PAC Logo

Reflections

John Deere Planetarium by Paul Castle

Newsletter of the Popular Astronomy Club **October 2016**

THE PRESIDENTS CORNER

Alan Sheidler

This summer has been one for the books! In July, the NASA Juno probe reached the planet Jupiter and began returning spectacular images as it moved through perijove (lowest point in its orbit around Jupiter). At each perijove, Juno skims just 5000 km above Jupiter's cloud tops. At this low point in its orbit, Juno is moving at an incredible speed of 57.5km/second! That's more than 7 times faster than the ISS or other satellites in low earth orbit. Not only is Juno fast, it has been right on the money for orbital precision--just where it should be exactly when it should be there. Such speed and precision over vast distances is amazing. It is also amazing the data transmitted by Juno require about 45 minutes traveling at light speed to get from Jupiter to earth. I can't wait to see the images of Jupiter from the first science orbit in November when the interesting stuff really begins. We live in amazing times for space science.

Not to be outclassed by NASA, the Popular Astronomy Club has logged some pretty significant numbers this summer too. From July through September, we provided three Niabi Zoo public observing sessions, and fulfilled requests for programs from four local libraries, Illiniwek campground, and Moline Kiwanis. For calendar year 2016 (so far), PAC has been involved with 28 public outreach sessions reaching an estimated 2600 visitors from the general public. Our mobile observatory (PACMO), which was refurbished this spring, has been involved in 20 of these public sessions and logged over 380 miles traveling to these events. This amazing level of public outreach, was only possible due to the enthusiastic support and contributions of PAC members. To date, 27 PAC members have received the AL's coveted Public Outreach Award, which proves we have an active club. We can really be proud of this.

I also would like to thank the Quad Cities Astronomical Society for organizing and St. Ambrose University for providing their Menke Observatory as the site for this year's Eastern Iowa Star Party. This was a great regional event with 23 attendees from QCAS, PAC, CAA (Cedar Amateur Astronomers), and NAA (Naperville Astronomical Association). This was a great opportunity to get together with enthusiastic amateurs for fellowship and learning. I am in awe of the knowledge of the attendees and the sophistication of their equipment. The deep sky photography by QCAS members is top-notch! I also enjoyed the afternoon presentations by CAA and SAU's Dr. Mitchell on spectroscopy followed up that evening by actually doing spectroscopy using modest equipment attached to the C14 telescope in the Menke Observatory. I learned a lot! Special thanks to Jeff Struve for being the chairman of EISP. Well done!

One of the high points for me this summer was attending the Astronomical League Convention in Washington, DC. This was a great event with 250 attendees from around the country. NOVAK (Northern Virginia Astronomy Club) hosted the event and did a great job with logistics and organizing tours of the Smithsonian, NASA Goddard Space Flight Center, and the US Naval Observatory. Guest speakers discussed a wide range of topics including gravitational waves, Pluto, and many other topics. There was something for everyone at ALCON.

Major General Charles Bolden was the keynote speaker for the banquet and spoke on NASA's current programs and plans for the future. His message was informative, inspirational and focused on the immense opportunities open to today's youth as they pursue careers in science and technology. General Bolden's remarks served as a great introduction to the AL Awards ceremony. Awards were given to five young people for their work in radio astronomy, pulsar physics, astro-photography and community service. One of the recipients, PAC member Katie Melbourne, received the coveted Horkheimer/Smith Youth Service Award and scholarship which was really great for her and nice for our club. At ALCON, PAC also received the 2016 Astronomy Day Award for Small Metropolitan Area and was notified about having won the drawing for a free Library Telescope (which we plan to give to the Eldridge Library).

The Popular Astronomy Club was mentioned several times during ALCON. As a result, during one of the award announcements, John Goss, the AL president, joked that the Popular Astronomy Club really is "popular"! Thanks to your efforts, your club is garnering recognition regionally and even nationally!

I also would like to mention another very significant milestone for one of our members. Cindy Pippert has served as club secretary for 30 years and has decided to retire to devote more time to her family. I think I am correct in saying she has served as an officer longer than anyone else in the club's history. Please join me in thanking her for outstanding service to the club. I also want to thank Terry Dufek for agreeing to step in to replace Cindy as our new secretary. Please give him your support in his new job.

One final note, PAC will be 80 years old this October. We are planning a special birthday banquet for October 21st at the Viking Club in Moline. Mr. Floyd Perkins will be the main speaker and will discuss "Working with Dr. James Van Allen on Air Density/Injun Explorer Satellites".

There will also be a 1934 "lattice tube telescope" display, club history display, astro-photo contest and door prizes. This promises to be a very enjoyable evening. Please return your RSVP for this very special event to Bryan Raser our treasurer to secure a spot. Don't miss it! We need to celebrate!

2016-2017 PAC BOARD OF DIRECTORS

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

VICE PRESIDENT – Adam Beals
PO Box 237, Walcott, IA, 52733
Phone: (217) 254-5204; Email: ajbeals@gmail.com

SECRETARY - Terry Dufek
2812 W. 65th Street, Davenport, IA, 52806
Phone: (563) 386-3509; Email: t_dufek@email.msn.com

TREASURER – Bryan Raser
3830 Lyndon Road, Prophetstown, IL, 61277
Phone: (815) 537-5407; Email: cbrdvm@frontier.com

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: rustycase32@gmail.com

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

OCTOBER 21, 2016 PAC BANQUET

Please mark your calendars for our special 80th anniversary PAC banquet to be held on October 21st, 2016 at the Viking Club, 1450 41st, Moline, Illinois.

This special buffet includes your choice of either chicken breast with rice or ham. It also includes scalloped potatoes, and vegetables including California Medley and green beans. There will also be a salad bar, bread, butter and a beverage included. We will have cake for dessert.

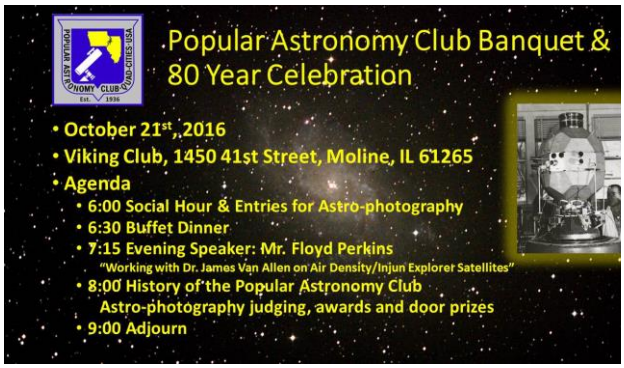
The cost is $20 per person. Please send your RSVP and check to Bryan Raser, PAC Treasurer, on or before October 7, 2016.

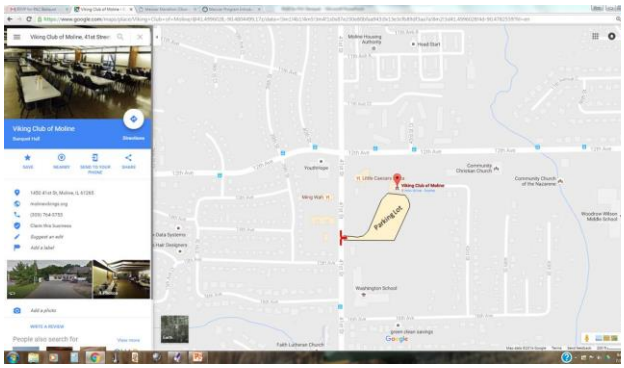
RSVP
kindly respond on or before
October 7th, 2016

Cost per person: $20 (include with RSVP, checks made out to The Popular Astronomy Club). Mail to Bryan Raser, 3830 Lyndon Road, Prophetstown IL 61277 (cbrdvm@frontier.com)

_____ we will attend _____ number in our party

Names of attendees: **Buffet Choice (pick one):**
_____ _____ chicken breast _____ ham
_____ _____ chicken breast _____ ham
_____ _____ chicken breast _____ ham
_____ _____ chicken breast _____ ham





ASTRONOMICAL CALENDAR OF EVENTS
(PAC Activities in Bold print)

(Possible Observing Challenge photo Op dates shown in red)

Oct 7, 2016 – Sherrard Fire Station Public Outreach event

Oct 8, 2016 – Cedar Amateur Astronomers, Eastern Iowa Observatory, Ely, Iowa

Oct 8, 2016 – First Quarter Moon

Oct 15, 2016 – Full Moon

Oct 15, 2016 – Uranus is at opposition tonight

Oct 15, 2016 – Public Viewing night at Niabi Zoo

Oct 21, 2016 – Our Annual Club Banquet, 6:00 pm, at the Viking Club, Moline, Illinois celebrating the 80th anniversary of the founding of the PAC. Please mark your calendars and watch for upcoming information on this very special event for club members and their families/guests

Oct 22, 2016 – Third Quarter Moon

Oct 27, 2016 – Mercury is at Superior Conjunction

Oct 30, 2016 – Saturn and Venus appear around 5:30 pm near the horizon 2° 59' apart in the western evening sky. Since both are bright planets, they should easily be visible in the evening twilight

Nov 7, 2016 – First Quarter Moon

Nov 14, 2016 – Full Moon

Nov 14, 2016 PAC Monthly Meeting - Augustana Planetarium, 7:00 p.m. Program: "Science Fiction and Laws of Physics"

Nov 19, 2016 – Public Viewing night at Niabi Zoo

Nov 21, 2016 – Third Quarter Moon

Nov 28, 2016 – Mercury is at Inferior Conjunction

Dec 7, 2016 – Earliest Sunset of the year

Dec 7, 2016 – First Quarter Moon

Dec 10, 2016 – Saturn is in conjunction with the Sun

Dec 11, 2016 – Mercury at Greatest Eastern Elongation.

Dec 12, 2016 PAC Monthly Meeting - Augustana Planetarium, 7:00 p.m. Program: "The Year in Pictures"

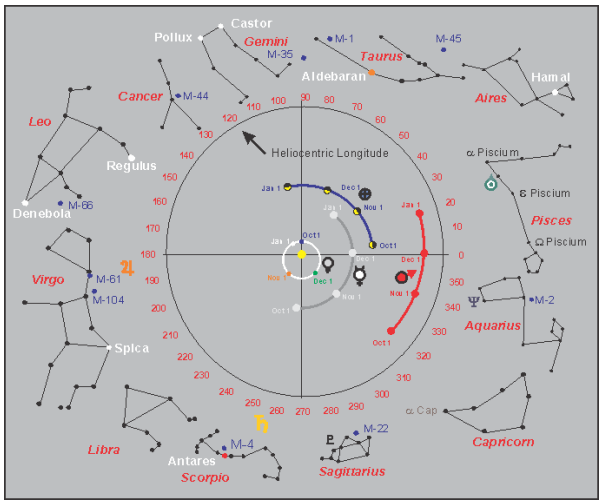
Dec 13, 2016 – Full Moon

Dec 20, 2016 – Third Quarter Moon

Dec 21, 2016 – Earth arrives at our winter Solstice. For viewers in our Northern hemisphere, this marks the most southern position point in our sky for the Sun.

Dec 31, 2016 – Mars and Neptune are in conjunction tonight as they set together in the dark southwestern sky. Venus also appears below the pair. Look for this conjunction about 6:30 pm.

PLANET CHART – FOURTH QUARTER 2016



Mercury makes a complete 88 day sidereal orbit around the Sun, and moves the additional earth days covered in this quarterly newsletter. The positions of Mercury on the first day of each month are shown with color coded circles on the chart shown above. Mercury makes one orbital revolution around the Sun in 87.969 of our days, but due to the motion of Earth around the Sun, the synodic period of Mercury is about 116 days. This is why there are only three entries on the list to the left, instead of four. Refer to the calendar to the left to view the major orbital events for Mercury as viewed from Earth during the period.

Venus is a daytime object during most of this quarter, becoming visible low in the evening western sky starting around November 1st.

Earth travels ¼ of its yearly twelve month orbital period around the Sun during this three month period, and arrives at our winter solstice on December 21, 2016.

Mars: The Earth is now orbiting ahead of Mars this quarter. It is an evening object and remains low in the southwest, moving from Sagittarius in October, through Capricorn to Aquarius at the end of the year. On December 31, 2016 Mars and Neptune appear very close together in the early evening sky.

Jupiter emerges into the morning sky after its conjunction with the Sun on September 28th. On December 31st, Jupiter appears in Virgo, very near the bright star Spica.

Saturn: During the first couple weeks of October 2016, for Quad City observers, Saturn appears low in the southwestern evening sky, heading for a December conjunction with the Sun. Saturn reaches conjunction with the Sun on December 10, 2016, and by December 31, 2016 Saturn emerges into the morning sky.

Uranus is at opposition on October 15th and appears in the constellation Pisces during this quarter.

Neptune was at opposition last September 2nd and now appears in the constellation Aquarius.

Pluto appears in the constellation Sagittarius this quarter heading for an early January 2017 conjunction with the Sun.

Our Very Own – Katie Melbourne
July 29, 2016
Bettendorf, Iowa

Tonight, PAC members got together at the Pizza Ranch in Bettendorf, Iowa to help celebrate with Katie Melbourne her Astronomical League's Horkheimer/Smith Youth Service Award and scholarship.

Katie Melbourne with her PAC Award

While we were eating dinner, Katie told us about her trip to Chile, where she worked with her professor from Yale University doing exoplanet research.

PAC members listen to Katie at the Pizza Ranch

Her work in Chile relates to increasing the precision of radial velocity data by cleaning up the signals by removing noise due to the star's magnetic activity. She worked with the Swiss 1.2 meter telescope at the La Silla observatory. She has been developing software programming to filter out the noise in the data using a supercomputer. The overall goal is to develop routines that can increase the precision of radial velocity measurements down to the +/-1 cm level (currently, the best precision is ~1m). This is obviously very interesting and important work.

Katie will also be receiving an expense paid trip to ALCON 2016 in Washington, DC, where the Horkheimer/Smith Youth Service award will be presented to her.

Fast forwarding to ALCON 2016, the following photo shows Katie receiving her Horkheimer/Smith Youth Service award from Astronomical League President John Goss.

After receiving her award at ALCON 2016, Katie will be returning to Yale to continue her studies.

PAUL R. CASTLE OBSERVATORY NEWS

This section is devoted to news about activities at our Paul R. Castle Memorial Observatory.

July 9, 2016
Observing Session at the Paul Castle Observatory
Terry Dufek

Our observing session started around 9:00 pm (dusk). Members attending were Rusty Case, Wayland Bauer, Bryan Raser, and Terry Dufek.

Wayland Bauer started off with observations of the moon (not quite half full). He noted exceptional detail in the craters and landscape along the terminator. He also observed Jupiter and all four moons and then went on to observing some deep sky objects.

Terry Dufek looked at Mars and there was detail but it was very hard to see consistently. He looked at Saturn and noted 2 moons, Titan and Tethys. The bands looked quite clear. Then the evening proceeded to all photography.

Wayland Bauer also took some pictures of the moon.

Rusty Case hooked his camera up and got digital pictures of the following objects.

NGC6543 the Cats Eye Nebula

M 8 the Lagoon Nebula

M 57 the Ring Nebula

M 17 the Omega Nebula

M 11 the Wild Duck Cluster

M 20 the Trifid Nebula

M 31 the Andromeda Galaxy

M 51 the Whirlpool Galaxy

M 82 the Cigar Galaxy

Terry Dufek hooked up his CCD camera and fed the images to a laptop and ran them through the Sharpcap stacking program. He recorded M-4, M-8, M-13, M-17, M-20, M-22, M-24, and M-80.

M 4 the Globular Cluster

M 8 the Lagoon Nebula

M 13 the Hercules Star Cluster

M 17 the Omega Nebula

M 57 the Ring Nebula

The Milky Way was quite prevalent overhead by midnight as we wrapped up the observing session.

July 15, 2016
Observing Session at the Paul Castle Observatory
Al Sheidler

This evening several of us met at the Paul Castle Memorial Observatory. The weather reports promised clear skies after 9:00 pm. However, this was not to be the case--the clouds rolled in just as it was getting dark enough to align our scopes. I did manage to take a group picture and photos of the Moon, Saturn and Mars which were located in the constellation of Scorpius. It clouded over right after this photo was taken.

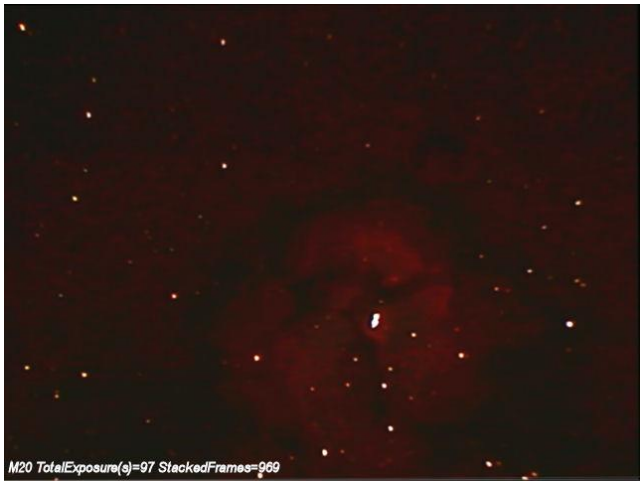
Al Sheidler, John Douglas, Mike Ombrello, Rusty Case, and Terry Dufek

July 25, 2016
Observing Session at the Paul Castle Observatory
Terry Dufek

I started by observing Mars in the south and the markings on the planet were quite clear. I then observed Saturn and could make out Titan and maybe 2 other moons barely. The sky began to clear off in the south and turned to M 80 in Scorpius, the Omega nebula (quite visible in the eyepiece) and the Trifid nebula which was barely visible in the eyepiece. By 11:30, I took some CCD images of M4 globular cluster, M16 the eagle nebula, M20 the trifid nebula, and M22, another globular cluster.

M 4 the Globular Star Cluster

M 22 the Globular Star Cluster



M 20 the Trifid Nebula

August 22, 2016
Observing Session at the Paul Castle Observatory
Al Sheidler

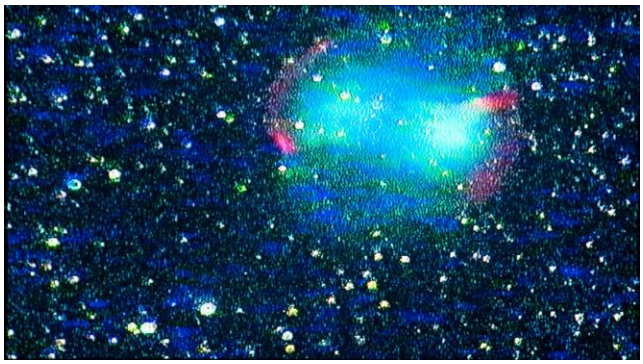
Last night, we convened at the Paul Castle Observatory to take some astro-photographs and to experiment with Rusty Case's new video camera.

Al Sheidler, Andy Zeglin, Wayland Bauer, Terry Dufek, Bryan Raser, Liz Robinson, Brad Smith and Rusty Case.

We brought the PACMO 12" Meade LX200 SCT with the idea of trying this in concert with Rusty's camera to see if we could obtain some good video imagery. Bev Case graciously loaned her 19" flat screen TV to use as a video monitor which produced some outstanding color images of various Messier objects. The first object we targeted was Saturn, which we used as a target to focus the telescope. Once we got Saturn focused we used the LX200's mirror lock to fix the focus for later imaging of deep sky objects. Before moving off of Saturn though, Rusty played with the camera settings to bring out Saturn's retinue of moons. We easily discerned four of Saturn's moons in close proximity to the ring system. This provided an amazing view of the Saturnian system.

With the big scope's focus now locked, we targeted M 8 (The Lagoon Nebula), M 16 (The Eagle Nebula), M 17 (The Omega or Swan Nebula), M 20 (The Trifid Nebula), M 22 (Sagittarius Cluster), M 27 (The Dumbbell Nebula), and M 51 (The Whirlpool Galaxy). All of these deep sky objects turned out amazingly well using Rusty's video camera. We also targeted a few other objects using this setup: NGC6543 (Cat's Eye Nebula), double stars Albireo, Beta Cephei and Xi Cephei. These doubles have separations of 34, 13, and 7.7 arcsec, respectively. We were able to split all of these very handily and show both component stars on the TV screen. In addition, we were able to see the blue and yellow coloring of Albireo's component stars.

The very fine planetary nebula in the screen shot is M 27, the Dumbbell Nebula. One can clearly see this object is round rather than dumbbell shaped as it's name would suggest. The colors are also quite vivid. We all agreed this would really amaze guests at star parties such as those we have at Niabi Zoo every month.



M 27, the Dumbbell Nebula

This picture shows the group viewing objects on the flat screen TV.

This was a very interesting and enjoyable session. It was nice to have Andy Zeglin come out to join the group too.

August 13, 2016
PAC Annual Picnic
Wayland Bauer

PAC met on the night of August 13th for its annual picnic. The attendance varied between 20 - 25 depending upon late arrivals and early departures. The weather and discussion was great as members got to know each other better. While we waited for darkness Rusty Case, Terry Dufek, and Dino Milani set up their telescopes. The sky cleared and we were given a chance to view the Moon, Saturn & Mars. Unfortunately the main purpose of the night; viewing the Perseids, was not nearly so successful. The Moon and clouds hampered the viewing. A couple of early meteors were spotted before the dew discouraged many in attendance. A faithful few remained after midnight before packing up. There have been more successful nights at the picnic viewing of Perseids. Wait until next year

PAC OUTREACH ACTIVITIES

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

July 14, 2016
Scott County Library in Eldridge, Iowa
Sara Sheidler

The PAC was invited to do an evening program at the Scott County Library in Eldridge, Iowa on July 14, 2016. It was our first visit to this library that we found to be spacious with a large parking lot and plenty of room for the PACMO and member scopes.

Al Sheidler started at 8:30 pm in the meeting room with a brief power point program describing what we would see in the night sky this evening. Sara Sheidler set up the Weight Station scales and had Wayland Bauer's model of Juno on display and also had literature from NASA to hand out.

Al Sheidler Describes What We Will See Tonight

After the inside program, everyone then moved outside where Mike Ombrello, Terry Dufek, and Rusty Case had their telescopes set up. Mel Schroeder assisted with the PACMO scope. We had good views of the Moon, Saturn, Jupiter, Mars, Albireo, and several other objects.

Our Group Moves Outside Into the Daylight

Children Play Glow Games in the Darkness

Children were able to play "glow" games including golf and bowling back in the semi-darkened library between views through the telescopes.

It was a fun and educational evening with the library count of 47 guests present.

July 16, 2016
Public Observing Session at Niabi Zoo
Al Sheidler

Early Arrivals at the Niabi Zoo Observing Session

We had great weather and a large turnout at the Niabi Zoo for this public viewing. Jupiter was the first planet we targeted and scopes were also set on Mars, Saturn, and the Moon. Many other interesting objects were viewed that evening before we wrapped up around midnight. Club members present included Adam Beals, Ken Boquist, Rusty Case, Terry Dufek, Tanya Duncan, Dino Milani, Mitch Milani, Ellen Tsagaris, Bryan Raser, Mel Schroeder, Al Sheidler, and Sara Sheidler. Approximately 125 people came out to join us at the Zoo and many commented they heard about our star party through Facebook. It was a beautiful summer night to be out observing!

July 21, 2016
LeClaire Library in LeClaire, Iowa
Anne Bauer

My presentation at the LeClaire Library included 4 parts. I held up the new Forever Stamp from the US Post Office called "Pluto Explored!" The sheet features both the view of Pluto and of the Spacecraft "New Horizon!" I shared how, after a 5-year trip for the spacecraft, it arrived in February 2016 taking the now famous photo which has a very visible heart shape on the right lower side of Pluto!! I showed the back of the postal sheet, where several paragraphs of information are printed. One fact listed there is that "our country is the only one in the world which has explored ALL the planets" is certainly one to celebrate, so we cheered for the USA.

Next I demonstrated an idea which is illustrated in H.A. Rey's book The Stars. It was easy to pull the onlookers into this because the author is a very famous one in Children's Literature. I held up a book cover showing the famous monkey, Curious George, then got to enjoy the responding wall-to-wall smiles!! The audience was amazed to learn that Rey's hobby was astronomy! I then got an umbrella and began to teach his "Circumpolar Constellations" lesson by first putting a piece of foil around the umbrella post to show Polaris. Then I added signs—one for the Big Dipper on one side and Cassiopeia on the other. Next, I added three constellation signs inbetween them (Draco, Little Dipper and Cepheus.) Rey explains that these are always in the same place in relation to one another and thus they are called "Fixed Stars." However, what DOES move is the whole umbrella or whole sky (or so it appears!) I then rotated the umbrella a quarter of a turn counterclockwise which stands for 6 hours of a day. After repeating this for four turns, I explained that this is what happens every 24 hours, noting that "the big W looks like a big M" at one point and that this is going on during the day so, we don't notice the rotation motion! The audience seemed most appreciative of this visual.

A short history of Optics was the next topic I presented. I began this part by telling how long ago people noticed that a drop of water on a leaf magnified the part under it! Eventually, long after the formation of glass was discovered around campfires, people transferred the knowledge of the curved drop of water to making curved pieces of glass for magnification purposes!! Thus, in the 1400's concave eyeglasses for seeing distances were invented. One-hundred years later convex eyeglasses were perfected for seeing things which were near. (This coincided with the establishment of the printing press.)

This leads into the explanation of the three major types of telescopes. To show this I put my homemade chart of them up on my easel. I began talking about how people about 600 years ago used a "Spyglass" as pirates did or as explorers did. At this point I asked the audience to belt out a hearty "Land Ho." I pointed a plastic replica of a Galilean Telescope upward and explained that when Galileo pointed it skyward in the early 1600's, he saw a planet "with ears" (Saturn) and Jupiter with moving moons. At this point Galileo realized that the Earth could NOT be the center of the universe as was previously thought!!

Galileo was using a Refractor type of telescope, which means "light bending".

The next type of telescope, the reflector, was developed by Isaac Newton in the 1600's. I explained how he introduced mirrors in addition to lenses and how this increased THE FOCAL LENGTH of the telescope.

The third major type of telescope is Compound, also known as Catadioptric or Schmidt-Cassegrain. After showing the path of starlight inside the scope, I asked them to notice when they went outside that night that most of the telescopes waiting for them to view through were of this type (shorter, having a glass plate at one end yet having a longer focal length!)

Lastly, I explained that the focal length of the telescope divided by the focal length of the eyepiece chosen by the telescope's operator equals how many times bigger they will view the object.

Attendees with the PAC Schmidt-Cassegrain Telescope

Al Sheidler Explains the Planet Alignment for Tonight

August 6, 2016
Illiniwek Forest Preserve Campground
Bryan Raser

The Popular Astronomy Club hosted a star party the evening of August 6th, at the Illiniwek Forest Preserve campground. Wayland Bauer, Terry Dufek, Mike Ombrello, Rusty Case, Mel Schroeder, John Douglas and Bryan Raser set up observing stations using their own scopes and answered guests' questions. Anne Bauer had her "celestial umbrella", telescope optics poster, and handheld refractor for daylight astronomical activities, while Al and Eric Sheidler manned the PACMO scope.

Star Party Attendees at Illiniwek Campground

We started observing the crescent moon, then Jupiter, Mars, Saturn, La Superba, M-57, the Garnet Star, double stars Cor Caroli, Graffias, and M-22. We had many guests, including an 85 year old woman who said it was her first time to look through a telescope.

The curious began gathering before sunset. They were treated to the crescent moon and Jupiter, before these objects dropped behind the trees. At dusk, Mars and Saturn gave spectacular views. With nightfall, La Superba, M-57, M-27, M-13, the Garnet Star, double stars Cor Caroli and Graffias, M-22, M-81 and M-82. Terry and Rusty utilized their camera/video screen setups, which proved very popular with the public.

The guestbook filled 1 ½ pages of visitors, but the crowd was obviously much larger. Curiosity and enthusiasm were high, a few people expressed interest in joining the club.

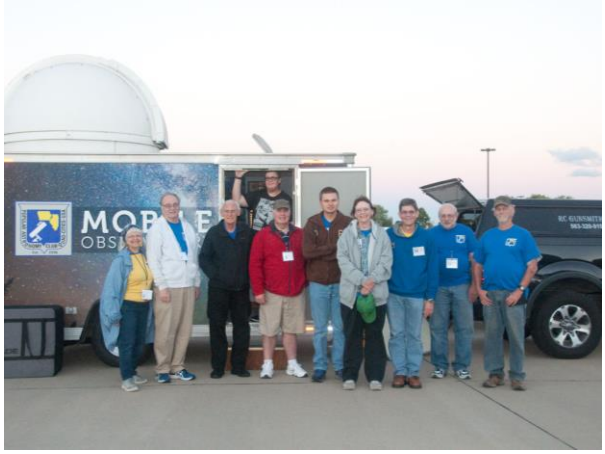
Mike Ombrello with his Telescope

Anne Bauer talks with some attendees

Terry Dufek with his Telescope

Anne Bauer Demonstrates the Types of Telescopes

August 20, 2016
Public Observing Session at Niabi Zoo
Al Sheidler



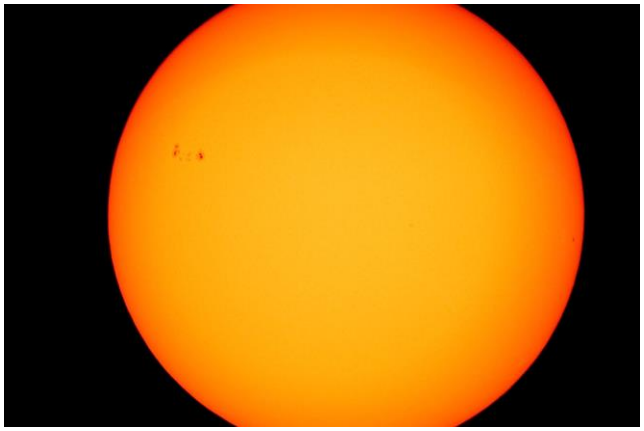
In front of the PACMO are Anne Bauer, Wayland Bauer, Mel Schroeder, Mitch Milani (in the doorway), Dino Milani, Eric Sheidler, Sara Sheidler, Al Sheidler, Terry Dufek and Rusty Case. Not present for the photo, but also in attendance were Gail & Thom Sederquist, Liz Robinson, Brad Smith and Peter Soble.

Dino Milani sat in the parking with his new 5" F8 refractor and Go-To mount.

September 2, 2016
Eastern Iowa Star Party
Al Sheidler

Here are several pictures I took yesterday from the Eastern Iowa Star Party. One of the highlights was the northern lights. This is a nice group of astronomers and the weather was fantastic.

The Group at Eastern Iowa Party



The Sun Today

Saturn Tonight

A view of the Northern Lights

Another View of the Northern Lights

A Third View of the Northern Lights

September 2, 2016
Eastern Iowa Star Party
Mike Ombrello

Eastern Iowa Star Party - We only had one night that was not cloudy at the star party this weekend, Friday night. I was set up before dark on Friday night and shot through the night until sunrise on Saturday morning.

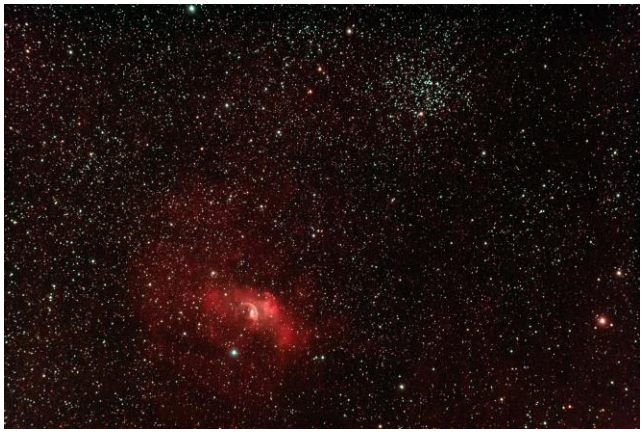
I focused on four objects during the clear Friday night and was able to get my polar alignment accurate enough to take 20 minute unguided exposures! WOW! Let's see if I can ever do that again.

I started by shooting Andromeda: 6 minute exposure @ISO 3200 - I increased the ISO to this level to see if I could pull out more detail. I didn't know if I was able to achieve 20 minute exposures at this point.

The Andromeda Nebula

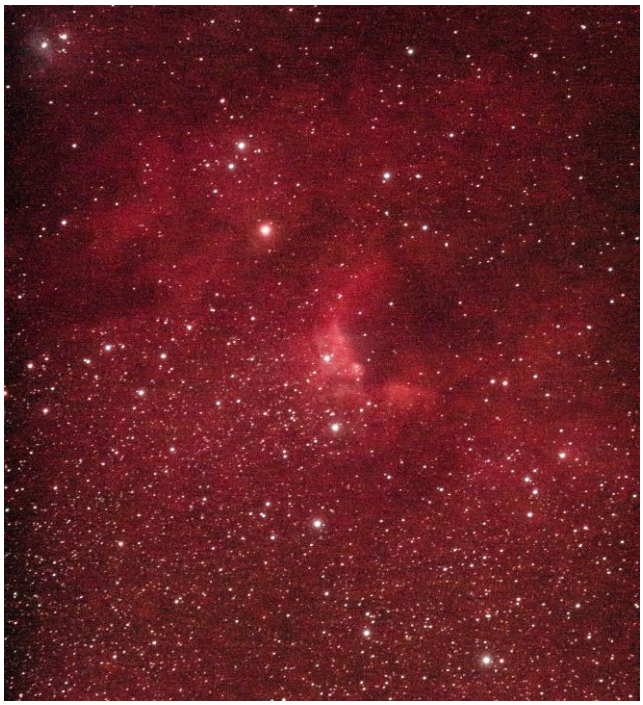
While I was imaging Andromeda, one of the QCAS club members came over and was giving me other objects that would look good using the broadband filter.

The first was NGC7635 - the Bubble Nebula, with an open star cluster (M 52). While I was shooting this, he encouraged me to increase the exposure - until I got to 20 minutes. This is how I found that I could use 20 minutes for the evening. Anyway, I have included the 20 minute exposure (ISO 800) of the Bubble Nebula.



NGC 7635 and Open Star Cluster M-52

Then he encouraged me to move on to Caldwell 9, the Cave Nebula. Again, I captured a 20 minute exposure @ ISO 800. There is a lot of nebulosity in this picture, so it really doesn't pop the way I thought it would.



Caldwell 9, the Cave Nebula

Then on Saturday night, before the clouds came in, I did manage to get a long 20 minute exposure (ISO 800) of the Witches Broom.

The Witches Broom Nebula

The images posted are single unstacked images!

Then I loaded everything up in the truck and came home.

September 10, 2016
Rock Island 30th Street/31st Avenue Public Library
Al Sheidler and Mike Ombrello

Following are some pictures that Al Sheidler took of the group last night at the 30/31 Branch Library in Rock Island. Club members in attendance were Ken Boquist, Jay Cunningham, Terry Dufek, Dino Milani, Mitch Milani, Mike Ombrello, Bryan Raser, Eric Sheidler, Alan Sheidler, and Wayland Bauer. We had approximately 93 visitors from the public, which is very good for this location.

PAC Members, PACMO, and Visitors in the Parking Lot

Visitor Stands on the PACMO Ladder to View the Moon

Brian Raser with his Telescope in the Parking Lot

Mike Ombrello with his Telescope in the Parking Lot

Ken Boquist with his Telescope in the Parking Lot

Dino Milani (kneeling) and Bob Foster (Standing)

Terry Dufek with his Telescope in the Parking Lot

Wayland Bauer with his Telescope in the Parking Lot

We had a continuous flow of viewers (young and old) to look into the skies. There were scopes set up on the moon (some with filters and some without), providing the guests with views of the craters along the lunar terminator. Additionally, guests got an opportunity to view two planets, Mars and Saturn. Saturn is always a treat for guests, as they can see the rings and various moons (potentially 7 last night) that orbit the planet. There were also opportunities to view star clusters and nebulas.

It is always an interesting evening, sharing our knowledge with the guests - and they have many questions about what they are seeing - and in some cases, not seeing.

September 21, 2016
Colona Illinois Library
Sara Sheidler

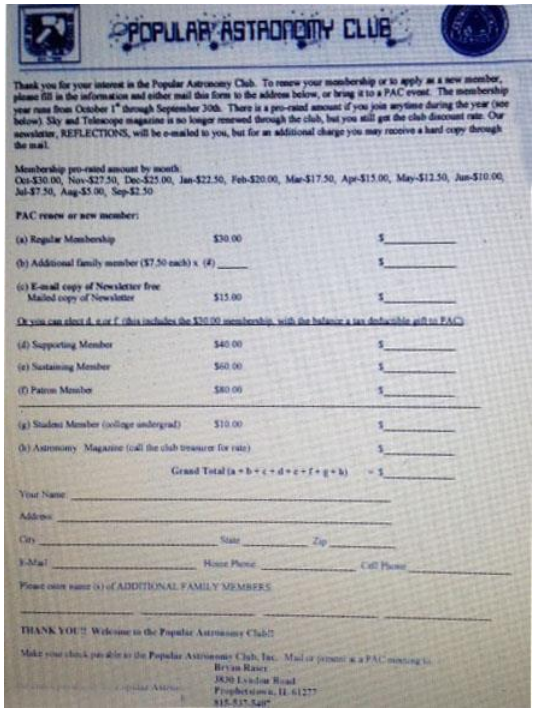
The PAC was invited to do a program at the Colona Illinois Public Library on the evening of September 21, 2016. Al Sheidler started with a power point program in their meeting room at 6:30 pm and talked about the fall night sky, the Juno Mission, and answered many questions from the enthusiastic group including many grade school children.

The weather was somewhat cloudy, but we then went outside at 7:30 pm to look for Venus, Mars, and Saturn. We had the PACMO set up in the adjacent church parking lot and Terry Dufek also brought his telescope. We wrapped up at 8:30 pm with approximately 38 visitors attending the program. Everyone went home with a "grab bag" of NASA literature. Thank you Colona Library for inviting us and getting the word out on their Facebook page and also contacting the local grade school and letting them know about our program.

Club members volunteering their time included Terry Dufek, Mel Schroeder, Alan Sheidler, and Sara Sheidler.

ANNUAL PAC MEMBERSHIP RENEWAL PERIOD

Our annual PAC membership year runs from October 1 through September 30th. By now you should have received the following PAC membership renewal form. Please complete this form to renew your PAC membership for 2017 and return it to Treasurer Brian Raser.



POPULAR ASTRONOMY CLUB

Thank you for your interest in the Popular Astronomy Club. To renew your membership or to apply as a new member, please fill in the information and either mail this form to the address below, or bring it to a PAC event. The membership year runs from October 1st through September 30th. There is a pro-rated amount if you join anytime during the year (see below). Sky and Telescope magazine is no longer renewed through the club, but you still get the club discount rate. Our newsletter, REFLECTIONS, will be e-mailed to you, but for an additional charge you may receive a hard copy through the mail.

Membership pro-rated amount by month:
Oct-$30.00, Nov-$27.50, Dec-$25.00, Jan-$22.50, Feb-$20.00, Mar-$17.50, Apr-$15.00, May-$12.50, Jun-$10.00, Jul-$7.50, Aug-$5.00, Sep-$2.50

PAC renew or new member:

(a) Regular Membership	$30.00	$_____
(b) Additional family member ($7.50 each) x (#) ____		$_____
(c) E-mail copy of Newsletter free Mailed copy of Newsletter	$15.00	$_____

Or you can elect d, e or f (this includes the $30.00 membership, with the balance a tax deductible gift to PAC)

(d) Supporting Member	$40.00	$_____
(e) Sustaining Member	$60.00	$_____
(f) Patron Member	$80.00	$_____
(g) Student Member (college undergrad)	$10.00	$_____
(h) Astronomy Magazine (call the club treasurer for rate)		$_____
Grand Total (a + b + c + d + e + f + g + h)		= $_____

Your Name _____

Address _____

City _____ State _____ Zip _____

E-Mail _____ Home Phone _____ Cell Phone _____

Please enter name(s) of ADDITIONAL FAMILY MEMBERS

_____ _____ _____

THANK YOU!! Welcome to the Popular Astronomy Club!!

Make your check payable to the Popular Astronomy Club, Inc. Mail or present at a PAC meeting to:
Bryan Raser
3830 Lyndon Road
Prophetstown, IL 61277
815-537-5407

LOCAL QC NEWSPAPER OUTREACH ACTIVITY

Members of Popular Astronomy Club are writing periodic monthly articles appearing in the Moline Dispatch/Rock Island Argus newspaper about astronomical events that can be viewed in the Quad-Cities area.

PAC Newsletter Editor Note: The following is the submitted version of our PAC member's monthly article to the Dispatch/Argus, but is not necessarily an exact reproduction of the possibly final edited article as printed in the newspaper.

Comets, Meteors, and Cosmic Collisions!

By Cindy Pippert
Popular Astronomy Club

August is a good time to see the Perseid Meteor Shower. Grab a blanket and head outdoors, preferably someplace dark with a clear view of the sky. No equipment is needed. Lie down on your back and look up toward the northeast for the Constellation Perseus. He is below Cassiopeia, the giant "W".

The Perseids are seen between July 17 and August 24. However, peak viewing is after midnight August 12, when a waxing, gibbous moon sets in the west around 1:00 AM. The moon will gradually increase in size every day thereafter until it becomes full on August 18. During full moon the sky will be too bright to see many meteors.

To be strictly correct, a meteor is known as a meteoroid until it hits Earth's atmosphere. At that point it becomes a meteor. If it lands it is called a meteorite. Most burn up in the atmosphere, but occasionally a large one makes it to the ground. Eons ago, a large meteorite landed in Arizona creating a crater a mile wide!

Meteor showers are given names depending on which constellation they come from. This is called the radiant. For example, the Geminids in December radiate from the constellation Gemini, and the Leonids from Leo in late November. The Perseids are popular because there are typically 50-60 meteors per hour. The Geminids put on a good show too, but only diehard observers go outside in December.

A meteor shower is really caused by debris from extinct comets. The Perseids are remnants of comet Swift-Tuttle. As the Earth revolves around the sun, it travels through comet debris which is an annual event. The amount of meteors we see depends on the angle Earth intersects this debris.

Comets travel in elliptical orbits. Short period comets originate from the Kuiper Belt just beyond Neptune. These comets make return visits. The most famous is Comet Halley. My grandfather saw it in 1910. I saw it through a telescope in 1986. It reappears every 76 years and is due back in 2062.

Some comets originate from a vast region of objects far beyond Neptune called the Oort Cloud. The Oort Cloud was named for Dutch astronomer Jan Hendrik Oort who proposed this could be the source of long period comets which take more than 200 years to complete an orbit.

Comets are dirty snowballs consisting of rock, dust, ice and gasses. As they approach the sun, heat causes a visible tail to form and grow in size. Comets actually have two tails. One is the dust tail, the other a gas tail. Ionized gasses flow out from the comet due to solar wind from the sun.

Each time a comet passes the sun, it gets smaller and weaker. Eventually it breaks apart and just dissipates. Scientists are concerned this is happening to Comet Halley. Last time it was here, Comet Halley was observed to be losing definition.

As a comet comes into our solar system, Jupiter's gravity changes its path. This is due to Jupiter's immense size and mass. Earth is actually protected by Jupiter's gravity which can deflect some objects safely away.

Twenty years ago, Comet Shoemaker-Levy crashed into Jupiter. This comet broke apart in space and collided with Jupiter over a two week period of time. Gene and Carolyn Shoemaker along with David Levy discovered this comet. Astronomers photographed this collision event which many of us watched on live TV.

If you discover a new comet, it can be named after you. Just contact the Central Bureau for Astronomical Telegrams in Cambridge Massachusetts. You will need to keep a logbook of observations and be able to prove any claims.

Currently, there are satellites scanning the solar system and beyond looking for rouge comets and asteroids heading in our direction. The last epic collision from outer space was when an asteroid crashed into Earth and killed the dinosaurs.

But don't worry. It's safe to go outside. Gather some friends, blankets, bug spray, and a cooler. Find a dark spot and enjoy the Perseids. Most of these meteors just make a quick flash in the sky. Larger ones will create an arc that lasts several seconds. Astronomers are predicting a vigorous display of 100-150 meteors per hour this year. So enjoy the meteor shower and don't forget to wish upon a falling star!

You are also invited to join the Popular Astronomy Club on August 20 in the parking lot of Niabi Zoo for an evening of stargazing (weather permitting). Join us for telescopic views of the planets and other amazing cosmic wonders.

Cindy Pippert.

Resources:

1) **Backyard Guide to the Night Sky** by Howard Schneider
2) **Backyard Astronomy** by Robert Burnham, Alan Dyer, Robert A. Garfinkle, Martin George, Jeff Kanipe and David Levy
3) **Astronomy-The Evolving Universe** by Michael Seilik
4) **Encyclopedia of the Solar System** edited by Paul R. Weissman, Lucy-Ann McFadden, and Torrence V. Johnson
5) **Astronomy Magazine**-August 2016, Vol. 44, issue 8

Look Up in the Sky! It's a ….?????

By Jeff Struve
Popular Astronomy Club

So it's nearing sunrise… sunset… the middle of the night… or most anytime, and you notice something up in the sky that for some reason has caught your eye, but what is it? So before calling Mulder and Scully, I thought I would give you a brief overview of the common objects noticed… those of an identified nature of course!

Is the object stationary? If so, you more than likely are seeing a star or planet. Common to notice are the planets Venus and Jupiter… and sometimes Mars and Saturn. Venus is very commonly seen at sun rise and sunset and is commonly referred to as the 'Morning Star' or 'Evening Star'. Jupiter is generally seen when skies are slightly darker and appears a bit larger. Mars is a bit harder to pick out and has a red hue to it. Both Mars and Saturn are generally seen with the aid of darker skies. It is beneficial to view the planets under dark skies, but the ones mentioned here can easily be seen under moonlight skies and even from inside our city limits. During the middle of September, you'll be able to see Jupiter and Venus follow the Sun as they set in the West after 7:00 PM and as skies darken, you'll see Mars and Saturn toward the West.

It seems obvious to mention stars as we generally equate stars with the night sky. There are a number of very bright and large ones to note. Some of the most popular are Sirius, Arcturus, Vega, Capella, Rigel, and Betelgeuse. Don't say that 3 times though!

Other somewhat stationary objects include comets and a few deep space objects that can be slightly visible to the naked eye… primarily the Andromeda Galaxy which would appear as a smudge in the sky and a few star clusters such as the Pleiades which can appear anywhere from a smudge to a small, very close grouping of stars. Less common and therefore highly publicized are the appearances of comets. Comets look a lot like stars with a cloud around them causing them to appear tear drop shaped or with tails.

But you say it's moving? The first thing to note is whether or not it is flashing… not twinkling as stars do, but the light is pulsating. If so, you probably have an airplane of sorts. If it isn't flashing you could be seeing a meteor or a satellite... but which is it???

A meteor is an object that is burning up as it passes through the atmosphere, therefore is short lived… you see a little flash of light out of the corner of your eye, and then it's gone. It is not uncommon to see them last 10 to 15 seconds, especially during meteor showers. Astrophotographers often capture the paths of meteors and satellites as they photograph objects. A white line that goes from edge to edge of the picture would indicate a satellite or the International Space Station (ISS) as lights from these types of objects do not normally flash. An airplane path, as you may have guessed would look like a dotted line. A meteor generally appears as a short streak in the picture as the camera captures its entry into the atmosphere and its abrupt burnout.

So hopefully I have left you with a few questions… ok, it's probably not ET, but what is it? You also may be wondering if you can see satellites and the ISS during the day…

Thanks to the advent of computers and the smart phone, there are a lot of free programs and apps that can help you precisely identify what you are looking at just by aiming your smart phone at the object. A few of the apps that can help identify stars, planets, comets and other deep sky objects include Google Sky Map, Stellarium, Mobile Observatory, SkEye, Distant Suns, and SkySafari. If you want to see a satellite or the International Space Station, there are apps to help with that as well… they can let you know where and when to look, again by using your smart phone. The apps I use for this include Satellite Safari and ISS Detector.

As always, the Popular Astronomy Club looks forward to seeing you at our public star parties held at the Niabi Zoo beginning at sundown on the third Saturday of each month.

Clear Skies!

Our Sun – The Super Star!

By Roy Gustafson
Popular Astronomy Club

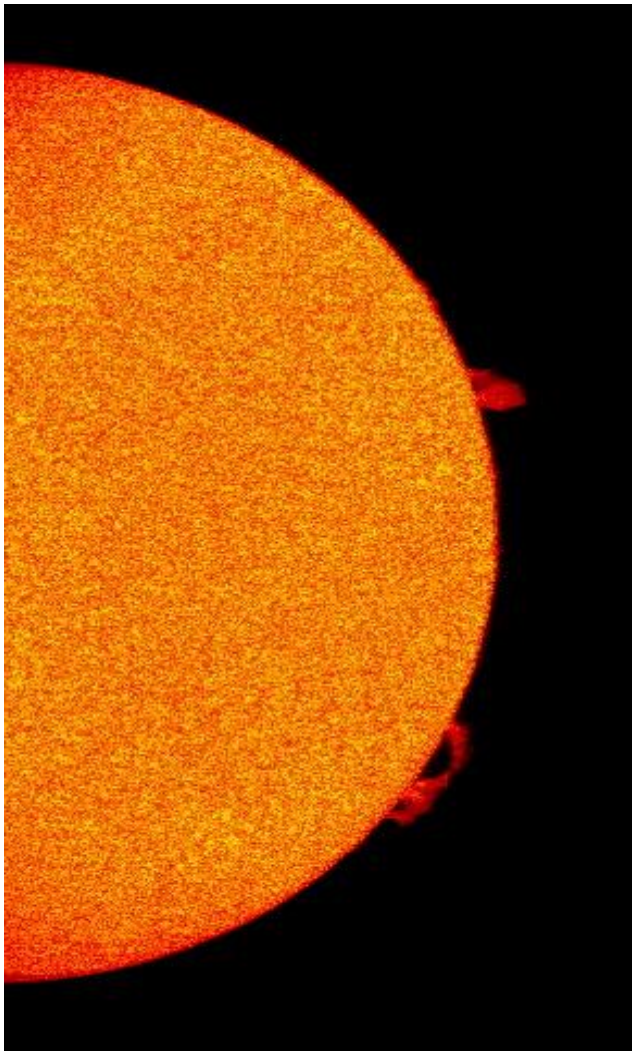
Summer is gone and autumn has finally arrived. I hope you used sunscreen to protect yourself from sunburn this summer, because without protection we can get skin cancer from exposure to too much sun, and this is certainly not a pleasant thing to have happen. The sun isn't doing this to be mean; it is merely doing its job of providing life-giving light energy to the Earth. This got me to thinking about the sun and some of the interesting facts that are hard for us, or at least me, to comprehend.

The sun is really just an average star, one that falls into the G class of spectral identification, but average to a star is far from average to the way we think. To us the sun does some pretty un-average things, and we are thankful it is 93 million miles away! The sun produces its energy by fusing 700 million tons of hydrogen into 695 million tons of helium every second with the release of a small amount of light energy! Each square centimeter of the solar surface emits as much light as a 6000-watt light bulb. In order for this fusion to happen we must have high temperatures and pressures at the core of the sun, and boy, do we have this - 27 million degrees Fahrenheit and a pressure that is 250 billion times the atmospheric pressure here on Earth! All this thermonuclear activity produces turbulence and magnetic storms that dwarf any type of storms we have on Earth, storms that even dwarf the Earth! These storms are large because the sun is 864,000 miles in diameter compared to the Earth at 7,926 miles in diameter. These storms produce the sunspots and solar prominences that are so beautiful to observe with a telescope that is equipped with proper eye protection (see attached photograph). These storms can affect weather and communication here on Earth.

During a Total Solar Eclipse we can see the solar prominences emanating from the surface of the sun. The sun is ejecting material at a velocity of 1 million miles an hour into space, and the sun is ejecting 100 million tons of this material every second! Even at this rate of hydrogen depletion (conversion to helium) and mass ejection during electromagnetic storms, the sun is expected to last for another 4.6 billion years, which is as long as it has been in existence now.

The mass of the sun is tremendous; the sum of the weight of <u>all</u> the material in the planets, their moons, and asteroids is less than 1/100th of the Sun's weight! Next year on August 21st we will be able to observe a <u>partial</u> Solar Eclipse from the Quad-City area with over 90% of the Sun covered by the Moon! The Popular Astronomy Club will be available to show the Eclipse, so watch this newspaper and other social media accounts to see where we will be set up for this fantastic event. If you want to see the <u>Total</u> Solar Eclipse, then just go south to Carbondale and observe totality for 2 minutes and 41 seconds!

So… when you are outside enjoying some sunshine and cool crisp fall air, think about this "average" star and the phenomenal things it is doing to provide that sunshine.



This photo shows electromagnetic storms shooting up over 1 million miles above the Sun's surface.

The picture was taken on August 21st, 2015 from Orion, IL.

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.

July 9, 2016
The PoleMaster Camera System
Mike Ombrello

ACHIEVING GOOD POLAR ALIGNMENT

I am a photographer and have a desire to take Milky Way and deep sky images. I can address the Milky Way images, using my existing equipment - using a wide angle lens for 20-30 second exposures without star trailing. However, deep sky images are a different matter - they require the ability to track with the earth's rotation. This is what got me interested in astronomy - and more specifically in astrophotography. I am new to astronomy and astrophotography, purchasing my telescope (an Explore Scientific ED127 Triplet APO Refractor) and mount (Losmandy G11 with Gemini 2 Goto) within the past 90 days. One of the observations I quickly made about this hobby is that it will consume all the money you can throw at it and ask for more. So I decided that I needed to get my arms around the capabilities and limitations of what I already had - without throwing more money at it.

The biggest challenge I was facing was taking exposures of 3-5 minutes, without trailing stars. I would diligently do my polar alignment (with three stars), using the Losmandy polar scope, but found that I was getting trails on start after about 2-3 minutes of exposure. Researching the different techniques, I discovered that Drift Alignment was the preferred method of polar aligning, with accuracy up to 2 arc minutes (I would guess that I was probably in the neighborhood of 10 arc minutes using the Losmandy polar scope). I tried Drift Alignment on a number of occasions, but found that it was extremely time consuming - eating up a significant amount of the time I had available to be under the stars for the evening.

A fellow astronomer (and member of the PAC and QCAS - Jeff Struve) told me about a device that he had heard of that was easy to use and provides accuracy up to 30 arc seconds. I did some reading on the product (PoleMaster) and found nothing but favorable reviews and comments. I took the plunge and purchased the PoleMaster camera and attaching hardware for the Losmandy mount, as well as downloading the software and device driver for my Surface Pro tablet.

Well the 5 minutes to install and get it up and running was a little understated - it actually took me about 25 minutes - though most of this was due to the learning curve - understanding what was being asked. I actually started the alignment routine over because of a mistake I had made. The software used the PoleMaster camera to find the stars needed to do the alignment. The actual instructions for using the PoleMaster system are found on the internet, in video form - basically it goes through the process of finding the celestial pole and then finds the axis for the mount. Following the instructions in the software, you use your hardware adjusting bolts (altitude and azimuth), to place the mount axis on the celestial pole. You are done.

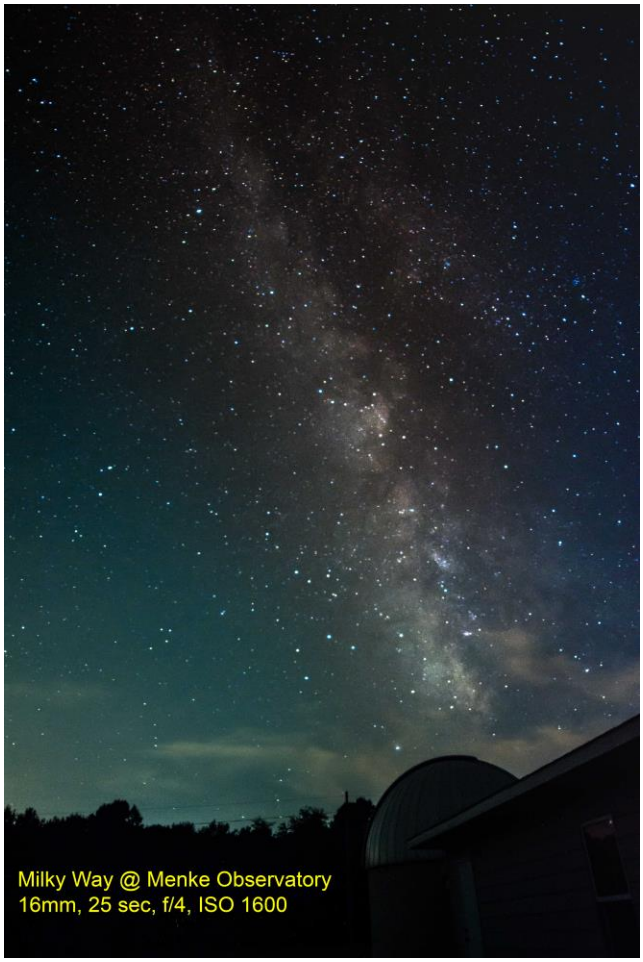
After completing the installation and alignment, I was surprised that I was now able to take the 3 minute exposures that I desired without star trailing. I had not pushed the exposure time to see where the threshold actually is for star trailing. But this has provided me what I needed to take 3-5 minute exposures without having to purchase auto guiding gear.

The next logical step for me was to determine if I could improve on the 3-5 minute exposure times, without star trailing. I went out last night (even though it was very humid and windy) and set up the PoleMaster system (in less than 5 minutes). I took my time in following the software and doing the alignments, using the arrow keys (instead of the touch pad) on my Surface Pro to fine tune the placement of the template on the sky. I mounted my DSLR. I was able to take 8 minute exposures without any star trails and just the faintest star trails were evident on a 10 minute exposure - all without auto guiding.

The PoleMaster system is definitely worth every penny I spent on it - providing what I have not been able to achieve previously (Good Polar Alignment) - without spending a significant amount of time setting up.

M 27 the Dumbbell Nebula

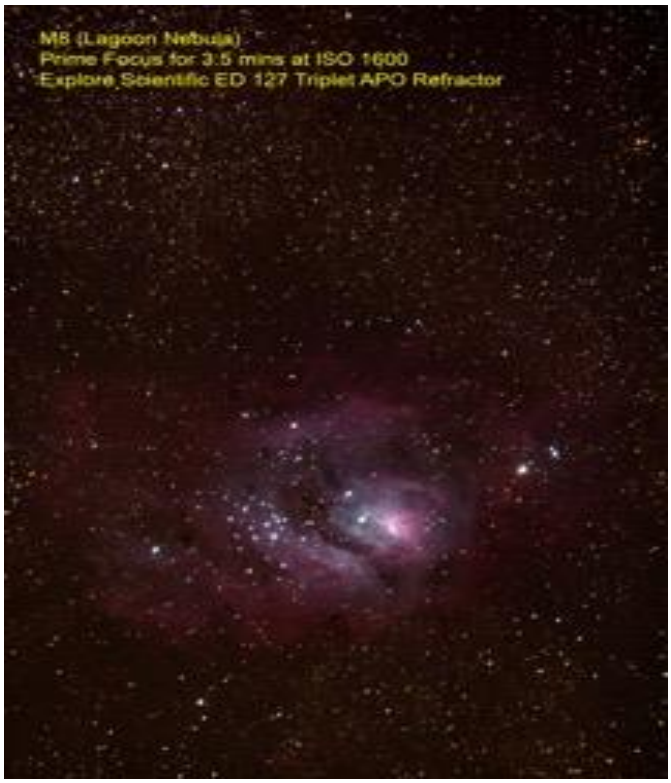
M-51 the Whirlpool Galaxy



The Milky Way at the Menke Observatory

Following are pictures of the Lagoon Nebula (M-8) and the Triffid Nebula (M-20) taken on July 27, 2016.

These pictures were taken with my camera/lens mounted to a dovetail plate, which was then mounted on my Losmandy mount.



M-8 the Lagoon Nebula

July 31, 2016
Observing Near Joy Illinois
Ken Boquist

I was out last night near Joy, Illinois, experimenting with an autoguider under fairly rotten skies (clear, but with passing clouds, lots of haze, and fog). Following are some pictures of what I imaged. These are all single exposures with a 5.1" refractor. The autoguider provided much better images, so I never looked back after the first comparison.

The image scale for the two gobulars is almost exactly identical, so the differences in the pictures reflect actual differences in how they appeared to the camera. I didn't attempt to keep image scales consistent with the nebulae shots since some differences were necessary (cropping out an offending plane is one reason!). I think you'll agree that M-22 is much nicer than M-13, and it's much easier for someone to find.

M 16 the Eagle Nebula

M 8 the Lagoon Nebula

M 13 the Hercules Star Cluster

M 17 the Omega Nebula

M 20 the Trifid Nebula

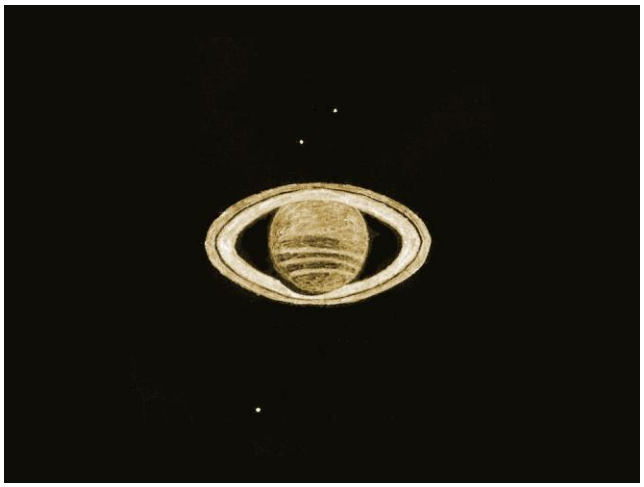
August 23, 2016
Andromeda Galaxy, M31
Mike Ombrello

Last night I was able to capture the Andromeda Galaxy, M31, using a Lumicon broadband "deep sky" filter (Five minute prime focus exposure at ISO 1600).

Andromeda Galaxy M31

September 3, 2016
Sketch of the planet Saturn
Al Sheidler

Despite the poor weather conditions last night at the Eastern Iowa Star Party I did manage to make a sketch of the planet Saturn before it got cloudy. I made this sketch using a No. 2 pencil and white paper. I spent maybe about an hour making primitive sketches of various types at the eyepiece of the scope and then this afternoon I redrew the final composite image attached here. I scanned in the pencil image and then "inverted" it in Photoshop to make a positive image to approximate the view at the eyepiece. This sketching exercise made me realize how much detail can be discerned using the human eye as the imaging device. The sketch isn't maybe the best, but I thought you would enjoy seeing it.



Al Sheidler's Sketch of Saturn

PAC TELESCOPES/BINOCULAR FOR RENT

The Popular Astronomy Club has two telescopes and one pair of binoculars for rent to members. The equipment in our rental inventory is:

Meade 90 mm ETX Astro Telescope

This telescope comes with a homemade mount and tripod, and a solar filter. It has a 26 mm eyepiece and a 2x Barlow.

The focal length of the telescope itself is 1250 mm, so the effective magnification is 48x with the eyepiece, and 96x with the addition of the Barlow.

8" Orion Dobsonian.

This telescope has three eyepieces: a 25 mm Ploessl, a 12 mm RKE, and a 9 mm Ploessl.

A moon filter is also provided with this scope.

Zhumell 20 X 80 Binoculars

These binoculars come with an integrated tripod mount for a standard photographic tripod.

The rental rate is $5.00 per month. Contact Adam Beals at (217)-254-5204 or email at ajbeals@gmail.com

THIRD QUARTER 2016 BUSINESS MEETING

President Alan Sheidler called the third Quarter PAC business meeting to order in the John Deere Planetarium at 7:00 p.m. local time, on Monday, September 12, 2016. Guests Marshall Dray and Taylor Waugh were welcomed.

Terry L Dufek was nominated and approved to replace Cindy Pippert as club Secretary. The second quarter business meeting notes were read and approved.

Treasurer's Report

Treasurer Bryan Raser reported on the financial status of the club. Receipts from donations, dues, outreach events, equipment sales brought cash receipts to $1,259. Expenses included dues to the Astronomical League, PACMO winter storage, Illinois nonprofit report, web site fees, and insurance for the Paul Castle observatory and the PACMO (Two separate line items). These expenses totaled $1,630.60.

Varnish (for the deck at Paul Castle Observatory) and Banquet gifts have been purchased and bills are to be submitted at a later date. Balance of the business account is $3,145.93 (Treasurer's report is included at end of report).

Members need to let Bryan Raser know they would like a copy of 2017 calendar. They can pay when they sign up or when the calendar is delivered. Club membership renewals have been emailed out and reminders will be mailed out in a few weeks.

Banquet reservations have to be sent to Bryan Raser by October 7th.

Vice Presidents Report

Vice President was not present at the time of the meeting and no issues were reported.

Observatory Director Report

All repairs to PACMO have been completed. The deck around the Paul Castle Observatory has been refinished. The surplus tires have been sold.

ALCor Report

Nothing to submit.

Correspondence

Old Business

No old business.

New Business

The telescope (4½ in Orion Starblast Reflector) applied for from the Astronomical League has been approved. It is to be donated to the Scott County Library- Eldridge branch. It will be modified (per the requirements) when received and along with some training in usage, given to the library. Volunteers will be needed at this time to assist when with initial training. There was some discussion at this time on how to restrict or warn about preventing it from accidentally being pointed towards the sun.

Meeting adjourned

Respectfully submitted, Terry L Dufek, Secretary

Tonight's Constellation Report was presented by Terry L Dufek (Aquila).

Astronomical League Outreach Awards were presented to Mel Schroeder (not present), and Terry L Dufek.

Astronomical League Transit of Mercury Awards were presented to Al Sheidler, Ken Boquist, Wayland Bauer, and Roy Gustafson

Photos from the Eastern Iowa Star Party were shown.

PAC Observations / photos were shown

Tonight's Program was presented by Wayland Bauer (Yerkes Observatory)

QUARTERLY REPORT

Following is the current Quarterly Report. It was taken from a full page format and resized to fit the two column format of this newsletter. You may need to increase the size of this page to be able to read the report.

09.5.2016 **September Quarterly Report**

Description		Subtotal	Total
June 14th Deposit		$248.50	
July 11th Deposit ($31 raffle, $25 payment & $25 donation)		$81.00	
July 11th Deposit: Moline Conservation Club		$100.00	
July 11th Deposit: Rock Island Conservation Club		$100.00	
July 29th Deposit: Eldridge Library Donation		$100.00	
July 29th Deposit: D Moline & P Soble dues, Raffle		$78.50	
August 22nd Deposit:		$264.00	
September 2nd Deposit:		$287.00	$1,259.00
Astronomical League Dues		$185.00	
Roy Gustafson (PACMO winter storage) Lost check reissue		$175.00	
Hastings Mutual Insurance Company		$675.00	
IL nonprofit report: File # N3539-595-2		$10.00	
Hastings Mutual Insurance		$314.00	
Adam Beals, Website bill		$94.80	$1,435.80
			$194.80
Business Checking Account Current Balance			**$3,145.93**

Popular Astronomy Club of the Quad Cities, Inc.

http://www.popularastronomyclub.org/

PAC Logo

Popular Astronomy Club
2232 24th Street
Rock Island, IL 61201