THE METEORITE

The Eskimo Nebula

or Clown Face Nebula

NGC 2392

Newsletter of the Mahoning Valley Astronomical Society, Inc.

IN THIS ISSUE:

NOVEMBER 2013

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MVAS CALENDAR

NOV	**2**	New Moon weekend. Observing at MVCO. 7:00 PM
NOV	**16**	ISON viewing at Lisbon High School. 5:30 AM
NOV	**23**	Business meeting at YSU. After 8:00 PM Show.
DEC	**1**	ISON viewing at MVCO. 6:00 AM. Sunrise 7:30 AM

NATIONAL & REGIONAL EVENTS

NOV 15 **IDA 2013 General Meeting**, To be held at the Aloft Hotel, 1900 East Speedway Blvd. Tucson, AZ. Registration: non-members $110 includes IDA membership in the International Dark Sky Association. IDA Members: $75 http://darksky.org/index.php?Itemid=180

DEC 12 **Chasing Supernovae in the Early Universe.** *A Frontiers of Astronomy Lecture* at the Cleveland Museum of Natural History. 8:00 PM. Speaker: Steven Rodney, Ph.D., Johns Hopkins University. Dr. Rodney will describe how we are using the Hubble Space Telescope to discover some of the earliest supernovae ever seen. Presentations are given in the Murch Auditorium. Free admission. http://www.cmnh.org/site/Index.aspx

JAN 29-31 **Orange Blossom Special Star Party,** held at the Withlacoochee River County Park, Dade City, FL . Registration: $50/adult, $30 spouse, $10 ages 7-17. 24 hr. event. Must register on-line. Campsites, speakers, new astro equipment on display. http://www.stpeteastronomyclub.org/obs.php

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MVAS Homepage- http://mvobservatory.com

NEWS NOTES

Some positive news? A new image of Comet ISON (right), suggests that it is intact despite some predictions that it's nucleus might disintegrate as the Sun warms it. The comet will pass to the Sun (perihelion) on November 28. In this NASA Hubble Space Telescope image taken on October 9, the comet's solid nucleus is unresolved because it is so small. If the nucleus broke apart then Hubble would have likely seen evidence for multiple fragments. Moreover, the comet's coma is symmetric and smooth. This would probably not be the case if clusters of smaller fragments were flying along. Its closest approach to Earth is on Dec. 26, at a distance of 39.9 million miles. *-From Space Daily Oct. 19, 2013*

Waving by the Weight Gain. Einstein predicted gravitational waves (ripples in space-time), would be generated by massive bodies changing speed or direction- like pairs of black holes orbiting each other. Every large galaxy has a supermassive black hole at its center. So when galaxies merge, their central black holes are doomed to meet. They first orbit into a desperate embrace and finally merge. When they get close to meeting they emit gravitational waves at just the right frequency that we can detect. The many such encounters occurring in the universe create a background of gravitational waves.

Astronomers have been searching for gravitational waves for 20 years using the Parkes Pulsar Timing Array (PPTA) radio telescope in Australia and a set of 20 pulsars. Pulsars act as extremely precise clocks in space. When the gravity waves pass a pulsar, the waves temporarily swell or shrink the space-time of the pulsar's area. This alters the arrival time of the pulsars pulses on Earth. The arrival time of their pulses on Earth are measured with exquisite precision, to within a tenth of a microsecond. The PPTA results are showing us a low rate of background gravitational waves. The strength of the gravitational wave background depends on how often supermassive black holes are merging, how massive they are, and how far away they are. So if the background is low, that puts a limit on one or more of those factors.

Using data from the gravity wave study, researchers tested four models of how black-holes gain mass. They have effectively ruled out that black holes gain mass only through mergers. Now they are investigating the three other models of black hole weight gain. *-edited from Space Daily Oct. 18, 2013*

Titan's solar boost. The NASA-ESA-ASI Cassini spacecraft has been observing the Saturn system, including the giant satellite Titan, for more than 9 years. A detailed analysis of Cassini data has now confirmed predictions that the density of Titan's ionosphere is directly linked to the 11 year solar cycle. All planets and satellites with atmospheres possess an ionosphere, a region in their upper atmosphere which is dominated by electrons and ions. Analysis shows a definite correlation between the amount of ionization in Titan's ionosphere and level of solar activity. Nearly the same mechanisms exist at Earth. *-from Space Daily Oct. 17, 2013*

MINUTES OF THE OCTOBER MEETING

OCTOBER 19, 2013 at the MVCO

The October meeting was held in the 16" building, on this cold evening of Oct. 19, 2013. President Lou DiNardo presided, calling the meeting to order at 8:00 PM. Roll Call was answered by fifteen MVAS members with Virginia Bartos attending, being a regular guest and friend of the Society. Our V.P. as well as one Trustee were both absent (prior commitments). The President called for the reading of the Minutes. Don Durbin moved to suspend the reading and accept the published Minutes. Paul Baker seconded the motion. With no further discussion, the motion was adopted by a unanimous voice vote.

TREASURER'S REPORT: The Report was read by Steve Bartos. With no questions or further discussion, Roy McCullough moved to accept the Report. Dave Ruck seconded the motion. By unanimous voice vote, the Report was accepted.

General Fund	**9/1 thru 9/30 2013**	
OPENING BALANCE:	$	8,156.57
CLOSING BALANCE:	$	8,221.70
AVAILABLE FUNDS (NON-RESERVED):	**$**	**4,007.58**
ACCOUNT NET GAIN/LOSS FOR THIS PERIOD:	$	+65.13
INCOME:		
ASTRONOMY CALANDERS	$	40.00
MVAS MERCHANDISE		25.00
INTEREST		0.13
TOTAL INCOME	$	65.13
EXPENSES:		
CK# XXXX NO CHECKING EXPENSES RECORDED	$	0.00
NO CASH EXPENSES RECORDED		0.00
TOTAL EXPENSES	$	0.00
Reserved Funds		
OBERVATORY ACQUISITION & DEVELOPMENT FUND	$	3,914.12
MVCO KEY DEPOSITS		270.00
SUNSHINE FUND		30.00
TOTAL RESERVED FUNDS	**$**	**4,214.12**

CORRESPONDENCE: None reported.

OFFICER REPORTS: *O.D. REPORT:* Larry Plante reported that the MVCO seemed in fine shape at the Observe the Moon night the weekend before and remains so this evening. He will be shutting down the well after the Halloween Party. Rosemary will shut down the refrigerators sometime in early November. *LIBRARIAN REPORT*: Rosemary Chomos reported that there have been no changes to the library. New book additions are pending the new roof completion.

COMMITTEE REPORTS: *IMAGING COMMITTEE:* Jodi is working on a new stacking procedure that should yield sharp images of Comet ISON with sharp stars at the same time. (no trailing.) She may have something to post soon. Lou reported that Mike Heim has been sending narrow band images to him for processing. Latest was an image of the Wizard nebula in Cepheus. Mike used Hα, OIII, and SII filters. Using different filter palets like the Hubble palate, Lou is able to pull out details and structure not readily seen in normal filter channels. Mike had posted some of these images to the MVAS email group earlier in the week. *VISUAL COMMITTEE:* Phil Plante reports that No Visual Report forms or Homework have been submitted.

OLD BUSINESS: Jodi posted and had on the computer monitor, as sample calendar page for February 2014. It is from the MVAS 75th anniversary calendar she is preparing. It featured a poem from the late MVAS member George Pitcovich as well as several images of and by MVAS members. The calendar will have the MVAS schedule as well as celestial events listed. The calendars will go for around $10 each. Jodi had an order form, but will also have it at the November meeting. She needs images form members. They can be astrophotos or of MVAS events. She will include them in the calendar. Please see Jodi if you would like to order one or two. She hopes to have these ready for the MVAS Christmas Dinner on Dec. 7th. The MVAS 2014 schedule was discussed next.

Phil noted that the June and July regular meeting dates were new moon weekends and that these might be OTAA convention nights for the CVAS or CAA. This presented a conflict in attending these OTAA events. Phil had no idea what the OTAA schedule for 2014 would be. One solution was to move our meeting night up one week in June and July. Roy McCullough move to do this. With a second from Karin DiNardo the motion carried by voice vote. Phil next needed confirmation that we will have our OTAA events on May 2 (at Scenic Vista) and the regular OTAA meeting on August 23rd. (at the MVCO). Jodi McCullough moved to set these as our OTAA dates. Karin DiNardo seconded it. All were in favor by voice vote. These dates will be sent to the other OTAA clubs.

Jodi brought up the finder chart book series she introduced at the last meeting. She only has 2 orders which is probably not enough for a bulk order which come with a 10% discount. She had them on hand for inspection. Lou suggested that she bring them to the Christmas Dinner when there will be a larger attendance. It is gift buying season too (spouses beware!) Jodi then brought up the observation of Comet ISON on November 16th from the War Memorial Stadium at Lisbon High School. The data has been confirmed. She needs a few volunteers to bring binoculars or a small scope. It is a Saturday morning starting at 5:30 AM and runs until 7:00 AM. There is AC power available if needed. Phil noted an error in his report on ISON viewing from the MVCO. The low tree line is due east and not south east as he remembered. However, the tree obstruction in ISON's direction could be reduce greatly if one observed from the top of the hill near the drive way. He checked it out prior to this meeting. Binoculars and/or cameras on tripods might do the trick. Rosemary noted there is flat land east of the Kent State Branch on Rt. 5. But she has not investigated how this might become available.

Steve had the MVAS merchandise on hand and was ready to sell some. Regarding the roof project, the Trustees have not yet had a meeting to discuss this. This project won't likely start until next spring. The trustees hope to schedule a meeting soon.

NEW BUSINESS: Jodi brought up the 2nd Bill Pearce Stargaze in Austintown Park and when to have it next year. Phil suggested we based it on the 2013 event. This was on the Friday night before our June 15th Scenic Vista night. It was near 1st quarter Moon. This situation would occur on June 20th (Austintown) and June 21st (Scenic Vista). It was then realized that we had just moved-up our meeting night to the planned Scenic Vista night. Phil noted that we have had business meeting at Scenic vista in the past. These were poorly attended. A discussion seemed to indicate that a business meeting before the public event at Scenic Vista was not okay. Jodi moved to move the June meeting back to June 28th and have the Pearce Stargaze on Friday June 20 and the Scenic Vista night on June 21st. Karin seconded the motion. All were in favor of the change. [secretary addendum: June 19 is the last qtr. Moon. We

may want to revisit this topic. The 1st. qtr. Moon desired for Scout observing occurs on Wednesday, June 5. 2014.]

Phil next suggested we reconsider the format for host duties in the interest of reducing costs for the hosts and to encourage more members to participate. He thinks making snacks and deserts as a standard fare rather than the more expensive and difficult hot meals with desserts. It was decided to discuss this further at the November meeting. Decide if you want to stay with the 3 person per meeting schedule, hot meals or try something different next year. We should vote on it at the December meeting when folks sign-up for hosting duties.

GOOD OF THE SOCIETY: Jodi watch a sun grazer comet on the SOHO website and is hoping that ISON will be visible from the same website. ISON is a sun grazer as well.

VISUAL REPORTS: Phil reported 26 variable stars in October, 12 were done with the 25". Also M13 and M57 with the 25". Roy has spotted ISON with 20x80 binoculars. Jodi and Roy tried for a triple transit of Jovian shadows across Jupiter. They also watched an ISS disappearance into the Earth's shadow. They noted all the "wows" from children and parents as the looked at the Moon at the Beach Creek Nature Center in Alliance. Larry sees the winter constellations every morning as well as an Iridium Flare one time.

ADJOURNMENT: Lou DiNardo called for adjournment at 8:53 PM. Paul Baker seconded. All in favor. We thank our host Larry Plante for the pizza. Jan and Paul Baker supplied cookies and brownies, Phil Plante had donuts and cider. Don Durbin had pie. Lou and Karin DiNardo supplied the soft drinks. The next meeting will be at YSU on November 23, 2013. Meeting begins after the 8:00 PM. planetarium show. Scheduled hosts is Margie Dimoff with the DiNardo's bringing the beverages. PASSWORD: name a comet. *-minutes by Phil Plante*

ANNOUNCEMENT: Arrive early for the next meeting and go to Room 2000 across from the planetarium. Lou DiNardo will give a talk on telescopes. This begins at 7:15 PM.

MVAS REMINDERS

November Meeting. Please remember that this meeting is one week early due to Thanksgiving weekend occurring on our regular weekend. This has been standard fare for at least 30 years. Also arrive early to attend Lou DiNardo's talk on telescopes. It begins promptly at 7:15 PM. It will be in classroom Room 2000 which is across the hall from the planetarium. Just poke your head in and you'll see us. With luck we can all move into the planetarium to see the 8:00 PM show. The meeting will be held after the show.

ISON Viewing. Stay tuned to MVAS e-mails to see what will happen for the November 16, 5:30 AM public observing at Lisbon High School War Memorial Stadium. Jodi and Roy are conducting this. Communicate with them if you would like to help out by bringing your tripod mounted binoculars or a small grab 'n go scope. This event is before perihelion when ISON makes its closest pass around the Sun. Perihelion is Nov. 28th which is Thanksgiving Day. Let's hope the only turkey we'll have to deal with is that famous bird will all the trimmings. On that day you might want to visit the SOHO website to watch for any images of ISON as it rounds the Sun. Hopefully we won't have to call ISON the proverbial "turkey" -- as they used say.

Now, most folks are off from work this Holiday weekend. On Sunday morning December 1st., ISON is a few days past perihelion and just climbing out of the solar glare... rising earlier before the Sun. If ISON survives, this might be a good time to have look from the MVCO. The main observatory grounds will have trees blocking the view. But a spot up at the top of the hill right off the driveway should get one high enough to peer over the tree tops to the southeast. Tripod mounted binocs and DSLR's might give splendid views. We can make plans at the November meeting. Hmmm. we've never had a real breakfast at the MVCO....Sunrise is around 7:30 AM. Bacon and egg time.

Holiday Spending. We all have some special new astronomy toy on Santa's list. But if it's too much yet for your checkbook to cover, please consider one of the MVAS 75th Anniversary Calendars ($10) or get some new MVAS clothing. We have a supply that's ready to move. Below is a price list:

Hoodies:	Price remains the same.	$25.00 ea.
Sweat shirt :	(hoodie design) New item.	$16.00 ea.
Polo shirt:	Price remains the same.	$25.00 ea.
Mock Turtle:	Price remains the same.	$25.00 ea.
T-shirts, all:	Price remains the same.	$10.00 ea.
Knit hats:	Price remains the same.	$10.00 ea.
Stretch caps:	New item ball cap.	$16.00 ea.
Regular caps:	Price remains the same.	$10.00 ea.
MVAS Patches:	(hat logo) New item.	$ 6.00 ea.

Visual Reports. Please start using your Visual Committee Report forms. It's easy enough. Just check off the items you happen to observe. There are naked eye as well as telescopic objects. With ISON on the way, you have a good object to get started with. You can download a PDF version from the MVAS website. Don't worry about the date in the heading. Scratch it out and put in the current year if needed. Turn them in to the Secretary (Phil) at any meeting. Ditto for "Homework". Please try a sketch. I can give you some pointers but I need to see what you can do now. Sketching might give you a whole new reason to drag out a telescope or a new way to observe. It slows you down and makes you actually observe the object. You can probably print just the Homework page from the PDF Meteorite. BTW: we now call it the "MVAS Observations" form.

MVAS ACTIVITIES

OCT 5th Star party at the MVCO. Guess what? It was rainy and cloudy. No one reported going.

OCT 12th Observe the Moon Night. Guess what? It was cloudy with breaks. An improvement. Larry and Phil Plante went out to the MVCO along with three pizzas. They saw peeks of Luna through those passing holes. "Night of the Living Dead" horror movie, a CSN Concert DVD and some live NASCAR racing made it to the flat screen TV. A rare and quite evening. We may try for another Lunar night next fall.

OCT 26 Halloween Party. It was a cold and cloudy night - of course. Only 9 people showed up. There was plenty of of chow and good spirits to share. We all enjoyed the 2011 Sci-Fi comedy "Paul" on the big screen TV. This was well recommended by our friends at Black River. See more details and a few pics in the Gallery Section.

Observer's Notes:

A Comet's Friendly Sky

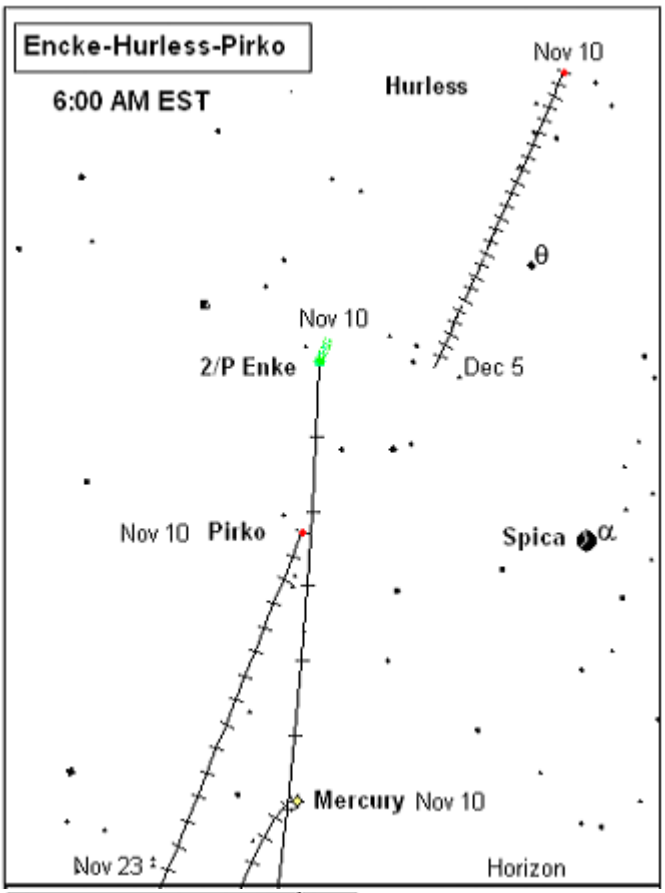
As we lead-up to the perihelion of ISON, we'll have a chance at another comet on those November mornings. Periodic comet 2/P Encke has been visible for weeks, but now it will be fading. During our time frame it goes from magnitude 7.4 on Nov. 9th to a peak of magnitude 7.1 on Nov. 17th. This is where it gets up close to the horizon and Sun for its perihelion on the 21st. From here it begins to fade, down to 9th magnitude by Dec. 7th. These predictions are from JPL/Horizon ephemerides. Encke should be visible in binoculars, just to the left of Spica, i.e. northward along the horizon on November 12th. On the chart to the right, all tracks show the position of the objects at one day intervals (tick marks). The tracks all start on November 10th as so labled. From about the 10th to the 14th you might get lucky and spot Mercury a few degress above the horizon.

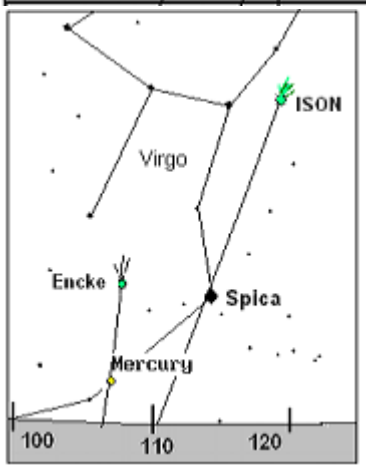
But there is something special to ponder as you scan this area. Two late friends of the MVAS have been so honored to have had an asteroid named after them. Ohio's esteemed female variable star observer Carolyn Hurless (1934-1987) and our own MVAS member and YSU Planetarium technician Rick Pirko (1953-2008). It so happens that these two asteroids: (3434) Hurless and (22105) Pirko are in the same area of the sky at this time. And near comet Encke. But be warned though: you will never see them. Both are at 20th magnitude. You'll need something like a 240 inch scope to have a shot. Good luck with that! Perhaps an adventurous CCD imager might try, but it will be a challenge to pick out the asteroids from the many faint stars in the field. By the way, there are many dozens of other 20th mag asteroids in the area. The main point is to think of these two local astronomers when you look at the area. The MVAS is well represented in the heavens. How unlikely could it be that these two namesakes asteroids would be so close together in the sky- to greet the comet of the century (ISON).

Carolyn Hurless was born November 24, 1934 in Lima, OH. She became interested in astronomy at the age of 13. Soon she joined the Lima Astronomy Club and would make an 8" F/4 reflector. She would learn variable star observing from legendary AAVSO observer Leslie Peltier. Carorlyn would go on to make 78,876 variable star estimates. It was the variable star work that brought her together with MVAS variable star observers in the 1960's. She would often attend our OTAA meetings at the MVO and observe variables with the 16" Cassegrain. Jack Draper made his last telescope for her, finishing the 6" refractor just before his death in 1967.

Rick Pirko was a long standing member of the MVAS serving simultaneously as Treasurer and Observatory Director in the mid 1980's. Rick would often serve as our emcee at OTAA meetings. The new 8" building is a direct result of Rick's generosity by paying his own work crew to construct a proper frame for the building. He would on occasion, take MVAS members into the sky in his plane or glider. His work at YSU touched many people and inspired many with the wonders of the sky and sundials. Rick loved eclipse photography and sunrise-set images of the sun and foreground objects.

2P/Encke is a periodic comet that orbits the Sun every three years. Its orbit was computed by Johann Franz Encke. Like Halley's Comet, it is unusual in being named after the calculator of its orbit rather than its discoverer. During the November 21, 2013 perihelion passage, the comet is expected to brighten to magnitude 7.0





In relation to ISON, Encke will be to the lower left of ISON. The chart at left shows the pair on the morning of Nov. 12 at 6:00 AM. Encke will be about 6.3° to the left (north) of Spica. At 6:00 AM the positions are as follows:

	Alt.	*Azm.*
Encke	10.2°	107.4°
Spica	9.4	114.1
ISON	24.3	119.6
Mercury	3.1	106.7
Mars	44.8	130.1

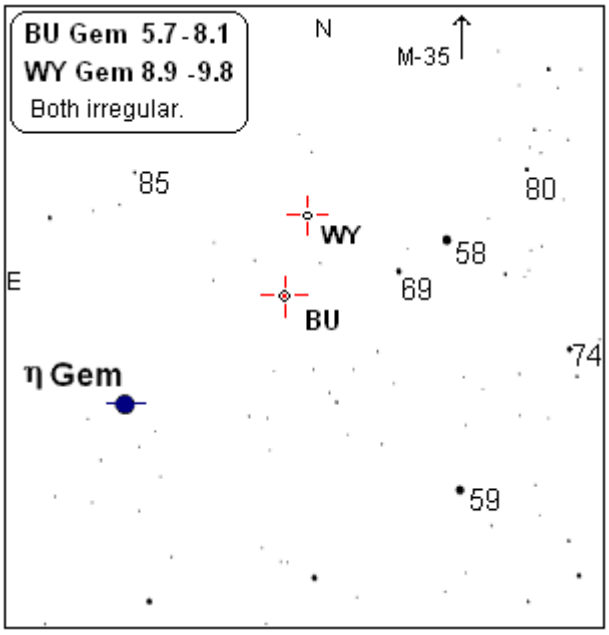
SE= 135° Azimuth

MVAS Homework: Eskimo Nebula

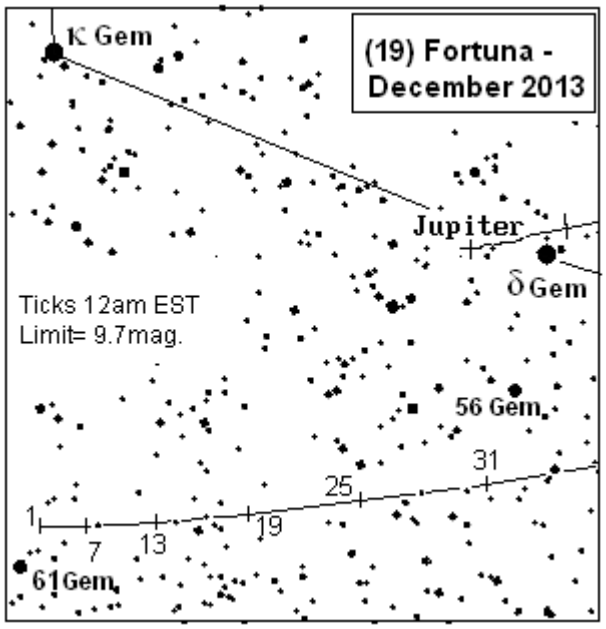
The Eskimo Nebula (NGC 2392), is also known as the Clown-face Nebula or as Caldwell 39. It is a bipolar, double-shell planetary nebula. It was discovered by William Herschel in January 1787. The formation resembles a person's head surrounded by a parka hood. Hence the term "Eskimo". But a more politically correct name now in use is "Clownface nebula". The surrounding gas shell is composed of the outer layers of a Sun-like star. The visible inner filaments were ejected by a strong wind of particles from the central star. The outer disk contains unusual light-year long filaments. Clownface lies more than 2,870 light-years away and is visible in a small scope. But as you'd expect, larger scopes give a more tantalizing view; 8 inch or larger. How big do you need to see the face?

MVAS OBSERVER CHARTS

Variable star of the month: **BU Geminorum** (*abbrev:* BU Gem). This is a great variable to follow with binoculars or finder scope. Especially when it is cold outside. BU Gem will often be somewhere between the 5.8 and 6.9 comp stars sitting to the west. While you're here, check in on WY Gem just north of BU. It will be a bit fainter most of the time. You will only know if you look. Eta is also a close double star and variable. Check the Gemini constellation chart, next page, for Eta's comp stars).



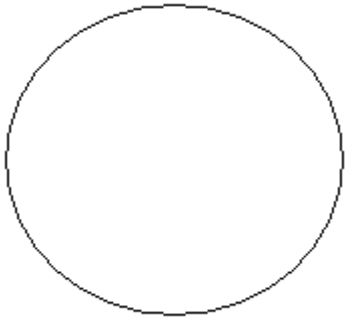
Asteroid of the month: (**19) Fortuna.** Fortuna starts off December just NW of 61 Gem and about 1/2 deg SW of the Eskimo Nebula. It brightens little during the month. From 10.6 to 9.9 magnitude. A scope will be needed to follow it. Note: a good reason to check the area is that on Dec.10th, 5PM EST, Jupiter will pass about 15 arcminutes north of δ Gem.. Give these a shot. Fill out your observing forms!



MVAS OBSERVATIONS - DUE DECEMBER 2013

OBSERVER_____

Featured object: Eskimo Nebula - NGC 2392 . Please try a sketch. Use as much magnification as your scope and sky will allow, in order to get a sizable image in the eyepiece. As always, draw a faint outline of the planetary and any prominent features. Then fill in with graphite shadings. Remember this is a negative image you are making. Darker pencil marks represent brighter portions of the image. And so on. Don't forget the stars!



NGC 2392 Observation:

Date:_____ Time(EDT)_____ Scope_____

BU Gem magnitude estimates:

Date:	Time:	estimate:	Instrument:
_____	_____	_____	_____
_____	_____	_____	_____

(19) Fortuna Observations:

Date:	Time:	Instrument:	magnification:
_____	_____	_____	_____
_____	_____	_____	_____

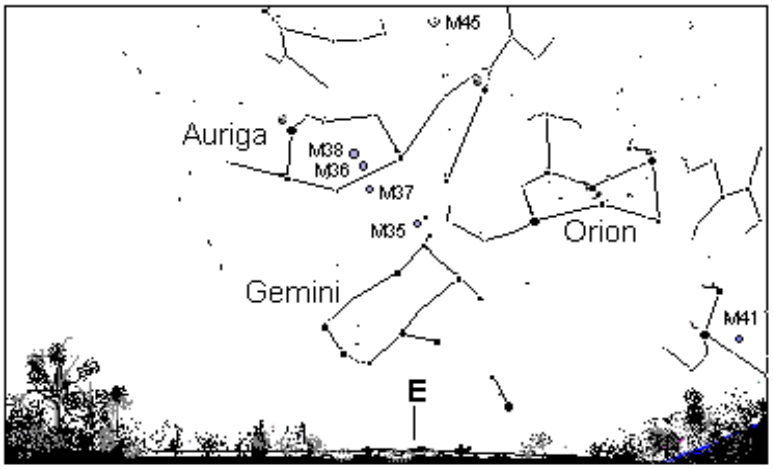
Other Objects in Gemini to observe

D. Sky	Date	Scope	**Dbl.**	Date	Scope	SEP	MAG	SPLIT?
M- 35	_____	_____	α Gem	_____	____	4.2"	1.9 - 3.0	Y / N
N- 2129	_____	_____	δ Gem	_____	____	5.8"	3.6 - 8.2	Y / N
N- 2420	_____	_____	15 Gem	_____	____	25.2"	6.7 - 8.2	Y / N

Lunar Occultations (see Sky Almanac):

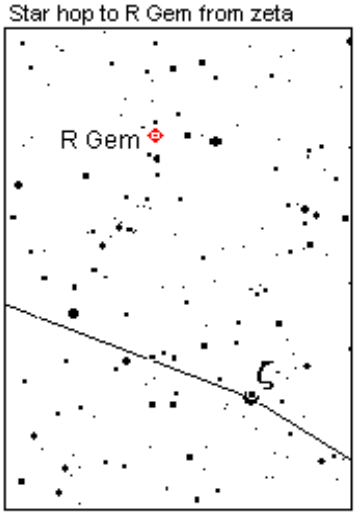
Star	(UT) Date	Time	Scope	magx.	Event(circle)
_____	_____	_____	_____	____x	R D
_____	_____	_____	_____	____x	R D
_____	_____	_____	_____	____x	R D

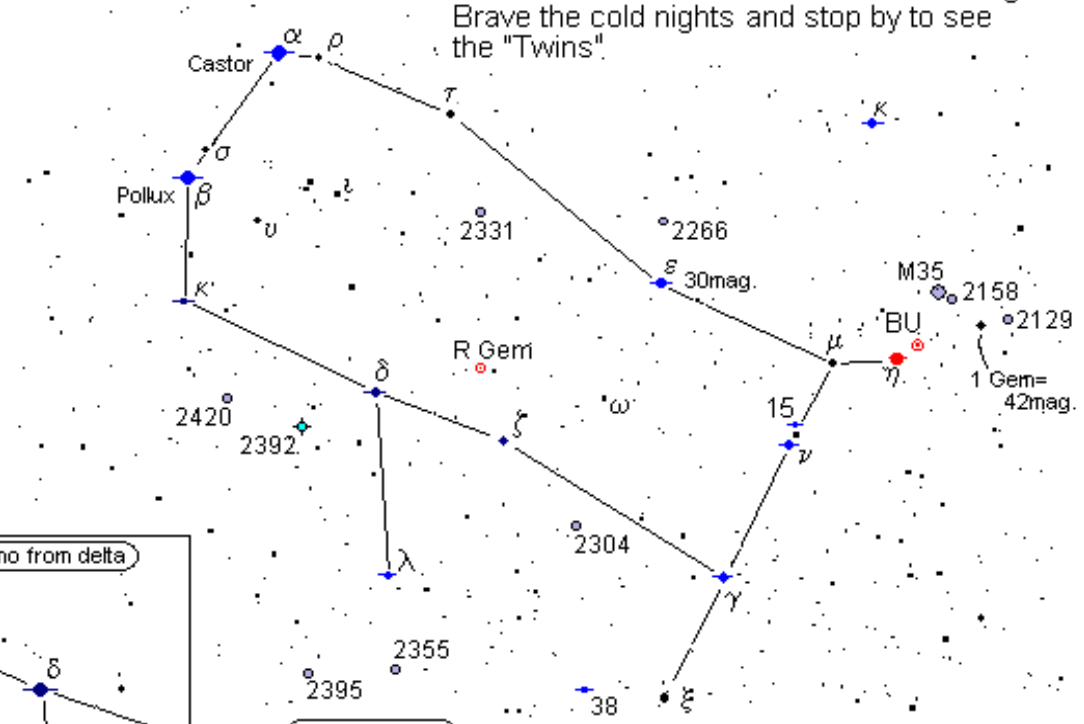
Constellation of the Month — Gemini



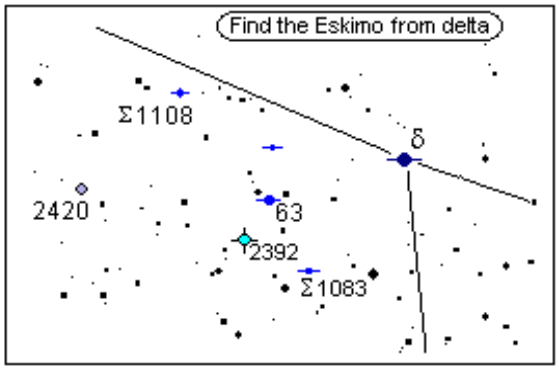
In mid November you'll find Gemini rising in the east, about 20° high at 10PM. Open cluster M35 might be glimpsed naked eye in a really dark location. Binoculars sweep it up nicely and a telescope brings in details as well as NGC2158. Jumping from double star δ Gem you'll get to the Eskimo Nebula and a few other interesting doubles. Zeta(ζ) Gem is a nice binocular double though it is an optical one. Nice colors. From zeta hop to the variable R Gem. Use ε and 1 Gem as comp stars for η (binoculars). Magnitudes are labeled. There are many open clusters and doubles to check. Some will be a challenge! Brave the cold nights and stop by to see the "Twins".

Star hop to R Gem from zeta

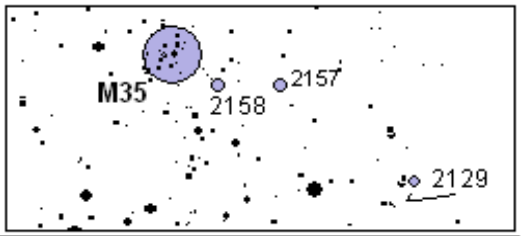




Find the Eskimo from delta



to keep track, cross-out or check the objects you observe. Photo-copy the chart to use at the eyepiece.



Deep Sky Objects

Obj.	mag.	size	notes
M35	5.1	28'	200 stars
NGC 2158	8.6	5'	rich, faint stars
NGC 2129	6.7	6'	40 stars
NGC 2157	8.4	8'	20 stars
NGC 2266	9.5	6'	50 stars
NGC 2331	8.5	18'	30 stars
NGC 2355	9.7	9'	40 stars
NGC 2392	9.2	15"	PN, Eskimo Neb.
NGC 2395	8.0	12'	30 stars
NGC 2420	8.3	10'	100 stars

Double Stars

star	magnitudes		sep.	"colors"
α Gem	1.9,	3.0	4.2"	both lemon white
β Gem	1.1,	13.7	29.7"	orange, ash
δ Gem	3.6,	8.2	5.8"	amber, purple
ε Gem	3.1,	9.6	110"	white, blue
η Gem	3.5,	6.2	1.8"	golden, ash
λ Gem	3.6,	10.7	9.7"	greenish, white
15 Gem	6.7,	8.2	25.2"	tangerine, violet
63 Gem	5.3,	10.9	43"	yellow, purple
Σ1083	7.3,	8.1	6.7"	yellow, silver-white
Σ1108	6.6,	8.2	11.6"	yellow, bluish

Variable Stars:

	est.		mo. day yr.
R Gem	____	mag. on	____/____/____
R Gem	____	mag. on	____/____/____

η Gem (3.2 - 3.6mg.)

est. mo. day

____/____/____

____/____/____

Instruments used:

_____ on _____

_____ on _____

_____ on _____

2013 DECEMBER SKY ALMANAC

Solar and Lunar (EST).

Date	Sunset	Moonrise	Moonset
1	4 : 56	05 : 46a	— : —
5	4 : 55	— : —	08 : 16p
8	4 : 55	— : —	11 : 59p
13	4 : 55	— : —	04 : 00a
17	4 : 56	05 : 36p	— : —
21	4 : 58	09 : 16p	— : —
25	5 : 00	12 : 11a	— : —
29	5 : 03	04 : 30a	— : —

PLANET WATCH

	Venus	Jupiter	Uranus
	Sets	*Rises*	*Sets*
1	7:47p	7:38p	2:29a
5	7:44p	7:20p	2:13a
8	7:40p	7:02p	1:57a
13	7:34p	6:45p	1:41a
17	7:25p	6:27p	1:25a
21	7:14p	6:09p	1:09a
25	6:59p	5:50p	12:54a
29	6:41p	5:32p	12:38a

December 2013

S	M	T	W	T	F	S
1	2	3 ●	4	5	6	7
8	9 ☽	10	11	12	13	14
15	16	17 ○	18	19	20	21
22	23	24	25 ☾	26	27	28
29	30	31				

Asteroid for December 2013 (19) Fortuna

Date	Transits	RA hr. min	Dec. deg.	Alt.	Azm	Magnitude
		topocentric				
1	3 : 28 am	07 : 45.1	+18.9	41°	100°	10.6
7	3 : 02 am	07 : 42.9	+18.9	45	106	10.5
13	2 : 35 am	07 : 39.5	+18.9	50	112	10.4
19	2 : 07 am	07 : 34.9	+19.1	55	120	10.2
25	1 : 38 am	07 : 29.5	+19.2	60	129	10.1
31	1 : 08 am	07 : 23.4	+19.4	64	141	9.9
		(at midnight)		*(at midnight)*		

Variable Star of the Month: **BU Gem** 5.5- 8.1 irregular

Celestial Highlights

Date	UT hr	
3	00	**NEW MOON**
5	00	U Cyg at max. 7.2 mag.
9	15	**FIRST QUARTER MOON**
14	06	Geminids. moon +90%
17	09	**FULL MOON**
22	14	Ursids. moon-77%
24	00	Herculina at opposition
25	13	**LAST QUARTER MOON**

LUNAR OCCULTATIONS FOR DECEMBER 2013

Civil (24hr) date	hr	min	sec	UT date	hr	min	sec	Ph	Moon % illum.	Moon alt	Moon azimuth	Star name	Star Mag.	event PA	dbl./ sep.
6	17	30	12	*6*	22	30	12	D	21+	32°	207°	ZC 3021	7.3	039°	0.25"
7	21	17	32	*8*	02	17	32	D	32+	13	246	ZC 3184	7.0	120°	0.06"
7	21	30	30	*8*	02	30	30	D	32+	11	248	46 CAP	5.1	146°	NA
8	21	03	30	*9*	02	03	30	D	43+	27	237	KAPPA AQR	5.0	022°	0.10"
12	19	27	46	*13*	00	27	46	D	83+	55	139	ZC 290	6.1	098°	NA
12	22	03	04	*13*	03	03	04	D	83+	58	211	SAO 92761	6.9	257°	NA
13	19	54	12	*14*	00	54	12	D	90+	55	129	SIG ARI	5.5	098°	NA
14	19	45	24	*15*	00	45	24	D	95+	47	111	ZC 532	7.1	093°	0.03"
16	3	48	54	*16*	08	48	54	D	99+	31	268	ZC 718	6.0	124°	NA
20	22	58	07	*21*	03	58	07	R	87-	28	98	50 CNC	5.9	232°	NA
27	7	25	20	*27*	12	25	20	R	30-	36	174	86 VIR	5.5	270°	1.20"

D= disappearance. Good occultation event.

d= disappearance, the star's magnitude approaches the observing limits of 200mm objective

R= reappearance. Good occultation event

r= reappearance, the star's magnitude approaches the observing limits of 200mm objective

All disappearances (D) occur on the eastern limb (left side in the sky). Reappearances (R) always occur on the western limb.

Position Angle (PA): tells where along the west limb to watch for a reappearance.

PA is referenced to celestial north: North=0° East=90° South=180° West=270°

Occultations computed using Occult v3.6 (I.O.T.A.)

Variable star data from AAVSO. All other data computed with MICA 1800-2050 (Willman-Bell)

GALLERY…..

Halloween Party 2013

Early arrivals included Don Durbin to install a new internet antenna and restore WiFi at the MVCO. Phil Plante came out to put new plastic over the 50" mirror blank before winter. These chores had to be done while there was still some daylight. Below one can see the cloudy skies with a threat of drizzle in the air. The wind was fairly strong too. The poor weather likely reduced the attendance as we usually get nearly 20 people. We had 9 this year. Next years Halloween Party will be on hiatus due to our 75th Anniversary celebration. Maybe we'll just get scary at the October business meeting next year.

Below is the newly covered 50" mirror blank. It had been covered with plastic sheeting since October 2008. It has cracked and deteriorated since then. In addition, the 16" painting crew put the glass window panes that were behind the desk for 35 years, on top of the 50". This was not a good situation for protecting the rough ground surface of the mirror blank. Water/ice damage in the form of micro-cracks on the surface could result. Finally with some free time, Phil removed the glass panes and old plastic. A a new plastic sheet was installed. Some scrap pieces of 2x4 lumber on top of the plastic allowed the glass panes to easily slide on top. Instead of stacking them (3 high), he set them side by side (overlap) to cover the entire mirror. There are a few smaller panes standing at the sides of the shelter for better sideways protection from wind and snow. These are hard to see so use care to avoid injury if you intend to fiddle around in there. But please don't.

A huge, monstrous spider had spun its web to capture its next meal. Likely victims were those attempting to use the outhouse. This may explain the low turn-out for the Halloween event...Well....I had to do *something* that was scary. This was photo was actually taken the morning after the OTAA meeting in August. An orb spider built this web, apparently overnight- between the tent and the 8" building. I had walked through this space several times the night of the OTAA with no encounter with it. It was head-high. The only way to see it lit by the rising Sun happened to have the outhouse in the background. A Halloween shot 3 months early. Now if we can only get monster spiders to snag all those mosquitoes!

Early food arrivals included Larry's chili (L) and Virginia's BBQ pulled pork. Eventually Pandian had pizzas. A wide assortment of baked goodies filled out the menu. Rosemary brought a monster carrot cake. And Virginia had apple square thingies. Yum. Some of the desserts never got open. Time to tone it down?

Maryanne was the only one with a real Halloween costume. Ironically it looks a little like the space alien character "Paul" the so named movie that we watched.

There would have been more photos but as soon as I took the alien shot, my memory card was full. I was reluctant to delete some images to make room. But you get the idea with these few. It was a nice last official get-together at the MVCO for 2013. There may be groups observing if ISON survives the hype and the Sun.

- all photos above by P. Plante

October 2013 Astro Images

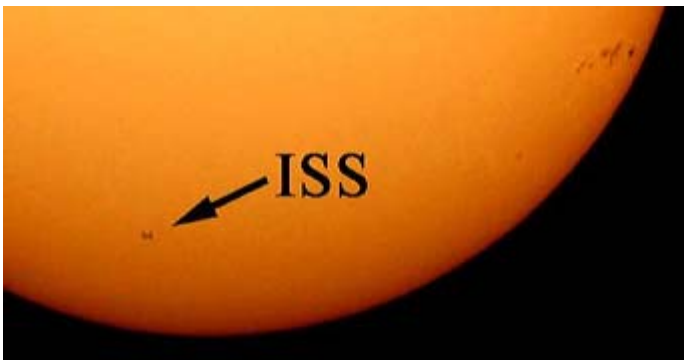
Jodi and Roy McCullough captured comet ISON on October 23. Galaxy 3279 is just visible to the upper left.

Jodi and Roy McCullough captured comet LINEAR C/2012 XI on October 23. Both images : 6" refractor and Canon 60 Da.

Jim Haklar captured this colorful star trail image of Mars and Regulus.

Mike Heim got Jupiter on October 12, 2013. With Europa (inner) and Io outermost.

Mike Heim imaged the Wizard nebula in Cepheus on Oct. xx 2013. Color filters used were H-α and OIII. This mapping is best for planetary nebula and Veil Nebula as examples



Isaac M. Kikawada (friend of the MVAS) captured an ISS transit of the Sun on October 18th from Mountain View, CA. Isaac is fond of solar imaging as well as eclipse work- sometimes alongside your editor.

Thanks to all the imagers that make this a Glorious Gallery.