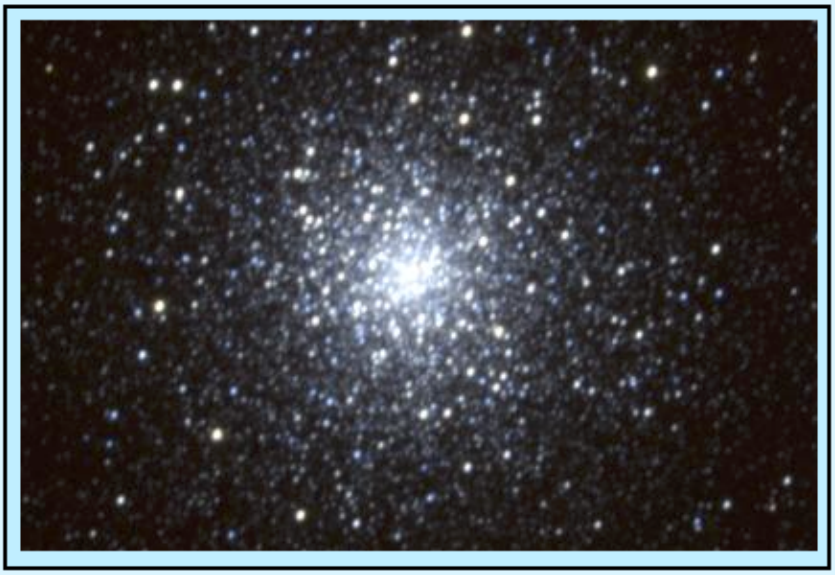
THE METEORITE

Globular Cluster M-79

in Lepus



NOAO PHOTO

Newsletter of the Mahoning Valley Astronomical Society, Inc.

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Meteorite Editor: Phil Plante
1982 Mathews Rd. #2
Youngstown OH 44514

THE METEORITE

Newsletter of the Mahoning Valley Astronomical Society, Inc.

DECEMBER 2012

MVAS CALENDAR

DEC 8 MVAS Christmas Dinner and Annual Meeting. Lariccia Center in Boardman Township Park. Doors open 6:00 PM.

DEC 8 MVAS Officer Elections during Annual Meeting. Paper ballots are cast before the meeting.

JAN 12 Telescope seminar at YSU. 1:00 PM to 3:00 PPM

JAN 26 Business meeting at YSU. After 8:00 PM show.

Ward Beecher Planetarium at YSU

DEC 7,8 8:00PM. *2012: The Maya Prophecy.* Drs. Matt O'Mansky and Pat Durrell will give a joint presentation regarding the significance of Dec. 21, 2012, both as to the origin of the Maya calendar and the people who created it, and an exploration of the many astronomical and doomsday predictions.

DEC15, 22 8:00 PM *Holiday Lights.* Combines lights, music, and visual effects with the wonders of the winter season and outer space.

DEC 31 6PM-9PM *First Night.* This annual First Night program is a fun music and full dome image celebration. Show every half hour.

JAN 12 1PM-3PM. *So You Got A telescope.* This popular program presented by the MVAS welcomes scope users of any age that need help on setting up their scopes.

MVAS, P.O. BOX 564 NEWTON FALLS, OH 44444-9998
MVAS Homepage- http://mvobservatory.com

NEWS NOTES

Connection: All hot gas. In the early Universe, it is believed filaments of gaseous matter pervaded the cosmos in a giant web, with galaxy clusters forming at the densest nodes. Much of that tenuous, filamentary gas has remained undetected. Astronomers expect it could be found interacting between galaxy clusters. Here, the filaments are compressed and heated up, making them easier to spot. ESA's Planck space telescope has made the first conclusive detection of a bridge of hot gas connecting a pair of galaxy clusters across 10 million light-years of intergalactic space. Planck's discovery of a bridge of hot gas connecting the clusters Abell 399 and Abell 401, each containing hundreds of galaxies, represents the first opportunity to observe such a hot gas bridge. The presence of hot gas between the billion-light-year-distant clusters was first hinted at in X-ray data from ESA's XMM-Newton, and the new Planck data confirm the observation. Early analysis suggests the gas could be a mixture of the elusive filaments of the cosmic web mixed with gas originating from both clusters.

A Planetary Reborn. Astronomers have found evidence that a dying Sun-like star is briefly coming back to life after casting its gassy shells out into space, forming a planetary nebula. This mimics the possible fate that our own Solar System faces in a few billion years. A planetary nebula is so called because it looks like a planet when viewed with a small telescope. It is formed in the late stage of the evolution of a sun-like star. To produce energy for several billion years, stars use nuclear fusion of hydrogen into helium in its core. A star then undergoes a series of energy crises related to the depletion of hydrogen and subsequent contraction of the core. These crises culminate in the star expanding a hundred-fold to become a red giant. Eventually the outer envelope of the red giant is ejected and moves away from the star at a relatively sedate speed of less than 100,000 miles per hour. The star meanwhile is transformed from a cool giant into a hot, compact star that produces intense ultraviolet (UV) radiation and a fast wind of particles moving at about 6 million miles per hour. The interaction of the UV radiation and the fast wind with the ejected red giant envelope creates the planetary nebula, seen as a spherical shell.

In rare cases, nuclear fusion occurring in the shell region surrounding the star's core heat the outer envelope of the star so much that it temporarily becomes a red giant again. The sequence of events -- outer envelope ejection followed by a fast stellar wind -- is repeated on a much faster scale than before, and a small-scale planetary nebula is created inside the original one. In a sense, the planetary nebula is reborn. The planetary nebula Abell 30, (a.k.a. A30), shows one of the clearest views ever obtained of this special phase of stellar evolution. A close-up view of A30 showing X-ray data from NASA's Chandra X-ray Observatory and Hubble Space Telescope (HST) data shows optical emission from oxygen ions, hydrogen ions and x-ray emissions. Studies of A30 and other planetary nebulas help improve our understanding of the evolution of sun-like stars as they near the end of their lifetime. The X-ray emission reveals how the material lost by the stars at different evolutionary stages interact with each another. The structures seen in A30 originally inspired the idea of reborn planetary nebulas, and only three other examples of this phenomenon are known.

MINUTES OF THE NOVEMBER MEETING

NOVEMBER 17, 2012 at YSU

The evening began with the planetarium show "Skywatchers of Ancient Mexico". It told the story of the Aztec, Maya, Toltec, and Olmec peoples of ancient Mexico. By watching the Sun, Moon and Venus, they were able to develop calendars and make eclipse predictions with modern day accuracy. Much of their architectures were also based on celestial events. The show was followed by a quick sky tour given by Sharon Shanks.

The meeting was called to order at 9:30 PM by President Sam DiRocco. Roll Call was taken. Twenty-four members gave a password, many repeats. Four guests attended. They included Debbie Hiem, Dominic and Nicholas Mattuissi and Bob McCully. Bob was interested in membership; to be addressed later in the meeting. A Call for the Reading of the Minutes was given. Greg Higgins moved to suspend the reading. Dan Schneider seconded the motion. A unanimous voice vote accepted the minutes as they were published.

TREASURER'S REPORT: The Report was read by Steve Bartos. There were no questions or further discussion. Don Durbin made a motion to accept the Report. With a second from Paul Baker, a unanimous voice vote adopted the Report.

General Fund	**10/1 thru 10/31 2012**	
OPENING BALANCE:	$	8,382.91
CLOSING BALANCE:	$	8,613.27
AVAILABLE FUNDS (NON-RESERVED):	$	4,449.15
ACCOUNT NET GAIN/LOSS FOR THIS PERIOD:	$	+230.36
INCOME:		
DUES	$	40.00
ASTRONOMY CALENDARS		50.00
MVAS MERCHANDISE		60.00
ASTRONOMY MAGAZINE RENEWAL		60.00
CHRISTMAS PARTY RESERVATIONS		20.00
INTEREST		0.36
TOTAL INCOME	$	230.36
EXPENSES:		
CK# XXXX NO EXPENSES RECORDED	$	0.00
TOTAL EXPENSES	$	0.00
Reserved Funds		
KEY DEPOSITS (MVCO)	$	250.00
CASH FROM ORIGINAL OAD FUND (FOR LAND)		3,914.12
TOTAL RESERVED FUNDS	**$**	**4,164.12**

2013 DUES PAID: Dennis Marko

CORRESPONDENCE: No mail received or reported.

COMMITTEE/OFFICER REPORTS: *IMAGING COMMITTEE: VISUAL COMMITTEE: LIBRARIAN:* No reports given.

OBSERVATORY DIRECTOR'S REPORT: Larry Plante reports that the well pump has been shut down for winter. Parts were disconnected and screening was installed to prevent "critters" from having access to any openings. All else was in good shape, remaining as it was after the Halloween Party.

OLD BUSINESS: Phil Plante pointed out that the 2013 Christmas meeting date was slated for December 7th, 2013. There would only be one weekend (Thanksgiving) between the Christmas dinner and the November 23rd meeting. The membership had Okayed the Dec. 7th date at the October meeting. He asked the membership if this short time span needed to be reconsidered; thus moving the date back to December 14th. This would allow time for MVAS business to take place and to make dinner reservations (head count, etc.) before the December meeting. By a unanimous hand count, the December 7, 2013 date remained in place.

Tony Mehle next gave a report on this year's Christmas Dinner menu and circumstances. The menu will be nearly the same as last year's. But, no salad. The cavatlli and meatballs will be replaced with a penne pasta dish and a rice dish will be offered in addition to the green beans. Tony advised that no alcoholic beverages are allowed in the Park. Please bring your favorite non-alcoholic beverage. Desserts are handled so there is no need to bring these. Tony will provide ice, coffee, cups and utensils. Meal price is still $10.00 per person. Phil will need to give Tony a final head count by December 1st. Please contact him via e-mail or phone with your reservation plans. You may also mail your reservation and pre-payment to Phil by December 1st. MVAS can also accept payment at the door if you have made a reservation. Everyone should have received a PDF MVAS Roster last month that included postal and e-mail addresses for both Steve and Phil. It is best to mail pre-payments to the Treasurer Steve Bartos as a first choice (to simplify the process). Confused yet?

The Annual Meeting and dinner will be held in Boardman Township Park in the Larricia Community Center, in the Stambaugh Room. It's on the right as you enter. For GPS machines, the address of the park is 375 Boardman-Poland Rd. (Rt. 224), Boardman, OH 44512. A park map will be included in the December *Meteorite*. Look for the white church with steeple (St. James) as a landmark near the entrance. Doors open at 6:00 PM, Hors D'oeuvre's are self serve at 6:15 PM. Shrimp Cocktail will be available, compliments Larry Plante. Buffet style dinner at 7:00 PM. Dress is casual- family style restaurant. We need to have the place cleaned and vacated by 10:00 PM.

Officer elections will be conducted prior to the business meeting. Four officer positions are up for election. President, Vice President, Treasure and Secretary. These are two year terms. In addition, two Trustee positions will need to be filled. One will be appointed by the four above officers. The second will be elected by the general membership at the January meeting. Paper ballots will be provided to cast votes for the four officers, before and during dinner. Rosemary Chomos did her best to contact the membership to locate candidates. These are the nominees for:

President:	Bill Pearce
Vice President:	Dr. Rich Mattuissi
Treasurer:	Steve Bartos (incumbent)
Secretary:	Phil Plante (incumbent)

Provision for write-in votes will be provided on ballot.

Trustee candidates listed by position they desire.

Appointed by the four officers (only is one selected): Lou DiNardo or Bob Danko. This is for a two year term.

Appointed by general membership (one selected): Maryanne Hoffman or Dave Ruck. This appointment is by vote and takes place at the January 2013 meeting. This is for a one year term. A paper ballot will be used.

NEW BUSINESS: No new business was discussed.

GOOD OF THE SOCIETY: Bob McCully introduced himself to the members. Got his first scope a year ago and just got his

second. He attended many planetarium shows and found a few of our meetings interesting. He wished to become a member. Sam DiRocco nominated Bob. Several members seconded the nomination. With that a unanimous voice vote accepted Bob as a member. Welcome to the Society Bob. We hope you will enjoy stargazing with us as well as the food and friendships.

Phil noted that he received the new book "Engineering, Design and Construction of Portable Newtonian Telescopes" by Albert Highe (autographed). This book was donated to the Terry Biltz Library at the MVCO by Isaac Kikawada and Heidi Gerster from Mountain View, CA. They are eclipse chasing friends of Phil and are fans of the *Meteorite*. They have visited the MVCO and are also friends of the MVAS. We extend a heart felt thanks for this generous donation.

Rich Mattuissi noted that he had contacted Brother Guy Consolmagno (authored "Turn Left at Orion) and it appears he won't be back to the area until 2014. Rich was hoping to bring him in to speak to the club. Who pay's?

VISUAL REPORTS: Phil Plante reported he had 8 vsos thus far in November, plus one solar eclipse. Chris Stephan sent a report from Florida that he had made 278 variable star estimates. Jodi and Roy McCullough also saw the solar eclipse (as reported via e-mail group). Paul Baker reported his scope was now locating objects and that one night he spotted Jupiter which had a red cast over it. There was discussion as to the cause of this. Bill Pearce went to Don Durbin's to observe. It was the night Don imaged Alberio and posted this to the e-mail group. Larry Plante and Tony Mehle watched the Leonids from Greg Klocek's property west of Scenic Vista (a former MVAS dark sky site candidate). They saw around 45 meteors about half were sporadic meteors. One was bright with a orange-metallic light to it. It got cold and a 2AM quit time was in order.

ADJOURNMENT: Adjournment came at 9:48 PM. We thank our host Dan Schneider for the sandwiches and chips. The Annual Christmas Dinner and Meeting will be at Boardman Park on December 8, 2012. Doors open at 6:00 PM. Meeting begins after dinner around 8:00 PM. Hosted by Tony Mehle and family. PASSWORD: Best ho-ho-ho. *-minutes by Phil Plante*

MVAS ACTIVITIES- The Eclipse

Three MVAS members made the trip to Cape York, Australia to witness the November 13 total solar eclipse. This happened on November 14 here at home. The prime viewing area crossed over eastern coastline near Cairns, Australia. The eclipse began shortly after sunrise which happened at 5:35 AM. First contact occurred at 5:44 AM. The Sun was only 14° high for second contact at 6:38 AM- the start of totality. Weather forecasts looked gloomy for the coast with clouds and rain predicted. Early mornings had been promising with breaks in clouds along the horizon. Jodi and Roy were in Port Douglas and opted to drive 2.5 hrs inland over the dividing range (mountains) to seek better weather. Phil was stuck at Trinity Beach although one Aussie offered to drive him to Mareeba, which showed clear sky promise. In the end, all three got to see the eclipse. The McCullough's had great clear views of the entire eclipse. Phil and 1,000 people on Trinity Beach got to see the last half of totality as obscuring clouds miraculously lifted above the eclipsed sun. The next day the three met serendipitously in Daintree Rainforest, and again later to share ice cream. A great adventure in Oz. Good'ay. (No one ever said that!)

MVAS REMINDERS

Please make reservations for the Christmas Party before December 1st. Contact the Secretary or the Treasurer as soon as possible to do this. We need a head count at least 5 days before the Party. Phone Phil at 330-757-4037 or Steve at 330-750-9862 to make reservations - arrange payments. It's in the same building as it has been in the last two years. (see map) Dinner price is $10 per person. Dues of $40 per year for 2013 can be paid at the meeting. Payments for reservations will be accepted at the door as well. Please vote before you dig in!

MVAS CHRISTMAS DINNER

To be held in Boardman Township Park (on Rt. 224). It's in the Larricia Community Center, Stambaugh Room. This building is located at the southern end of the park, past the Park Offices. Look for signs. Meal $10/person.

6:00 PM-- Doors open. Social hour and business.

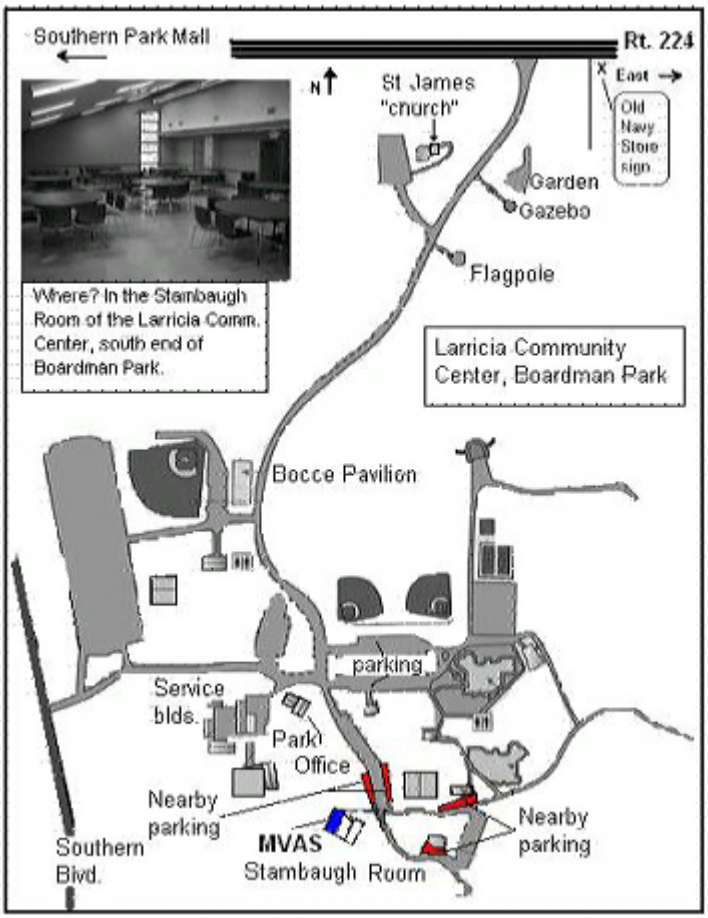
6:15 PM -- Snacks and shrimp cocktail.

7:00 PM -- Dinner time, till 8:00 PM.

8:00 PM -- Break for last minute transactions, etc.

8:30 PM -- Annual meeting and door prize drawing.

10:00 PM -- Clean-up and vacate room by 10:00 PM.



CHRISTMAS DINNER MENU

(Food will be catered by Larricia's, compliments of Tony Mehle)

Snack trays:	Veggie & dip tray, cheese & pepperoni tray, and shrimp cocktail will be available during the social hour. (Shrimp by Larry Plante)
Chicken Galore:	Marinated, grilled skinless boneless chicken breast with peppers & onions & mozzarella cheese in a light Marsala sauce.
Beef Tenderloin:	Sliced filet of beef in mushroom wine sauce.
Sausage:	With peppers, and Onions. Very mildly hot.
Penne Pasta:	Pasta in Vodka sauce.
Sides:	Parsley Potatoes & Green Bean casserole, rice.
Dessert:	Mocha House Cheesecakes.

Coffee, Ice, cups, plates and utensils will be provided. Bring your favorite beverage (all non alcoholic).

Please try to be on time. Dress is casual, as per family restaurant. You are free to go formal if you like.

Sign in when you get there. There will be a host list for the 2013 meetings to fill up. Please consider this duty as the list is passed around. We thank you in advance.

There are limited parking spots right in front of the building with handi-cap spaces for anyone that requires one. Other spots are near by, and only a short walk away. Farther away are spots near the baseball fields and across from the park office.

The best way in is from Southern Boulevard (to the west). There is a main entrance on Rt. 224 near an Old Navy store sign. You can see the old white church from Rt. 224 as you approach the entrance. The room is in the back end of the park. Hope to see you there.

Observer's Notes ….

A Sign for Everywhere

A trip to Australia, or anywhere, adds many natural sights and experiences to the memory banks. Most relate to common things found in daily life back home. A few of these experiences can transcend commonality, invoking new thoughts, perceptions or even visions of what could be. Usually a total eclipse of the Sun leaves its own mark in your mind. This might be why so many people chase these things around the world. Each one is different on a personal level. But on a few occasions a traveler may also find a man-made artifact that can change one's perspective. One happened to me on the ride back from the Daintree Rainforest tour. As the van slowed in traffic, I caught a glimpse of an altered road sign. Road signs are usually vandalized into profane or infantile messages. This sign was different. Two letters were added to a sign that was meant to instruct drivers to carefully merge traffic into one lane. It took a second to register but the message rang out clearly.

Instead of being profane, it was profound. The sign originally read "Form 1 Lane"; directions for the merging of traffic. Someone spray painted a letter "p" at the beging of the word *Lane* and a letter "t" at the end. Thus forming the word "Planet". The sign now read "Form 1 Planet". Instantly it was brilliant and succinct in its message. It became directions for humanity. For survival. From environmental to political actions, humans need to travel into the future in unison. Otherwise we risk crashing into each other or destroy the surrounding landscape.

I wondered why a graffiti artist could have such far ranging thoughts. Investigating on-line, I found that an Australian artist named Richard Tipping, from Wangi Wangi, in New South Wales, (1983-1992) made such road signs. He was known as a 'visual poet. He described his work as 'concrete poetry'. Poetry that appreciates words and even letters for the way they look. Their aesthetic appeal as art objects. These manipulated road signs were a continuing theme in Tipping's visual puns and in his urban commentary. The sign I saw was not likely an original, but a rough duplicate. The individual that painted the sign was probably not a vandal but more likely another "artist", eager to get the message out.

This is the Christmas season and tidings of "Peace on Earth" and "Good Will towards Men" are common. The sign points the way forward. As astronomers we are in a position to use the sky to unite humanity. The organization "Astronomers without Borders" has the motto, "One People, One Sky". The sign points the way. This Holiday when you have a quiet moment, ponder how you can evoke such sentiment at the next public event. You can try by connecting the sky that belongs to everyone, into global harmony. The night sky is a heritage and inspiration we all share. Past, present and future. It's a tough road to haul, but hey, the sign points the way. *-Phil Plante*

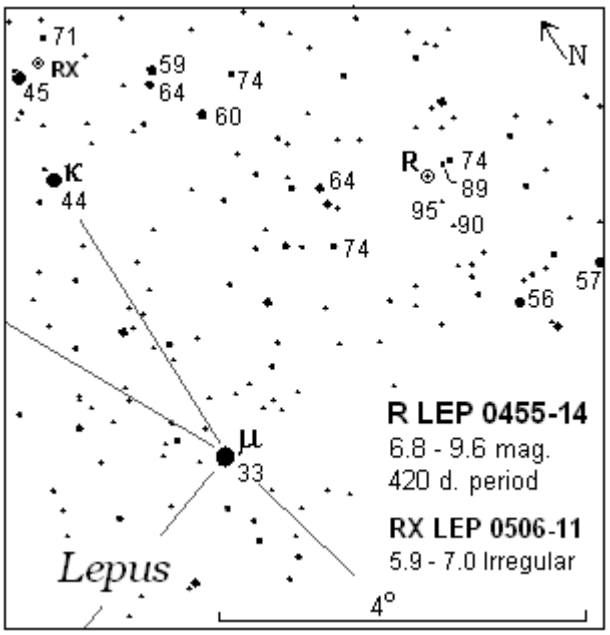
MVAS Homework: M-79

M79 is unusual for a globular cluster in that it's located far from the galactic center. Most globulars are grouped around the center. It lies about 42,000 light years away from us and about 60,000 light years from the galactic center. It appears 8.7' in diameter. This diameter corresponds to a diameter of about 118 light years. It has the same condensation as M-13 but is twice a far away. An 8" scope is needed to begin resolving its stars. The cluster is slightly elliptical at a position angle of 45°. The cluster is receding from us at about 200 km/sec.

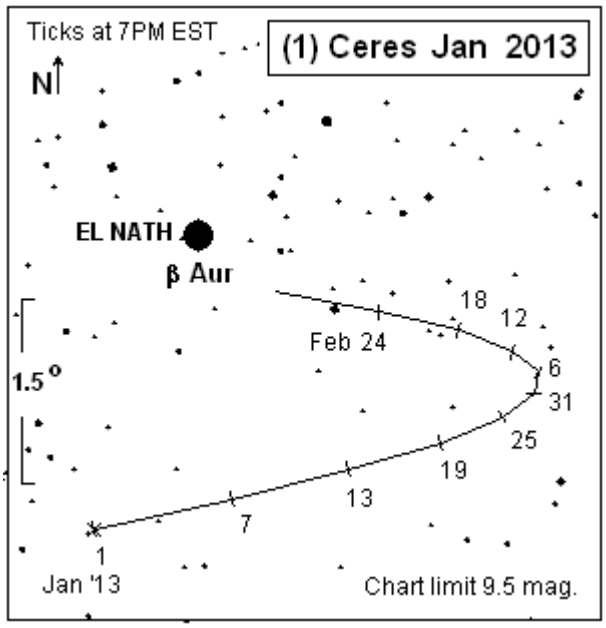
In 2003, evidence showed that M79 might be a new addition to the Milky Way, coming from the Canis Major Dwarf Galaxy. This galaxy is interacting with the Milky Way. M79 was discovered in 1780 by Pierre Méchain, who reported it to Charles Messier, who then cataloged it. It was first resolved into stars and recognized as a globular cluster by William Herschel in 1784. M-79 is found low under Orion, usually in poor seeing. Take a chance and try to spot this unusual globular.

MVAS OBSERVER CHARTS

Variable star of the month: **R Leporis** (*abbrev:* R Lep). This star is a colorful treat- some have called it a blood drop in the sky. It can be one of the reddest stars you'll see. At maximum light it appears less red- the usual behavior for carbon stars. Small scopes or even binoculars can catch it hiding under Orion. Around the end of January 2013 it should be at minimum light; with its deepest color. It will gain in brightness until it merges with the Sun in late spring. Follow the brightening and note how the color changes. Or does it?



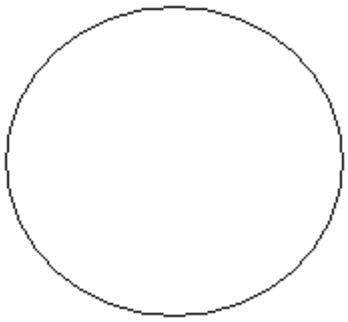
Asteroid of the month: (**1) Ceres.** This is the first of three months of observation. Ceres is at opposition on Dec. 18, 2012 at magnitude 6.4. It fades after opposition and starts off January at magnitude 7.1, fading to 8.4 by the end of February. Ceres was the first asteroid discovered, on January 1, 1801. Now classified as a dwarf planet (with Pluto). You can follow it with binoculars. Get familiar while it is brighter, to follow as it dims.



MVAS OBSERVATIONS - DUE JANUARY 2013

OBSERVER_____

Featured object: M79. This is often cited as the only globular cluster in the winter sky. It is often hidden in the glow of city light if you observe from town. This is due to its low elevation in Lepus. But even suburbia can offer a pleasing view on a transparent night. Again a small scope will work. Can you spot it in binoculars? Please try a sketch in the circle below.



M-79 Observation:

Date:_____ Time(EDT)_____ Scope_____

R Lep magnitude estimates:

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

(1) Ceres Observations:

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

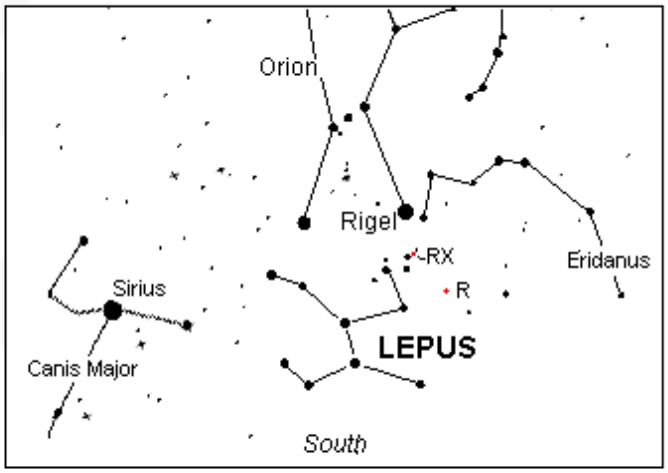
Other Objects in Lepus to observe

D. Sky	Date	Scope	**Dbl.**	Date	Scope	SEP	MAG	SPLIT?
IC- 418	_____	_____	ι Lep	_____	____	12.0"	4.5 - 9.9	Y / N
N- 1832	_____	_____	κ Lep	_____	____	2.0"	4.4 - 6.8	Y / N
N- 1964	_____	_____	γ Lep	_____	____	96.9"	3.6 - 6.3	Y / N

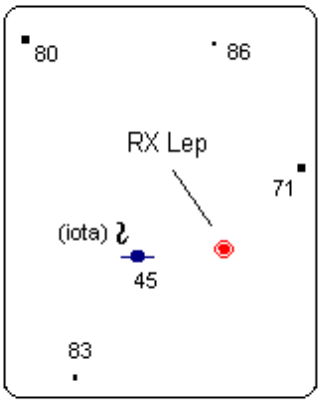
Lunar Occultations (see Sky Almanac):

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

Constellation of the Month — Lepus

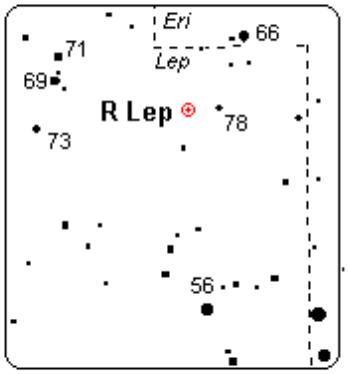


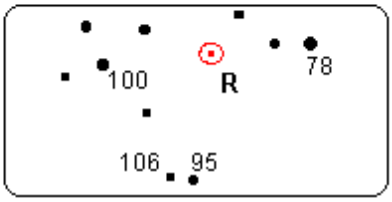
As the mighty hunter Orion and his dog Canis Major trek across the southern sky, Lepus the hare scrambles underfoot in an eternal race to escape the hunter. Not a usual stopping ground for telescope users, Lepus is best seen when on the meridian. As Webb suggested, a chance to observe "should not be thrown away". Lepus also hides in the glow of city lights from suburban sites. A pair of binoculars will help pick up the main stars of Lepus. With binoculars you can follow the variable star RX Leporis, just south of Rigel. In darker skies you can find the globular cluster M79. An 8"' telescope will begin to resolve it's outer fringes. With a telescope of 6" or more aperture you should be able to split all of the double stars listed below. Can you split the close ones with a smaller scope? A few faint galaxies might be good targets for large scopes at a dark sky site. The variable star R Leporis can be followed with binoculars when it is near maximum light. It has been known as Hind's "Crimson Star" and described as a drop of blood on the sky. The color gets deeper as the brightness dims. How do you see it? With its low sky altitude, Lepus is well presented for comfortable veiwing compared to objects high overhead. Lepus may escape Orion, but don't let it escape your scope.

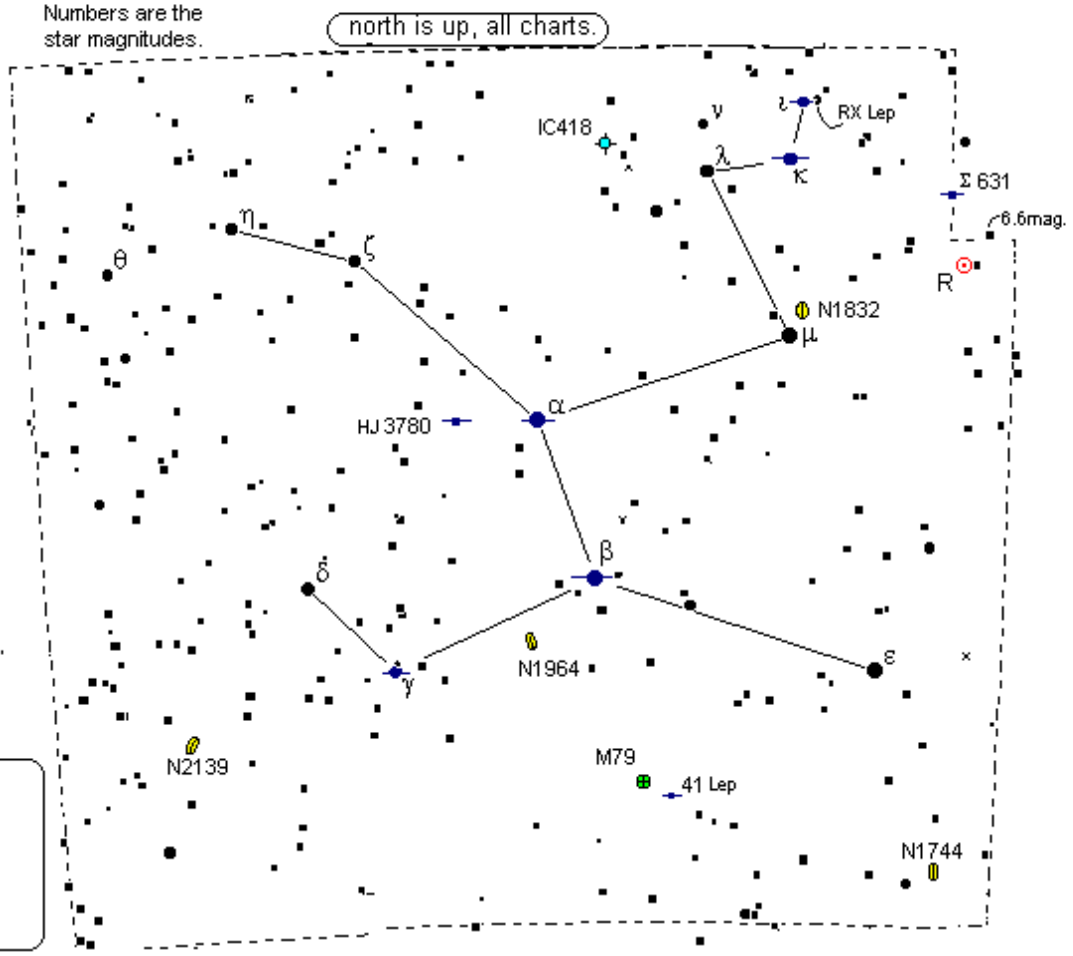


Variable star charts:
Numbers are the
star magnitudes.

north is up, all charts.







DOUBLE STARS			
α	2.6 - 11.2	36.2"	yellow & gray
β	3.0 - 7.5	2.3"	- - -
γ	3.6 - 6.2	96.8"	yell. & garnet
ι	4.5 - 9.9	12.7"	green & orange
κ	4.5 - 7.4	2.3"	- - -
41 Lep	5.4 - 6.6	3.5"	- - -
Σ 631	7.5 - 9.0	5.6"	- - -
HJ 3780	6.7 - 6.7	76.0"	- - -

DEEP SKY			
M79	GC	7.7mag.	6' diam.
IC418	PN	10.7	12" diam.
N1832	GAL	12.0	2' x 1.5'
N1964	GAL	11.6	4.8' x 1.8'
N1744	GAL	11.6	7' x 4'
N2139	GAL	12.0	2.2' x 1.6'

VARIABLE STARS		
R Lep	5.5 to 11.7 mag.	427 day period
RX Lep	5.0 to 7.4 mag.	60 day period

Check list

α	____	M79	____
β	____	IC418	____
γ	____	N1832	____
ι	____	N1964	____
κ	____	N1744	____
41 Lep	____	N2139	____
Σ 631	____		
HJ 3780	____		

Instruments used:

____ on ____

____ on ____

____ on ____

____ on ____

RX Lep was ____ mag. on ___/___/____

R Lep was ____ mag. on ___/___/____

Solar and Lunar (EST).

Date	Sunset	Moonrise	Moonset
1	5 : 06	9 : 38p	9 : 59a
5	5 : 10	12 : 52a	12 : 00p
9	5 : 14	5 : 27	3 : 13
13	5 : 18	8 : 44	7 : 57
17	5 : 22	10 : 48	— : —
21	5 : 27	1 : 06p	3 : 11a
25	5 : 32	4 : 28	6 : 20
29	5 : 37	8 : 34	8 : 32

PLANET WATCH

	Jupiter	Saturn	Venus
	Transits	*Rises*	*Rises*
	10:05p	2:53a	6:21a
	9:47p	2:38a	6:26a
	9:30p	2:24a	6:33a
	9:14p	2:10a	6:40a
	8:57p	1:55a	6:45a
	8:41p	1:40a	6:50a
	8:24p	1:25a	6:53a
	8:08p	1:10a	6:56a

January 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 January 2013 (1) Ceres

Date	Rises	RA hr.	RA min	Dec. deg.	Alt.	Azm	Magnitude
		topocentric					
1	3 : 23 pm	5	: 32	+26.0	36º	86º	7.1
7	2 : 53 pm	5	: 26	+26.3	42	90	7.3
13	2 : 24 pm	5	: 22	+26.5	47	94	7.4
19	1 : 56 pm	5	: 18	+26.8	53	99	7.5
25	1 : 29 pm	5	: 15	+26.9	58	105	7.7
31	1 : 03 pm	5	: 14	+27.2	62	111	7.8
	EST	*(at 7:00 PM)*			*(at 7:00 PM)*		

Variable Star of the Month: **R LEP** 6.8 - 9.6mag 432 day period

Celestial Highlights

Date	UT hr	
1	12.3	Metis at oppostion: 8.2m
3-4	05	Quadrantids after midnite
5	04	**LAST QUARTER MOON**
11	19	**NEW MOON**
16	00	R Lep maximum 6.8m
18	23	**FIRST QUARTER MOON**
22	03.1	Jupiter 0.5º N. of Moon
27	04	**FULL MOON**

LUNAR OCCULTATIONS FOR JANUARY 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.*
2	0	: 58 :	17	***2***	05	: 58 :	17	**R**	78-	34º	119º	ZC 1528	6.7	275º	117"
13	17	: 29 :	28	***13***	22	: 29 :	28	**d**	6+	23	232	ZC 3154	7.4	051º	0.10"
14	18	: 01 :	02	***14***	23	: 01 :	02	**D**	13+	30	230	ZC 3290	7.3	116º	0.60"
22	21	: 10 :	23	***23***	02	: 10 :	23	**D**	85+	69	172	106 TAU	5.3	104º	.005"
23	17	: 39 :	11	***23***	22	: 39 :	11	**d**	91+	31	089	ZC 892	6.7	040º	NA
23	18	: 10 :	04	***23***	23	: 10 :	04	**D**	91+	36	094	chi 1 ORI	4.4	105º	NA
24	0	: 42 :	56	***24***	05	: 42 :	56	**D**	92+	52	248	chi 2 ORI	4.6	045º	1.00"
24	18	: 34 :	58	***24***	23	: 34 :	58	**d**	95+	31	092	ZC 1038	7.1	109º	0.05"
26	0	: 43 :	47	***26***	05	: 43 :	47	**d**	99+	62	210	ZC 1176	7.6	054º	NA
28	3	: 50 :	11	***28***	08	: 50 :	11	**R**	98-	44	236	omega LEO	5.5	307º	0.79"
31	4	: 15 :	48	***31***	09	: 15 :	48	**R**	82-	43	193	ZC 1726	6.7	267º	NA

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=0º East=90º South=180º West=270º

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

GALLERY…..

Stuff…..

Mike Heim was vigilant in November. M-1 above.

Mike also captured M-33 in Triangulum.

Clouds interfered with Phil Plante's imaging attempts of the eclipsed sun. Still an awesome experience with 1,000 people present. They let out quit a roar as the sun broke through.

Phil also nabbed the diamond ring at third contact. Bumped camera causing blurred image. You get what you get!

(R-L) Roy, Jodi and Phil ran into each other in the Daintree Rain forest the next day after the eclipse. No planning involved.

Early morning clouds at Trinity Beach foretold the problems during totality. All the clouds cleared out soon as totality ended.

The McCullough's got a great shot of promenences and a double diamond ring at 3rd contact. Also some inner corona is still visible. Great shot!

A pin-hole design by Jodi, projected by the eclipsed sun.

Great shot of the Holy Grail of eclipse chasers- the corona. McCulloughs succeeded again!