Penobscot Valley Star Gazers

An Astronomical Society of Central Maine

http://www.gazers.org

Sol's heating rays each mist retracts, that hovers over the plain;
The clouds overhead grow thick and black, in torrents pours the rain.

June 2019

Filtered Views

Jupiter will be at opposition when the PVSG meets at John Bapst Memorial High School on Monday June 10, 2019 at 6:30 pm. The program will be Dave Clark's *Astronomical Filters*.

For last month's program we can thank Dwight for sharing the tale of his solar telescope's unexpected fall to the floor. Also, congratulations to Dwight and Scott on their re-election as president and vice-president.

Dwight's Fright

May 13, 2019

Attendance:
Scott Burgess, Vice-President
Alan Davenport
Don Krause
Dwight Lanpher, President
Ralph Mallett
Jeff Waring
Phil Normand, Secretary
Wade & Donna Smith

Before the meeting started, Dwight showed a video on the culture of Ireland.

Meeting was brought to order at approximately 6:42PM.

Calendar review:

- Star party – June 1st at Don Krause's house in Levant (although Don won't be there). Dwight will send directions.
- Shawn Laatsch offered to hold meeting at the Emera Astronomy Center in July or August. He also said he would help out with an observing event as well.
- Other possible summer observing opportunities:
  - ○The Carver library in Searsport looking for a summer star party.
  - ○Kingfield days – July 20th – Dwight looking into it.

Update on interested person who is deaf: Dwight tested real-time transcribing software with a microphone and he thought it worked rather well. He also tried contacting a group that works with the deaf.

Pen purchases have not gone forward even though the group approved the purchase at the last meeting due to the price of the pens doubling.

Elections: President & Vice-President: After nomination and unanimous approval, Dwight & Scott will continue for 2 additional years in their current positions.

The group had a discussion on how to grow our membership. Ideas included: Brochures could be left at area libraries and with school science teachers, at the Emera Astronomy Center and the Challenger Center; Bookmarks could be made to leave at libraries; Pens could be handed out by club members to potential new members;

Phil brought up a request to find locations that members would be allowed to set up and view. Many places have security lights. Possibilities include: Golf courses in Holden and Hermon; And a possible location off Eastern Avenue in Brewer. The Bangor Land Trust location was discussed as well.

Nancy Hathaway has invited the group down for Stars over Surry on Wednesday, July 31st.

Challenger Center star party was attended by Donna, Wade, Dave and Phil. Approximately 310 people came through to look through the 2 scopes we had set up. We focused on a church steeple across the river, since it was cloudy and not nearly dark enough. The Challenger Center folks would like to have a real star party in the future, perhaps in the fall on November 2nd with November 9th as a rain date, or if they want to try

On the Schedule

(Items Subject to Change)

PROGRAMS

July 8 or August 12: PVSG meeting at Emera Center.

STAR PARTIES

?Sometime this summer: Carver Library in Searsport star party
?July 20: Challenger Center, Emera Center, 50th anniversary of Apollo 11 lunar landing event
July 20: Kingfield Days
?July 27 or 28: Maybe Sunfest somewhere.
July 31: Stars Over Surry
August 1 to 4: Stellafane
August 23 to 24: Maine State Star Party
September 21: Stars Over Katahdin
September 25 to 29: Acadia Night Sky Festival
?October 26: Club star party at Ben Philips'
?November 2, 7, or 9: Challenger Center star party
?November 23: Bangor Land Trust

? Tentative; (rs) rain or shine; (co) clear only; (rd) rain date

for a Thursday night, November 7th might work.

Dwight announced that the next meeting will be at John Bapst.

Observers' reports:

Everyone agreed that the weather these last few months have been less than ideal for star gazing.

New business:

Wade showed a meteorite and also micro particles he believed to be tektites. He collected them with rainwater and a magnet. The group discussed different types of meteorites and their properties.

Dwight announced that the Seal Cove auto museum location will replace the ANSF seawall star party. The Keynote Speaker for this year's Acadia Night Sky Festival will be Dr. Jackie Faherty from The Museum of Natural History in New York City. She will talk about techniques for presenting the GAIA data.

Program:

A Sad Tale: By Dwight, Coronado Solar scope damage. Dwight talked about damaging his solar scope and what he went through to send it away to be repaired.

Meeting adjourned at 7:52

Phil

Observe the Sky This Month
Selected Objects
June 2019

General sky comments – The summer season begins on the 21st of the month at 15:54 Universal Time (UT1, or often simply UT) or 11:54 Eastern Daylight Time (EDT). This is the time the Sun reaches its most northerly declination. The sky in June does not get fully dark until after 10 PM and there are only about 4+ hours to observe. Make the most of the late evening and early morning. We will never get to Mars but we can send our names to Mars. From now until September 30 everyone can sign up to send your name to Mars. Included is a special boarding pass and they will award you 300 million "frequent flyer" points on NASA's Mars 2020 rover yet to be named. I don't know about you but I sent my name to Mars on the last rover and have signed to send my name again this time.

Planets this month – Monday the 3rd the moon is new, first quarter is on Monday the 10th, full moon is on Monday the 17th, and last quarter is on Tuesday the 25th. Mercury is in the evening sky all month. Look for it early in the month when it will be very accessible. Venus is in the morning sky all month but will be difficult to observe late in the month. Mars is becoming difficult to observe low in the west. Jupiter will reach opposition on the 10th and will be in excellent position for observing all month. Observe a double transit of Io and Ganymede on the 12th starting at 11.33 pm EST. Saturn is at opposition next month and will be in the late evening and morning sky most of this month. The waning gibbous Moon will pass very close to Saturn on late night of the 19th early morning of the 20th. Uranus is in the morning sky but is very low and difficult to observe. Neptune rises after midnight in central Aquarius. Pluto is still in Sagittarius.

Constellations for the month – This time of the year when the sun is high in the sky the Zodiac constellations are located low in the sky and consequently the constellation Scorpius, the tail of the Scorpion scrapes the horizon and the bottom of the constellation is on the horizon as it is quite long and we are located almost halfway between the equator and the North Pole. More about Scorpius is below in the featured constellation section. Above and to the right of Scorpio is the constellation of Libra, the scales. Libra is the only inanimate object in the Zodiac. In ancient time Libra may have been connected to the scorpion by some but these claws almost universally were considered a separate constellation by most representing justice. To me the most interesting thing in Libra are the two bright stars Zubenelgenubi (α Lib) and Zubeneschamali (β Lib) and the way they sound. Zubenelgenubi is an interesting wide yellow and white double star visible with binoculars. There are no Messier objects in Libra and only a few galaxies none worth observing except with larger telescopes. Below and to the west of the tail of Scorpius we at this latitude can see some of the stars of the constellation Lupus, the Wolf but it is not worth our time trying to observe. Above and to the east of Scorpio and Libra are the constellations of Serpens Caput, the Head of the Snake and Ophiuchus, the Serpent-Bearer. Further to the east is Serpens Cauda, the Tail of the Serpent. All three are portions of the myth of Aesculapius the founder of medicine represented by Ophiuchus wrestling with a serpent. Serpens Caput contains one Messier object M5 (NGC 5904) a very fine globular cluster located 11½° north of Zubeneschamali (β Lib) and 7½° SW of Unukalhai alpha (α) Ser. Do not miss M5. Serpens Caput is connected on the east to Ophiuchus, the Serpent Bearer. Above Ophiuchus is the constellation Hercules, the Strongman and to the west above Serpens Caput is the constellation Corona Borealis, the Northern Crown. Corona Borealis represents the crown given to a victor. In Greek mythology it was the crown given to Ariande by Theseus who had killed the Minotaur in the Labyrinth made by her father. The constellation only contains a number of dim galaxies we will not try to find. Last month I said we would look at the constellation Boötes, the Herdsman. Boötes is one of the oldest constellations but the name origin has been lost. The only definite mythology of Boötes comes from the Romans who called him the Herdsman of the Septemtriones, the seven oxen represented by the seven major stars of "the Big Dipper". As a modern constellation Boötes holds the leash of Canis Venetici, the hunting dogs. The constellation has the shape of a kite trying to take off. To appeal to the youth at planetarium shows, Boötes is usually called "The Ice Cream Cone". The Sumerians called him the man who drives the great cart. The only real interesting Boötes object

is the alpha (α) star, Arcturus, the 4th brightest star in the sky. Its main use is as a guide star to other stars in the sky as in the saying "follow the arc of the handle of the big dipper to Arcturus and spike on to Spica". Boötes has a special importance for me. It contains one of the globular clusters in the Astronomical League Globular Clusters Observing Club listed on the Challenge List of Globular Clusters. To qualify for this observing club you have to observe at least one globular cluster on this list. The globular cluster in Boötes on the challenge list is NGC 5466 and is the globular cluster I chose to observe. I am going to challenge you to observe NGC 5466 too and this is how to find it. Start at Arcturus and go 10° NNW to the cluster. Unfortunately this a difficult way to find NGC 5466 but there are a couple of easier ways to find this object. First at the same 10° there is a 5th mag. star 9 Boötes. Find this star and follow a curve of 4 dimmer stars to the NW, to the WNW of the last star you should find NGC 5466. The other way is to locate M3 in Canes Venatici and go 5°east to NGC 5466. Remember this is a difficult object. Good Luck! Let me know if you observe it. Back to Hercules, a demigod born of the union between the god Jupiter and the mortal Alcmene. Jupiter's wife Hera was suspicious Hercules was the child of Jupiter because the child was extraordinarily strong. (The Greek name of Hercules is Heracles.) The constellation had been previously known simply as "The Kneeler". The constellation Hercules is best known because of the globular cluster M13 (NGC 6205) but there are two other globular clusters easily visible in most telescopes and one of them also has a Messier number M92 (NGC 6341). The other is NGC 6229 a smaller globular visible in most telescopes. To find M13 locate the squashed square of stars known as the keystone just to the left and slightly above Corona Borealis. Then go ¾ of the way up the west side to find M13. At a dark site M13 is visible to the naked eye as a "fuzzy" star. It was discovered this way by Edmond Halley of comet fame in 1714. This is the best globular cluster you can see unless you travel to far southern Florida and observe Omega Centauri the largest globular cluster in our galaxy which may actually be the core of a dwarf galaxy which has had its outer stars stripped away. If you can pull yourself away from M13 look for NGC 6207 a spiral galaxy located in the same low power field as M13. A big binocular shows it but use more power for a better view. It is only ½° NE of M13 and at mag 12.1 the brightest galaxy in Hercules. Give it a try. M92 (NGC 6341) is located 6° north of pi (π) the 3rd magnitude star at the NE corner of the keystone. Just because it is a bit out of the way do not miss it. M92 is a very nice globular cluster deserving of more attention, if it was not so close to M13. To me it looks a little flattened on one side. Is there a small dark nebula dimming that side? What do you think? The last globular cluster in Hercules is NGC 6229. It is observable with my 8" telescope but my 12" allows me to resolve a few stars with averted vision and it looks slightly granular. To find it go 7° NW of M92. It is slightly over 1° NNW of 52 Her the 4th magnitude star 6° NW of M92. Above Hercules and just slightly to the east there is another almost keystone like the one in Hercules forming the head of Draco, the Dragon. Do not confuse this keystone with the one in Hercules as I have occasionally because you will not find M13 in this one. As long as you keep your directions straight this will not happen and the two do not really look alike. For us Draco is a circumpolar constellation and never sets. This time of the year is the best time to follow Draco as it winds around Ursa Minor, the Little Bear the constellation most everyone has heard of but are not very familiar. Probably the most famous star in the sky is in Ursa Minor, Polaris, alpha (α) the North Star. Polaris is also the end of the tail of Ursa Minor and helps form the asterism, the little Dipper. Ursa Minor is a convenient way to determine the brightness of the sky by comparing magnitudes of the stars. Polaris is mag 2, along with Kochab, beta (β) at the end of the "bowl" of the constellation. Pherkad, gamma (γ) the other star at the end of the bowl of the "Little Dipper" is mag 3, followed by delta (δ) and epsilon (ε) the other two stars in the handle of the "Little Dipper" at mag 4. The star joining the handle to the bowl is Zeta (ζ) also at mag 4. Finally if you can see eta (η) the other star forming the "bowl" at mag 5 you have a pretty dark sky. Draco contains few bright stars making it difficult to trace through the sky but since the head is conspicuous it is best to begin there. From the head Draco goes NNE toward the north celestial pole but before it gets there it turns back SW before curving around the body of the little bear where the alpha (α) star of Draco, Thuban alpha (α) Draco forms a long triangle with the two end stars of the dipper. Thuban (mag 3.6) is not the brightest star in Draco but is the easiest star to find. Thuban is famous because of precession it was the Pole Star when the great pyramids were built around 2600 BC and they are aligned to its position at that time. Thuban as a pole star is not as bright as our Polaris but when you did not have electric lights to light the sky almost magnitude 2 was bright. Draco contains numerous dim galaxies and one notable planetary nebula, the Cat's Eye Nebula a green planetary with the central star visible in most telescopes.

Featured star – Epsilon (ε) Boötes is one of the stars we see every time observing the constellation but have you ever observer Izar? Yes that is its official name and it is a double star at magnitude 2.37 for the primary star and a magnitude of 5.12 for the secondary. If you took away the primary the secondary would be naked eye visible at a moderately dark site. Izar is the left star in the belt of Boötes. Although both stars are bright it takes a telescope to separate the pair because they are relatively close to each other at 2.85 arcseconds of separation. The primary star is a red giant on its way to becoming a planetary nebula with a white dwarf center while the secondary is a main sequence star with many years to go before becoming a red giant. Eventually the visual look of the two stars will reverse. Do not overlook this pair. They are easy to

observe and interesting too.

Featured Messier object – I am an ardent fan of globular clusters and the various types. Show most people globular clusters in a telescope and after they see a few before long they begin to say "Not another one!" Do not make the mistake of thinking globular clusters are all alike. Every globular cluster is a unique individual and this characteristic makes them very interesting. In 1927 Harlow Shapley and Helen Sawyer wrote Harvard College bulletin 849 classifying globular clusters from Class I to Class XII by their concentration of stars with Class I the most concentrated and Class XII the least. This is the most common method of telling one globular cluster from another but most of them can be identified simply by how they look. Every globular looks different and after observing a few you begin to recognize each as an individual. Like me become a fan of globular clusters. NGC 6171 - Messier 107 is a class IX globular cluster located in Ophiuchus. In April of 1782 Piérre Mechain discovered it followed independently by William Herschel in 1793, and in 1947 Helen Sawyer Hogg added it to the Messier list. It is around 20,900 light years distant. M107 can be observed with a telescope as small as 6" but use an 8" to 10" one to observe if possible. M 107 is slightly flattened on the south side likely due to intervening dust. Stars can be resolved at 150x and more with averted vision where the core begins to look granular. Like many globular clusters M107 can be also identified by its unique field stars. To find M107 locate the row of stars defining the bottom of Ophiuchus. From the center star zeta (ζ) go 2½° SSW to M107. I first observed this globular cluster in 2011.

Featured constellation – Scorpius, the scorpion is an ancient constellation mentioned in Mesopotamian tablets dated to 2500 B. C. along with scorpions and scorpion-men pictures. The scorpion was sacred to the Mesopotamian fertility goddess Ishara. The sting of the scorpion was sacred to the war-god Ninurta and the two stars lambda (λ) and upsilon (υ) were associated with his sacred weapons Sharur and Shargaz. In Greek and Roman mythology Scorpius was the scorpion sent to sting Orion in his heel. (Did someone confuse Orion with Achilles?) Scorpius contains several multiple component stars including the triple star Xi (ξ) a test for 8 to 10 inch telescopes, Beta (β) Graffias, the upper claw is a double star consisting of a blue-white primary and a pale blue secondary, and alpha (α), Antares is a double star. The secondary is close to the primary star so brilliant it makes the secondary difficult to spot. Use a large telescope and high power. You will find it best close to the horizon when the primary is dimmed by the thick air and it can be detected as a green spike in the Airy disk of the primary. Also found in Scorpio are four Messier objects, M4, a large Globular Cluster found near Antares, M80 another Globular cluster discover by Charles Messier in 1781 on January 7 found halfway between Antares and Graffias, an Open Cluster M7 located 3½°NE of the "stinger" of the scorpion and NE of M7 is an Open Cluster M6. Both clusters can be seen with no optical aid but use a binocular or wide field telescope. Both were noted by Ptolemy in the 2nd century A. D. as "little clouds" near the Sting of the Scorpion. This is a rich area of the sky. Find a detailed star chart and take some time to observe this interesting area.

Other objects of interest – NGC 6369 the "Little Ghost Nebula" is a planetary in Ophiuchus. To find it go to a line of 3rd and 4th magnitude stars a little over 10° east of Antares and follow these to this planetary. It is bright enough to see in a small telescope but a larger telescope is needed to see it as a ring. Its name fits it well, it is "ghostly". NGC 6366 is a globular cluster in Ophiuchus. It is found 3° SW of M14 just east of a 4th mag star. It is actually larger than M14 but it is in the class of globular clusters with the lowest surface brightness thus more difficult to observe. It almost looks like a large dim open cluster. NGC 6217 is a barred spiral in Ursa Minor forming an equilateral triangle with eta (η) and zeta (ζ) outside the bowl portion of the constellation. It can be located with an 8" telescope but a much larger telescope is need to see much detail.

Bill Shackelford

We are all in the gutter, but some of us are looking at the stars, Oscar Wilde 1892.