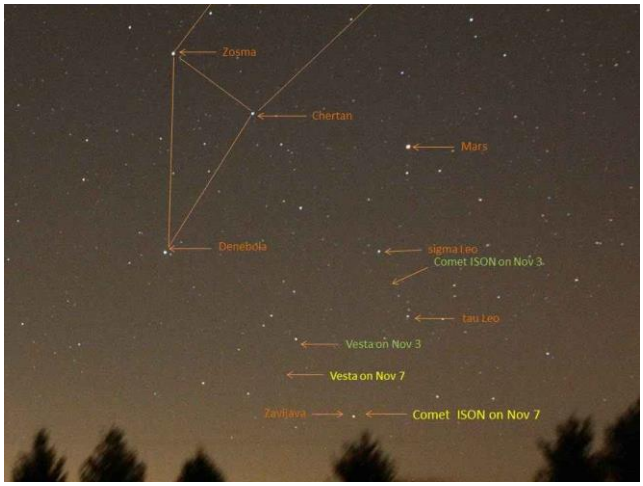
Roy Gustafson

Following is the photo I took with my Canon Xsi camera of Comet ISON on the morning of November 3rd. Although it doesn't show very well, I could detect a slight tail under very close examination, a tail that was very much present when examined by the guys with telescopes. I would like to follow this and see when the tail actually becomes very apparent in a camera shot as we approach perihelion. I also noted that the Asteroid Vesta was present and is marked and shown as a faint image. Ceres was also visible but was very dim. I will try again with my camera and telescope on Thursday morning. It is supposed to be clear.

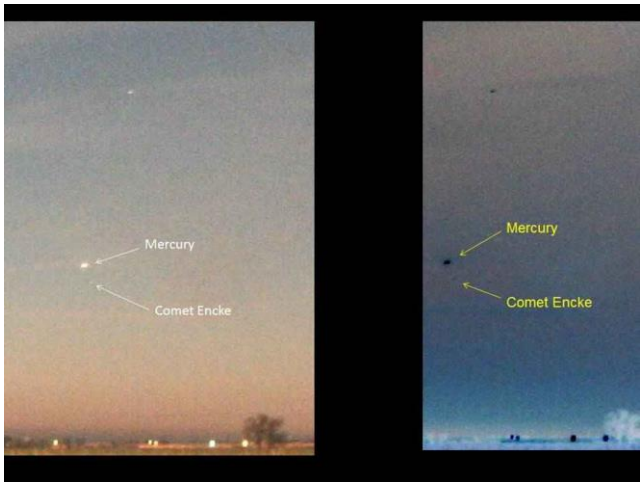


COMET ISON
November 7, 2013
Roy Gustafson

Following is a photo I took with my Canon camera this morning (3:29 am) that shows the movement of Comet ISON since I last photographed it on November 3rd. I also brought my telescope to view and photograph the comet, but I only got to view. My mount is not hefty enough to hold my camera so when I attached my camera it weighed the telescope down and the objective lens just kept moving up!!). Anyway I marked the progress of Comet ISON and the asteroid Vesta on the photograph.



COMET ENCKE AND THE PLANET MERCURY
November 19, 2013
Roy Gustafson

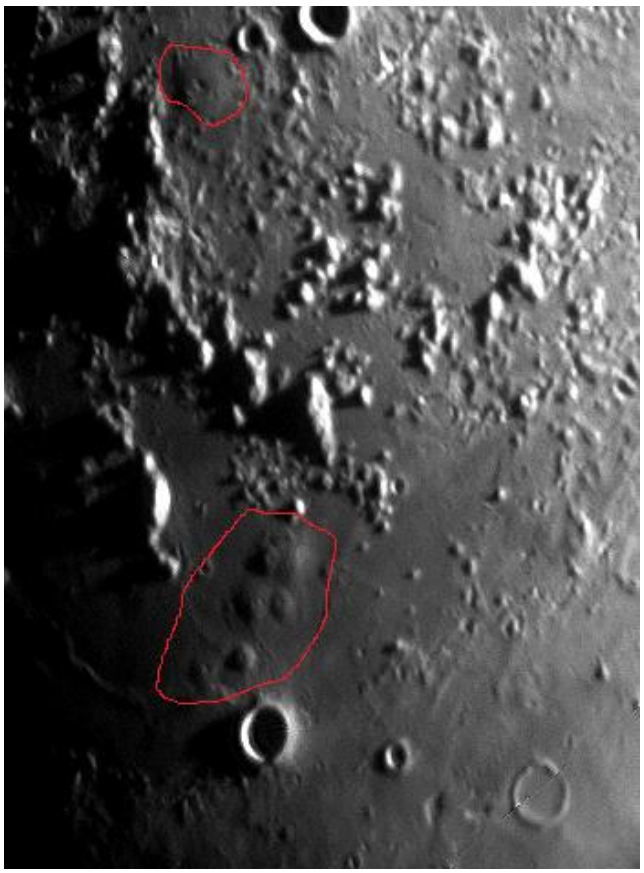


With all the hype about Comet ISON I thought we should at least look at one of the other comets in the morning sky. I photographed Comet Encke next to Mercury on November 19th at 5:33 am. I did get a camera shot of ISON but thought we shouldn't forget the other comets. The photograph shows a positive image and a negative of Comet Encke. Comet Lovejoy was up also but I didn't get a photograph of that one. So, enjoy this one and get ready for ISON in early December. Let's hope it makes it around the Sun!

CRATER HORTENSIUS AND THE DOME FIELD
November 12, 2013
Ken Boquist

The following image of the Hortensius dome field on the moon was based on a 500 frame video taken about 7:50 pm on November 12th with a C9.25" f/10 Schmidt-Cassegrain under a fair to poor seeing condition.

This dome field consists of six low mounds shown inside the red circle at the bottom of the image. The noted author Charles A. Wood in his book "The Modern Moon: A Personal View" states that each of these domes are six to eight kilometers wide and a few hundred meters high. Hortensius itself is the large crater immediately below the lower circle.



CRATER HORTENSIUS AND ITS ASSOCIATED DOME FIELD

Lunar domes generally can be difficult objects to observe. They usually can be seen for only a few hours after lunar sunrise since they are almost always low features with gentle slopes, so a very low angle of light is necessary to see them. Many of them tend to have craterlets at their summits, but these are usually very challenging to observe.

Lunar domes are generally thought to be due to volcanic processes, although the exact process isn't known for certain.

While observing in this area, I also noted another feature that looks like an isolated dome farther to the north, and it is also visible in the image, circled near the top. I have not been able to find any information about this feature to date.

OBSERVING AT BRYAN RASERS OBSERVATORY
November 23, 2013

Ken Boquist and Al Sheidler

Photos by Al Sheidler

Several club members visited the home observatory of Bryan Raser near Prophetstown, IL, on November 23rd. PAC club members present were Wayland Bauer, Al Sheidler, Rusty Case, Roy and Jan Gustafson, and Ken Boquist.

WE ARRIVE AT BRYAN'S HOME NEAR PROPHETSTOWN, IL

It was a very cold observing session. The temperature was probably only about 13 degrees when we arrived shortly before sunset, and by the time we left about 9:30 pm, it was probably down to around 10 degrees. It certainly didn't help that there was a light breeze that continued until sometime after sunset. All of us were dressed very warm, though, and there was a heater in Bryan's observatory pointed towards ground level to help keep feet warm, and Rusty Case brought out a heater as well. We all took a break about midway in the observing session to warm up in Bryan's house with some hot coffee and snacks, which helped to keep the cold at bay.

IT WAS A VERY COLD NIGHT, ABOUT 10 DEGREES

In the photo above, our hardy observers are left to right: Al Sheidler, Wayland Bauer, Ken Boquist, Rusty Case, Bryan Raser, Jan Gustafson and Roy Gustafson.

Bryan's observatory is a very nice roll-off roof observatory that houses a 12½" f/4.7 Newtonian Reflector. His reflector is mounted on a driven equatorial mount that provides very steady views of the sky. The mirror itself provided very nice views of many objects. The observatory is in a great location, well away from city lights and the surrounding security lights are far away, thus providing a very dark location for northwest Illinois.

Bryan's observatory has a very flat horizon from the north to the southwest by way of east. It was really nice watching some of the fall and winter constellations rising in the east throughout the observing session. In particular, I enjoyed seeing Orion rising, looking like a drunken sailor who's almost keeled over! Other locations that I have observed from do not provide anywhere near as nice a horizon to the east and south. The lay of the land is such that there is no interference from passing cars.

BRYAN STANDS NEXT TO HIS ROLL-OFF OBSERVATORY

BRYAN RASER'S LARGE 12½" REFLECTOR TELESCOPE

Bryan's telescope was the star of the show, being the largest aperture in use.

In addition to Bryan's telescope, everyone else brought out telescopes as well. Wayland Bauer brought his 5" Schmidt-Cassegrain (SCT), Al Sheidler brought the club's Norm Utke 7" Maksutov, Rusty Case brought his 8" SCT, Roy and Jan Gustafson brought the club's new 12" PACMO scope (minus the PACMO), and I brought my 9.25" SCT. Thus we had a wide variety of apertures to look through, and it was really neat to go from one scope to the next and compare the same object through different apertures.

Of course, it also helped that he had the heater going, and the observatory walls provided a nice windbreak! Unfortunately, we weren't able to use the PACMO scope as we found out that the base had been cross-threaded, so we couldn't get it securely mounted on its tripod. Rusty Case has since fixed this, and the scope is ready to go for observing in the spring.

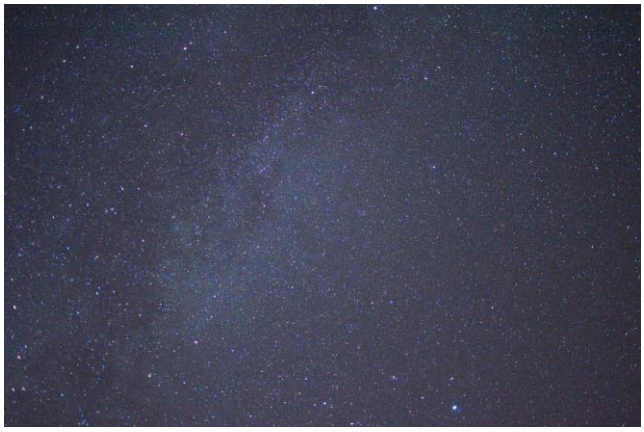
Al Sheidler also spent quite a bit of time imaging objects through the Norm Utke scope with a single lens reflex camera. A number of his images are included in the accompanying photographs. Considering that these images were typically around 30 seconds long, and taken with an f/15 Maksutov that was not equatorially mounted, these are very good images indeed!

THE CRESCENT VENUS

THE DOUBLE STAR ALBIREO

Most of our observing session was a Messier Marathon. There are 110 Messier objects, and they can be grouped into four groups, consisting of one group per season. We observed all of the Fall group (16 objects), and about eight from the Winter group. In addition, we also observed NGC7293 (The Helix Nebula), Albireo, the beautiful double star in Cygnus, the planets Venus and Jupiter, and Jan Gustafson caught sight of an Iridium flare.

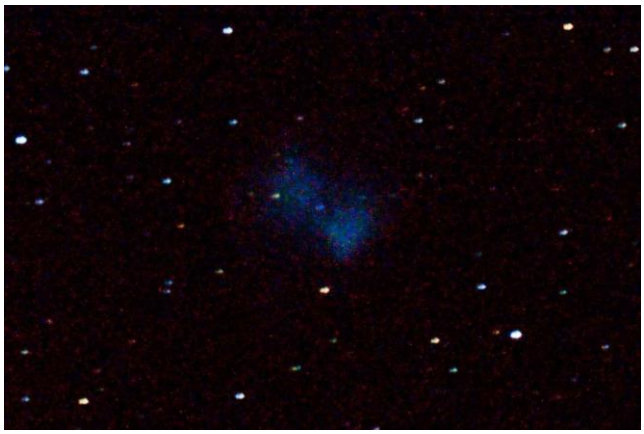
All in all, we had a great time, and our club thanks Bryan for letting us visit his observatory.



THE MILKY WAY

M13 IN HERCULES

M57, THE RING NEBULA IN LYRA



M27, THE DUMBBELL PLANETARY NEBULA IN VULPECULA

FOURTH QUARTER 2013 BUSINESS MEETING

President Wayland Bauer called the Fourth Quarter PAC business meeting to order in the John Deere Planetarium at 7:00 p.m. local time, on Monday, December 9, 2013. Third quarter minutes were read and approved, after one minor correction.

The dedication of the Harry Nelson Telescope will be held in the spring.

Treasurer's Report

Treasurer Roy Gustafson reported on the financial status of the club.

Vice Presidents Report

Vice President Al Sheidler mentioned that Astronomy magazine has a $2,500.00 outreach award. Al said PAC should apply for this award. Rusty Case said we could use a video camera and viewing screen so folks would not have to climb the ladder in PACMO. We have some video equipment, but it might be outdated technology. Gerry Pearson suggested a USB connection and Roy Gustafson suggested we go wireless. Al will submit a proposal as the dead line is in January 2014.

Al Sheidler is checking on some field trips for 2014. Fermi Lab in Batavia, IL (132 miles away), University of Illinois in Champaign to see a 12" refractor or we could go to Northern Illinois University in DeKalb. They have a 14" Schmidt Cassegrain and do accept proposals for use of that telescope! We could also go to Yerkes Observatory.

Astronomy Day will be held on April 19, 2014 at the Moline Public Library. Our speaker will be Dr. Estabon Ararya from WIU. His topic "Radio Astronomy- Window to the Universe".

ALCor Report

Alcor Lee Farrar is updating the membership list. He needs pictures of comet ISON for the newsletter.

Outreach

There is a Cub Scout lock in at Two Rivers YMCA-Moline on January 18, 2014, possibly 200 scouts. They need several short programs from 7 P.M.- 11P.M.

Chapter 3338 of the National Association of Active and Retired Federal Employees would like a 15-20 minute talk about our club. They meet at 1:00 P.M. on the 3rd Tuesday of each month in Moline at the Viking Club.

Dino Milani was contacted by the German American Heritage Center. They would like to know where to go to see the Perseid Meteor Shower. They are also interested in German Astronomers and scientists.

Old Business

The slate of officers for a two year term 2014-2015 was voted and approved. They are President Wayland Bauer, Vice President Al Sheidler, Secretary Cindy Pippert, Treasurer Roy Gustafson, Alcor Lee Farrar, and Observatory Director Rusty Case.

New Business

PAC will purchase the adapter for the 12" Meade so we can use the 2" eye pieces.

Programs for 2014 PAC meetings are all set.

We will meet with the Nordics to discuss vegetation.

The Annual picnic will be Saturday August 9, 2014.

The Annual Banquet will be Friday October 9, 2014.

Tonight's program was The Year in Pictures by Roy Gustafson.

Respectfully submitted,
Cindy Pippert.

2014-2015 BOARD OF DIRECTORS

At the December 2013 meeting, the Popular Astronomy Club 2014 – 2015 Board of Directors were elected.

PRESIDENT - **Wayland Bauer**
3256 Pleasant Drive, Bettendorf, IA., 52722
Phone: (563) 332-4032; Email: bauerwp@gmail.com

VICE PRESIDENT - **Alan Sheidler**
3528 56th Street Court, Moline, IL, 61265
Phone: (309) 797-3120; Email: adsheidler@gmail.com

SECRETARY - **Cindy Pippert**
3532 12th Street, Rock Island, IL, 61201
Phone: (309) 787-3559; Email: Ckulhavy@aol.com

TREASURER – Roy Gustafson
11 Deer Run Road, Orion, IL, 61273
Phone: (309) 526-3592; Email: orion4@frontiernet.net

ALCOR / NEWSLETTER EDITOR - **Lee M. Farrar**
Illinois - 2232 24th Street, Rock Island, IL, 61201
Arizona - 808 N. 82nd Street, Townhouse F-2, Scottsdale, AZ, 85257
Phone: (309) 721-4301; Email: lmfastro@aol.com

DIRECTOR OF OBSERVATORIES - **Rusty Case**
2123 W. 16th Street, Davenport, IA, 52804
Phone: (563) 323-7168; Email: eacase@mchsi.com