

THE METEORITE

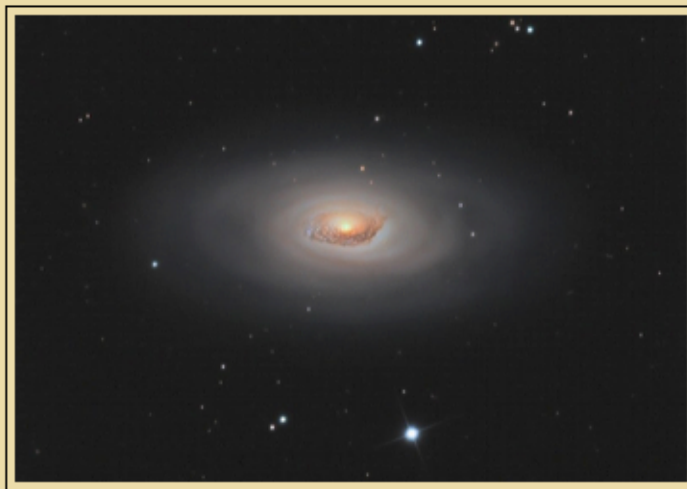


The Black Eye Galaxy

M-64

NGC 4826

In Coma Berenices



Source: Andrea Tamanti © 2007

Newsletter of the Mahoning Valley Astronomical Society, Inc.

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APRIL 2013

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Meteorite Editor: Phil Plante
1982 Mathews Rd. #2
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NEWS NOTES

Close Encounter: Many have already heard the news: late next year, a comet will arrive at Mars. "There is a small but non-negligible chance that Comet 2013 A1 will strike Mars next year in October of 2014," says Don Yeomans of NASA's Near-Earth Object Program at JPL. "Current solutions put the odds of impact at 1 in 2000." The nucleus of the comet is probably 1 to 3 km in diameter, and is coming in fast, at around 125,000 mph. So if it hits Mars, it could deliver as much energy as 35 million megatons of TNT.

A near-miss is far more likely than an impact. But even a near miss could be a big event. The latest orbit solutions put the comet somewhere within 300,000 km of the red planet at closest approach. That means Mars could find itself inside the comet's coma. Visually, the comet would reach 0th magnitude, that is, a few times brighter than a 1st magnitude star, as seen from the Mars. Closest approach should occur sometime between 6:00 PM to 7:00 PM EDT (~22 to 23 hr UT) on October 19, 2014. That is a Sunday evening in the USA. The comet will be approaching from below the ecliptic at an inclination of 129°.

At close approach on the date given, Earth-based scopes will show Mars at 5.73 arc seconds in diameter. The Solar angle will give Mars a strong phase effect at 0.89% illumination. The central meridian at that time (22hr UT) will be 333° CM. Syrtis Major will be past the CM but approaching the Martian limb. Sinus Meridani will be approaching the CM. Sunset is at 6:36 PM EDT. Mars will be at 23° altitude and at 192° azimuth (west of meridian) in a bright sky, at closest approach for eastern US. At this time it is unclear where the comet will pass; in front, behind, above or below Mars. The Mars Science Laboratory (Curiosity) is positioned at longitude 137° and will be on the far side of Mars during close approach, as seen from Earth. Cameras on all of NASA's spacecraft currently operating at Mars should be able to take images of Comet 2013 A1. The issue with Mars Odyssey and the Mars Reconnaissance Orbiter will be the ability to point them in the right direction; they are designed for looking down, not up. Mission engineers will have to figure out if this is possible. Stay tuned.

A.P.B. There is distressing news that one of two iron meteorites in the possession of the Department of Physics and Astronomy/ Ward Beecher Planetarium at YSU, has been stolen. Both are marked "Canyon Diablo" indicating they are part of the impactor that created Meteor Crater in Arizona. The smaller of the two is missing. It weighed 960 gm. Similar meteorites of this type sell for \$500 to \$1500. All are asked to keep an eye open for such an item placed for sale on any of the various internet sites (i.e. Astro-mart, e-bay, and any meteorite dealer). Please report suspect sales to the Planetarium.



Photo of missing meteorite above.

Newsletter of the Mahoning Valley Astronomical Society, Inc.

MVAS CALENDAR

- APR 20** 6th Annual Chili-fest at the MVCO. 7:00 PM.
- APR 27** Business meeting at the MVCO 8:00 PM
- MAY 11** MVAS-OTAA Scenic Vista Stargaze. 7:00 PM.
- MAY 25** Business meeting at the MVCO. 8:00 PM

NATIONAL & REGIONAL EVENTS

- MAY 10-12** **5th Annual Michiana Star Party.** At Dr. T. K. Lawless Park, South Bend, Indiana. \$25 advanced reservations, \$30 at gate. 18 and younger free. Speakers, vendors, camping & hiking, dark sky observing. <http://michiana-astro.org/>
- MAY 23-27** **2013 RTMC Astronomy Expo.** This is the 45th "Riverside Telescope Makers Convention". It will be held at the YMCA Camp Oakes, five miles southeast of Big Bear City. Register on-line. \$50 after May 10th. Vendors, speakers, meals \$8-\$12. <http://www.rtmcastronomyexpo.org/index.html>
- JUN 6-9** **Cherry Springs Star Party.** Cherry Springs State Park Coudersport, PA. Sun. Single-\$40, Family-\$55, Student-\$30. Availability for the star party is limited. Early registration recommended. <http://www.astrohbg.org/CSSP/Information.html>

MVAS BOARD OF TRUSTEES

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Production / Editor	Steve Bartos
MVAS Webmaster	Sam DiRocco
MVAS Webmaster	Harry Harker

MVAS REPRESENTATIVES

OTAA Representative	Harry Harker
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MVAS, P.O. BOX 564 NEWTON FALLS, OH 44444-9998
 MVAS Homepage- <http://mvoobservatory.com>

MINUTES OF THE MARCH MEETING

MARCH 23, 2013 at YSU

At 7:30 PM members gathered in room 2000 for a presentation given by Jodi McCullough and assistant Roy McCullough. Titled "Comets 101", Roy fabricated a model comet from dry ice and various other chemicals; the proverbial dirty snow ball. Jodi reviewed comet origins (Oort Cloud), their orbits and tail formation. She also showed images of recent comets, leading up to PanSTARRS. After the talk, most members mounted an expedition across campus to look for PanSTARRS, low in the west. Using binoculars, they had success! We thank Jodi and Roy for the excellent presentation. Once the planetarium cleared out from the 8:00PM show, MVAS moved there to conduct the March business meeting.

The meeting was called to order at 9:25 PM with President Lou DiNardo presiding. Six of seven Trustees were present. Roll Call was answered by 27 members. Four guests included Virginia Bartos, Dominic and Nick Mattuissi and Rick Burk from the Astronomy Club of Akron (ACA). A Call for the Reading of the Minutes was made. Roy McCullough moved to suspend the reading. Paul Baker seconded the motion. With no further discussion or corrections needed, the minutes were accepted as published by a unanimous voice vote.

TREASURER'S REPORT: The Report was read by Steve Bartos. There were no questions or corrections brought forth. Mark Baker moved to accept the report. Larry Plante made a second to the motion. By unanimous voice vote, the Report was accepted as read, for the period given below

General Fund 2/1 thru 2/28 2013

OPENING BALANCE:	\$	9,758.28
CLOSING BALANCE:	\$	9,833.48
AVAILABLE FUNDS (NON-RESERVED):	\$	5,669.36
ACCOUNT NET GAIN/LOSS FOR THIS PERIOD:	\$	+75.20

INCOME:

BEREAVEMENT DONATION TO ELAINE PEARCE	\$	375.00
DUES 2013		250.00
INTEREST		0.15
TOTAL INCOME	\$	625.15

EXPENSES:

CK# 2784 DONATION - ELAINE PEARCE	\$	375.00
2785 GEAR MOTOR FOR 16" DOME		149.95
2786 OHIO TAX EXEMPT RE-INSTATEMENT (FEE)	\$	25.00
TOTAL EXPENSES	\$	549.95

Reserved Funds

KEY DEPOSITS (MVCO)	\$	250.00
CASH FROM ORIGINAL OAD FUND (FOR LAND)		3,914.12
TOTAL RESERVED FUNDS	\$	4,164.12

2013 Membership Dues Paid this period by: R. Blevins, D. Durbin, M. Heim, C. & D. Iliff (family), R. Mattuissi, G. Thomas III. Thanks to all.

CORRESPONDENCE: Phil Plante noted that he and many other members received a thank-you card from Elaine Pearce; for the thoughts, prayers, personal support and monetary gift she has received from the MVAS in the loss of her husband Bill.

Sharon Shanks read an e-mail communication from the Chagrin Valley Astronomical Society (CVAS), inviting our group to attend their 50th Anniversary Celebration at their observatory (Indian Hill Observatory - Huntsville, OH). Sharon will be a guest speaker at the August 3rd event. No other mail was noted.

COMMITTEE/OFFICER REPORTS: IMAGING COMMITTEE:

No report was given. **VISUAL COMMITTEE:** No Homework or Visual Reports were turned in. Bad weather was the excuse. Everyone that had seen PanSTARRS this night has at least one observation to put on their report form! **LIBRARIAN:** Nothing new to report regarding books and the Library.

OBSERVATORY DIRECTOR'S REPORT: Director Bob Danko was unable to attend. Assistant Larry Plante reported that he and Steve Bartos met with an employee of Rock's Roofing on March 15, 2013 to inspect the leak in the 16" building roof. Water has collected on the lat roof and a Google Earth search shows this water has been there for over a year. After a walk-around inspection a cracked seal was found near the west wall closer to the dome. There was also a leak around the vent. We were told that sitting water would destroy the roofing material's UV protection. The worker installed a temporary patch over the leaky seam (~\$150). A permanent patch would be needed to fix the leak. Since water is pending, the roof is slumped in the center; the cause possibly due to past foundation problems. The foundation has been fixed in 2011.

It was advised that the roof membrane be raised a small amount to let water drain away. This would be easy to do. Larry has the jack and steel support plate needed to raise roof joists an inch or two and place spacers under them. This will create the needed membrane "hump". In passing, the water logged joists will dry out and should not need to be replaced. There won't be a need for lot's of help to raise the roof- maybe 3 or 4 sets of hands and eyes. Dennis Marko offered the use of some 4x4 lumber but it may not be needed. This will most likely be a weekday project. Once the roof is raised, we will proceed with the permanent seal. A job quote was received for \$700 plus labor. Other issues that need to be resolved are replacing the ceiling panels- the old damaged ones have been discarded. We may have spares under the stage. There may be wiring issues in the ceiling and also the display box isn't working. We need to determine what to do with the water logged DVD player.

OLD BUSINESS: Issues with the roof were covered under the O.D. report. Jodi wanted know a time that she could give to our OTAA speaker Tom Fields. With sunset around 8:30 PM on that day and with the other OTAA activities (picnic, prizes) starting around 6:00 PM, it was decided that an 8:00 PM start time for the presentation would work. Phil reminded us of the Chili-fest on April 20th at the MVCO. Anyone that enters a pot of chili will be in the drawing for a prize. Rich Mattuissi has donated the Cambridge Herschel Object Atlas for use as a prize. He won this last year, being the Chili-fest winner. There were no objections to doing this. Rosemary will open the refrigerators before the Chili-fest as long as the weather becomes more spring-like.

NEW BUSINESS: Lou noted that our coffee pot is near the end of its usefulness. Karin DiNardo recently picked up a Bunn Coffee maker for about \$80. Lou will bring it to the next meeting.

GOOD OF THE SOCIETY: Jodi will not be able to be at the April meeting at the MVCO, and was looking for someone to give a talk. Lou hinted that he might be interested. Sam DiRocco wanted more information about events to put on the MVAS homepage calendar. He was advised to change "MVAS Business meeting" to "MVAS Monthly Meeting" as this seems more inviting and open to potential new members.

Sharon Shanks reported the disturbing news that someone has stolen a Diablo Canyon Meteorite from YSU. She asked

that members keep an eye on venues like AstroMart to see if anyone is trying to sell such an item. Going rates are from \$500-\$1,200. This meteorite came from the impactor that created Meteor crater in Arizona. See the March issue for a picture and more details.

VISUAL REPORTS: Many saw PanSTARRS this evening for the first time. Jodi, Roy and Lou had a visual sighting last Thursday. Phil got 11 variable star estimates so far in March. Chris Stephan sent an email report that he had 102 estimates using his new 16" Lightbridge scope in Florida.

ADJOURNMENT: After a motion and second from Sam and Larry respectively, the meeting adjourned at 9:54 PM. We thank our hosts Ed and Sheila Bishop for the valiant effort to bring sandwich makings, and to Mark Baker for the excellent White House Farm pies and to Maryanne Hoffman for the "springtime" lemonade and root beer. The next meeting will be at the MVCO on April 27, 2013. Meeting begins at 8:00 PM. Scheduled hosts: Dave Ruck (meal), Rich Mattuissii (Dessert), Phil Plante (beverages). **PASSWORD:** There are plenty of galaxies with common or proper names. Give us one. It would seem a few of those names were used for this meeting's password of favorite snack! - *minutes by Phil Plante*

MVAS ACTIVITIES

BinoBlast 2013: On March 9th, about 14 members made it to the MVCO for BinoBlast 2. We had mostly clear skies to start. Clouds slowly moved in later in the night around 9:00 PM. The usual food fest and good cheer made up for any clouds. Thanks goes out to all that brought food and drink. Binocular views included the easy M-objects. Phil was doing variables (of course). None of the MVCO scopes were used. It was a binocular kind of night. We will do this again next year. Look's like Galaxy Quest is replaced. But wait! Check out Observer's Notes. You might want to do your own, as your schedule allows.

16" Building Roof: On March 15, Larry and Steve met with an employee from Rock's Roofing at the MVCO. They inspected the leak that destroyed several ceiling panels and probably a DVD player. Ponding water on the roof is the source, which has been sitting on the roof since last year. A temporary patch was installed over the leaky membrane seam. It was advised that we raise the membrane/roof to allow water to drain away. Once this is done, we will have a permanent patch installed. Stay tuned for work session times for the roof raising.

Star Party Florida. Chris Stephan took part (hosted?) a star party in a residential area near Avon Park, FL. They looked for comet PanStarrs and other objects. He used his new 16" Lightbridge telescope. About 50 people came out- he reports.

Tony Mehle of MVAS was in Florida for a family-baseball vacation, so he stopped by. They had a good time observing and getting to know each other. Tony took a few photos. Here is Chris with the new 16" scope. Looks like a good time for all.



MVAS REMINDERS

2013 DUES: We are still taking dues if you haven't paid yet.

APRIL 20: Chili-Fest. Please bring your pot-o-chili to the MVCO. We have another Chili-fest in the works. Like last year, anyone that brings chili is entered into a raffle. The prize is a Cambridge Herschel Object Star Atlas. We'll start around 7:00 PM so try to get there in time to get your crock pot plugged in and ready to serve. If you can't do the chili thing, feel free to bring lite desserts, snacks or drinks. Spicy hot chili is still OK, but most seem to like a milder brew. Use the e-mail group to coordinate who will bring what.

The 8th OTAA SCENIC VISTA STARGAZE

May 11, 2013

The OTAA Scenic Vista Stargaze is held at Scenic Vista Park, just west of Lisbon, OH. Use below for Google Maps, etc:

11000 Wayne Bridge Rd. Lisbon, Ohio 44432
GPS Coordinates: 40° 44.152, 80° 48.988

This event is held in conjunction with an MVAS public star party. All OTAA members are invited. This is an excellent opportunity for OTAA clubs to have a first meeting in 2013. Please bring snacks and drinks to get you through the night. If you arrive after dark please use parking lights when possible. **Cancellations:** If predictions call for totally cloudy skies in the Lisbon area that night, no event will take place. But with nighttime partial clouds or clearing skies soon after sunset, the local public event will still be on. Distant OTAA members are welcome to give it a try under these conditions. Monitor your weather sources to help you decide on a trip. The Clear Sky Chart website link for Scenic Vista Park given below.

<http://cleardarksky.com/c/ScnVstPkOHkey.html>

SCHEDULE OF ACTIVITIES

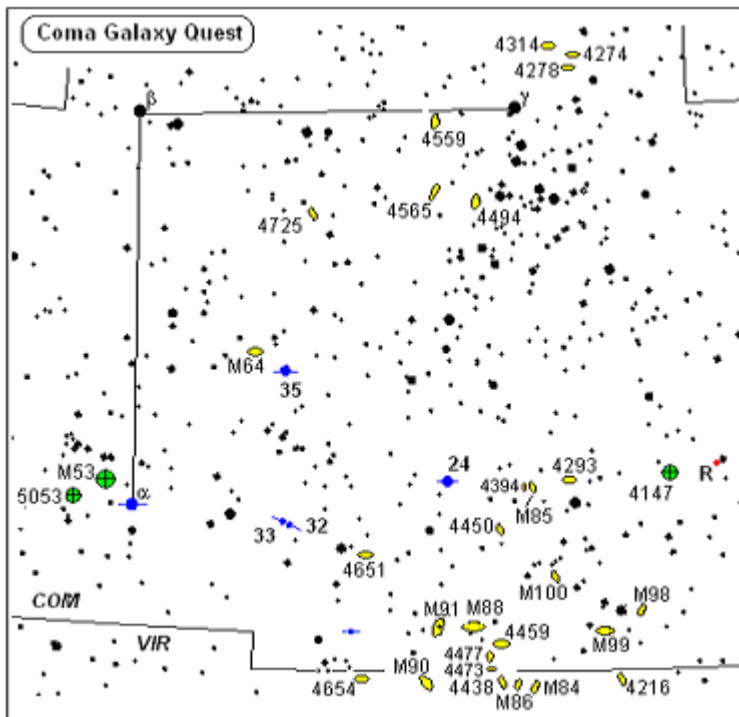
- 3:00 PM** Solar observing this afternoon. You may set-up scopes and/or tents at this time. (no camp fires). No RV connections. A Port-a-John is on site. Remember...this event has no fees, raffles, or pot-luck picnic. Just observing.
- 6:00 PM** Informal welcome for OTAA folk at the pavilion. Pass along club news and contact info.
- 9:00 PM** Sunset is at 8:40 PM. Star party begins as darkness sets in. You may use the pavilion for breaks. A coffee pot should be on, so help yourself. For a safe drive home, consider a nap.
- 6:00 AM May 12.....Sunrise, Official End of Stargaze**

CVAS 50th Anniversary: Saturday August 3, 2013.

They have a whole day of activities planned. Please check their website for details. Our own Sharon Shanks has been invited to be a guest speaker. TIME: Sat Aug 3 12pm – Sun Aug 4, 2013 12am Eastern Time. Location: Indian Hill Observatory (IHO) in Huntsburg, Ohio (map). <http://cvas.cvas-north.com/>

NOTE: The May 24th lunar occultation of β Sco at 9:48 PM is one not to miss. Get your video gear ready! **See the Almanac.**

Observer's Notes: Coma Galaxy Quest



It would seem that the usual MVAS Galaxy Quest event has been replaced with BinoBlast. Fair enough. Galaxy Quest was spectacular when we got to observe, but mostly it was always poor weather. However, BinoBlast has had two events with skies clearing for a little observing. Let's hope that trend continues. Meanwhile, we could all do a private Galaxy Quest. The skies have to be just right; transparent with moon free, dark skies. We often get these in late April and into May. It's time for a springtime sky-tour! With Coma Berenices as constellation of the month, let's do our Galaxy Quest in Coma Berenices.

This area of night sky might be a little off the beaten track for many observers. But it includes the northern portion of the "Realm of Galaxies" which meanders south into Virgo. To start, star hop due west from Arcturus, by about 15°. You should be able to spot the globular cluster M-53. From M-53 scan SW to find double star α Com. It is a 4.4 magnitude star, the brightest in the vicinity. Look for a 6th magnitude star about 45' due south to help identify α Com. Once you get it in the main scope, crank up the power. You will need at least an 8" or larger scope. At 0.65" separation, this is at the limit for an 8". My last check (April 1, 2010) was with a C-8 at 433x under steady seeing with cooled optics. I saw the classic "egg shaped" diffraction disk. Most likely, seeing conditions will limit your success; even with larger apertures. But give it a try to test your optics at least.

Switch to your lowest power eyepiece. Look about 1° SE of M-53 for globular NGC 5053. It's much fainter than M-53, if you can see this one, there is hope for seeing many of the galaxies to follow (see the list). If you can't see NGC5053, don't expect much in the way of galaxies. You still might try for M64, M86 and M87. Use a star chart to find the double star 24 Com. You will be in for a treat. It's another clone of Alberio or Almach. The golden yellow and deep blue colors are striking. This may become a favorite double for you. From here you can hop to the northern *Realm of Galaxies* at the Coma/Virgo border.

Trace a line going NW between α and γ Com. You'll find M64 and 35 Com 1/3 of the way up. Continue up that line to find the showpiece, edge-on galaxy NGC4565. The Coma galaxies in the list below are all brighter than 11.2 magnitude. These should be within grasp of 8" and larger scopes used in a dark sky location. Those galaxies brighter than 10.2 magnitude should be found in a 6" scope under the same dark sky conditions. The only way you'll know for sure is by trying. Whether successful or not, you'll gain an understanding of your equipment and your site's observing limits. Even someone in the suburbs should consider this Quest. This is exploring the heavens in its truest sense. Not knowing what to expect is at the heart of exploration and discovery. You might even find a few of the fainter galaxies not plotted on the chart to the left. Of course bigger scopes will help spot all these galaxies.

Under "notes" you'll find a brief description as found in *Deep Sky Field Guide to Uranometria* when available. In some cases the common name is given. Please use a detailed atlas for the hunt. If none are available, feel free to photo-copy the chart at left to use at the telescope for lack of something better.

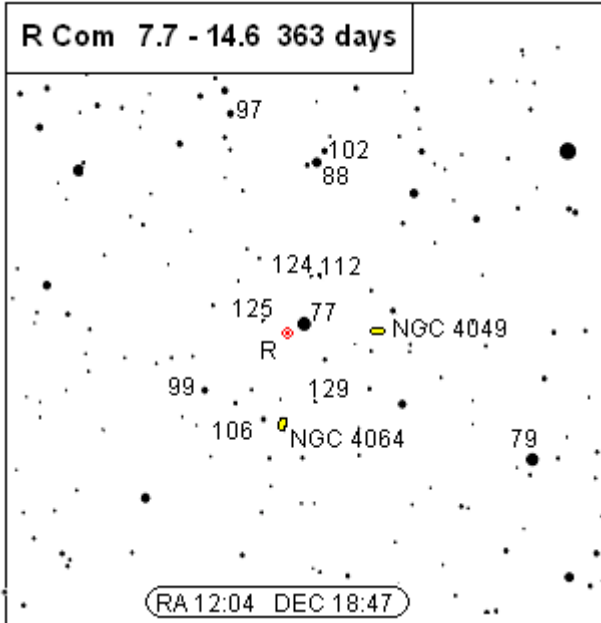
Touring the night sky also takes on a personal touch when one uses their own skills in finding their way. Go-To's are great and can save a great deal of time and frustration. But the typical big Dobsonian is not a Go-To. Much like all the user friendly scopes at the MVCO. So have at it! - P. Plante

OBJECT	Magn.	Type	Sep. / size / notes
α Com	4.9, 5.5	dbl. star	0.6" (closing fast)
24 Com	5.1, 6.3	dbl. star	20.0" (org. & blue)
32-33	6.5, 7.0	dbl. star	196.0" (org. & white)
35 Com	5.1, 7.1, 9.8	dbl. star	1.2" (AB- yellow) 28" (C- blue)
M53	7.5	globular	14.4' resolv. w 6" ?
M64	8.9	galaxy	3.0' x 2.0' Blackeye
M84	10.0	galaxy	5.0' x 4.0' near M86
M85	9.1	galaxy	7.5' x 5.7' bright ellipt.
M86	8.9	galaxy	12.0' x 9.0'
M88	9.6	galaxy	6.1' x 2.8'
M90	9.5	galaxy	10.0' x 4.0' barred spiral
M91	10.2	galaxy	5.0' x 4.0'
M98	10.9	galaxy	9.9' x 2.0' large
M99	10.4	galaxy	5.0' x 4.0' round, spiral
M100	9.3	galaxy	6.2' x 5.3' face-on
NGC 4147	10.2	globular	4.0' dia. brighter center
NGC 4216	10.9	galaxy	8.5' x 1.7' edge-on
NGC 4274	11.2	galaxy	7.3' x 2.0' brt. Center
NGC 4278	11.0	galaxy	3.5' x 3.0' bright, round
NGC 4293	10.3	galaxy	1.0' x 0.5' brt. nucleus
NGC 4314	11.4	galaxy	4.6' x 4.0' brt. center
NGC 4394	10.9	galaxy	3.6' x 3.0' brite bar
NGC 4438	10.2	galaxy	6.2' x 1.7' "The Eyes"
NGC 4450	10.1	galaxy	5.5' x 3.7'
NGC 4459	10.4	galaxy	3.5' x 2.7' brt. nucleus
NGC 4473	10.2	galaxy	3.5' x 2.3'
NGC 4477	10.4	galaxy	3.8' x 3.9'
NGC 4494	10.6	galaxy	4.5' x 4.0' brt., round
NGC 4565	10.3	galaxy	15.5' x 1/0' edge-on !!!
NGC 4559	10.4	galaxy	13.0' x 5.0'
NGC 4651	10.8	galaxy	3.9' x 2.0' diffuse nucl.
NGC 4654	10.5	galaxy	5.3' x 2.9'
NGC 4725	10.0	galaxy	12.0' x 9.0' brt. center
NGC 5053	9.9	globular	8.9' faint & concentrated

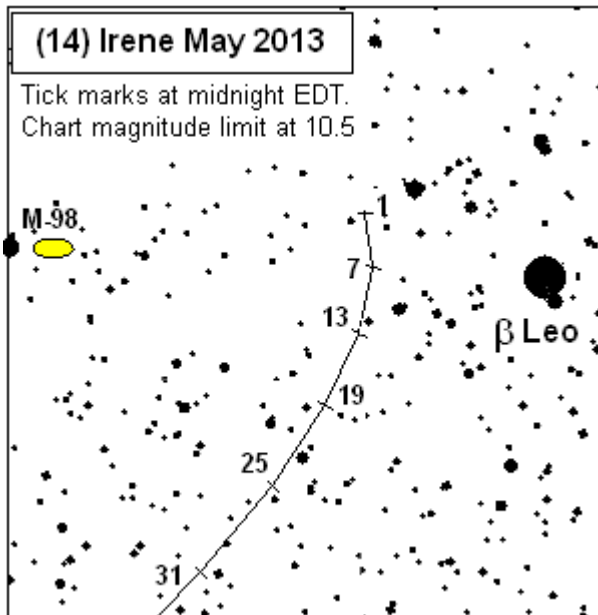
MVAS OBSERVER CHARTS

MVAS OBSERVATIONS - DUE MAY 2013

Variable of the month: **R Coma Berenices** (*abbrev:* R Com). You'll need a scope. In early May R Com will be just below 11th magnitude. By month's end, it passes this mark as it is getting brighter. It should be at maximum light by the end of August. It is located about 1.5° west of globular NGC4147. Hey, while you're looking for faint galaxies, try faint R Com.

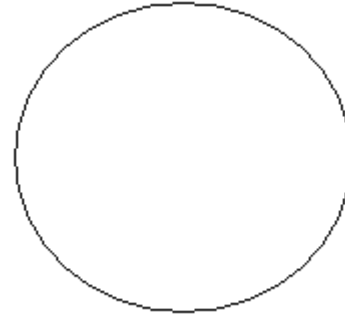


Asteroid of the month: **(14) Irene**. This asteroid begins May 2013 between Denebola in Leo and M-98, which is a 10.9 mag. Galaxy. M-98 is an edge-on galaxy in Coma. But Irene is the main target. It drops from magnitude 9.7 to 10.3 by the time May ends. It travels southward. Big binos or a grab and go short tube scope might suffice to capture this one. It was discovered by John Russell Hind on May 19, 1851. **Irene** was named after Irēnē, a personification of peace in Greek mythology. It is an odd shaped main belt asteroid with a long diameter of 167km.



OBSERVER _____

Featured object: M-64 . Please try a sketch. It might be hard to see the "black eye" in smaller scopes. But sketch what you can. Draw any field stars first to use as reference points. Then the outline of M-64 sized and oriented properly in relation to those stars. Then smudge with pencil and finger to match the glow. Brighter parts use more graphite. Make a negative image.



M-64 Observation:

Date: _____ Time(EDT) _____ Scope _____

R Com magnitude estimates:

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

_____	_____	_____	_____
_____	_____	_____	_____

(14) Irene Observations:

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

_____	_____	_____	_____
_____	_____	_____	_____

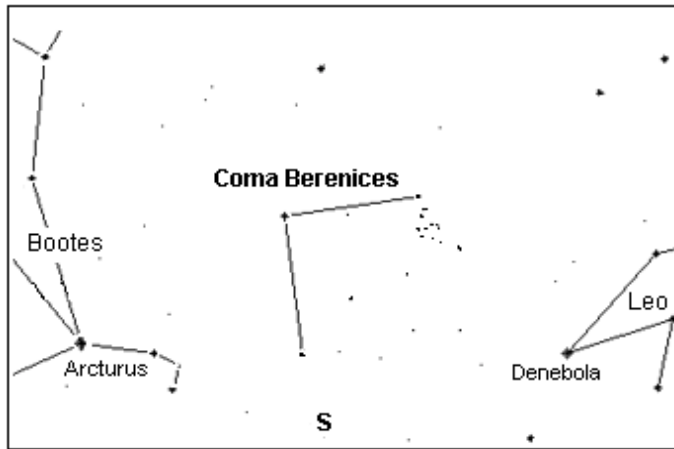
Other Objects in Coma Berenices to observe

D. Sky	Date	Scope	Dbl.	Date	Scope	SEP	MAG	SPLIT?
M- 53	_____	_____	35 Com	_____	_____	1.2"	5.1 - 7.1	Y / N
M- 85	_____	_____	24 Com	_____	_____	20.0"	5.1 - 6.3	Y / N
N-4565	_____	_____	2 Com	_____	_____	4.0"	6.2 - 7.5	Y / N

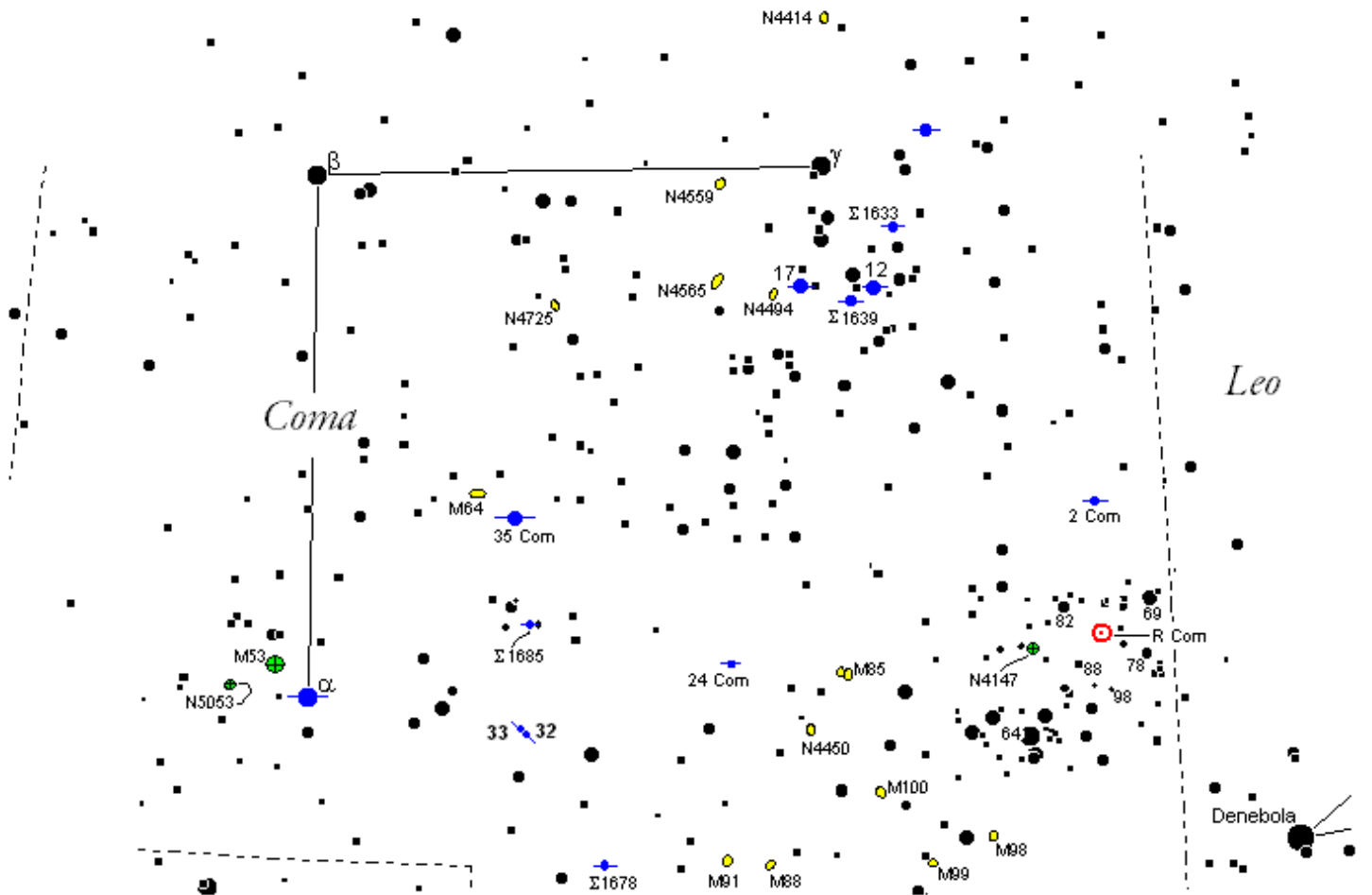
Lunar Occultations (see Sky Almanac):

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

Constellation of the Month — Coma Berenices



Coma Berenices is another constellation that requires a dark sky to fully appreciate. The tell-tale glow from the open cluster that comprises this constellation is unmistakable. Only 250 light years away, it's one of the closest to us. With Daylight Savings Time upon us, one has to go out later in the evening to observe. Look for Coma Berenices just passing the meridian around 11pm at mid-month. It will be about 2/3 of the way up from the horizon. M53 is just visible in 10x50 binoculars. Sweep the area to inspect the cluster stars and moving a little southward, look for some of the Messier galaxies. What Coma lacks in our double star list, it makes up for with numerous galaxies to hunt with your scope. These galaxies are the northern portion of the clustering of galaxies called "The Realm of Galaxies". It continues down into Virgo. You may need to consult a star atlas to better identify which galaxy is which. It can be confusing but don't give up. Each time you work the area, it becomes easier to find your way to specific galaxies. There are seven Messier galaxies in Coma, with M64 the "Black Eye Galaxy" being the most famous. Stars are shown down to 7.5 mag. except in the R Com area where they go down to about 10th mag. Some comparison mags are shown, down to 9.8 mag.



Deep Sky				Double Stars				Check List			
M 53	7.7 mag.	GC	15'	2 Com	6.2 - 7.5	3.7"	yellow, rose	<input type="checkbox"/> M 53	<input type="checkbox"/> 2 Com	Instruments used: _____ on _____ _____ on _____ _____ on _____ _____ on _____	
M 64	9.4	Gal	7' x 5'	17 Com	5.2 - 6.6	146"	white, bluish	<input type="checkbox"/> M 64	<input type="checkbox"/> 17 Com		
M 85	9.1	Gal	6' x 5'	12 Com	4.9 - 8.9	65.2"	yellow, lilac	<input type="checkbox"/> M 85	<input type="checkbox"/> 12 Com		
M 88	10.4	Gal	6' x 3'	24 Com	5.0 - 6.6	20.3"	yellow, blue	<input type="checkbox"/> M 88	<input type="checkbox"/> 24 Com		
M 91	11.0	Gal	5' x 4'	33/32	6.5 - 7.0	196"	orange, white	<input type="checkbox"/> M 91	<input type="checkbox"/> 33/32		
M 98	11.0	Gal	8' x 2'	35 Com	5.0 - 7.1	1.0"	yellow, blue	<input type="checkbox"/> M 98	<input type="checkbox"/> 35 Com		
M 99	10.4	Gal	5' x 4'	Σ 1633	7.1 - 7.2	9.0"	both peach-white	<input type="checkbox"/> M 99	<input type="checkbox"/> Σ 1633		
M 100	10.1	Gal	6' x 5'	Σ 1678	7.2 - 7.8	3.5"	white, yellow	<input type="checkbox"/> M 100	<input type="checkbox"/> Σ 1678		
N 4414	11.0	Gal	4' x 3'	Σ 1685	7.3 - 7.9	16.0"	bluish, greenish	<input type="checkbox"/> N 4414	<input type="checkbox"/> Σ 1685		
N 4450	10.9	Gal	4' x 3'	Σ 1639	6.7 - 7.8	1.7"	white, greenish	<input type="checkbox"/> N 4450	<input type="checkbox"/> Σ 1639		
N 4494	9.8	Gal	4' x 3'	Variable Star				<input type="checkbox"/> N 4494	<input type="checkbox"/> Σ 1639		
N 4565	10.4	Gal	13' x 1.5'	R Com	7.1 to 14.8	363 day period		<input type="checkbox"/> N 4565	R Com was _____ mag. on ____/____/____		
N 5053	9.0	GC	9'					<input type="checkbox"/> N 5053	_____ mag. on ____/____/____		

Solar and Lunar (EDT).

Date	Sunset	Moonrise	Moonset
1	8 : 21	01 : 30a	— : —
5	8 : 25	03 : 49a	— : —
9	8 : 29	05 : 56a	— : —
13	8 : 33	— : —	11 : 52p
17	8 : 37	— : —	01 : 28a
21	8 : 41	— : —	03 : 29a
25	8 : 45	— : —	06 : 23a
29	8 : 48	12 : 09a	— : —

PLANET WATCH

Jupiter Sets	Saturn Transits	Neptune Rises
11:39p	1:13a	3:48a
11:07p	12:56a	3:33a
10:55p	12:39a	3:17a
10:44p	12:22a	3:01a
10:32p	12:05a	2:46a
10:20p	11:44p	2:30a
10:09p	11:28p	2:15a
9:57p	11:11p	1:59a

May 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 May 2013 (14) Irene

Date	Transit	RA hr. min deg.	Dec. deg.	Alt.	Azm	Magnitude
		<i>topocentric</i>				
1	10 : 45 pm	11 : 58.1	+15.2	60°	217°	9.7
7	10 : 22 pm	11 : 57.7	+14.6	56	226	9.8
13	9 : 59 pm	11 : 58.4	+13.9	52	233	9.9
19	9 : 37 pm	12 : 00.1	+13.0	48	238	10.0
25	9 : 16 pm	12 : 02.7	+12.0	44	243	10.2
31	8 : 56 pm	12 : 06.2	+10.9	40	246	10.3
		<i>(at midnight)</i>		<i>(at midnight)</i>		

Celestial Highlights

2	11	LAST QUARTER MOON
5	06	eta Aquarids: moon -21%
5	09	daytime Mercury occult.
10	01	NEW MOON
13	00	R UMa at max. 7.5 mag.
18	04	FIRST QUARTER MOON
23	00	Hebe at opposition, 9.6m
24	02	beta Sco occultation
25	05	FULL MOON

Variable Star of the Month: **R Com** 7.1- 14.6 363 days

LUNAR OCCULTATIONS FOR: MAY 2013

Civil (24hr) EDT	UT	Moon Ph	Moon % illum.	Moon alt	Moon azimuth	Star name	Star Mag.	event PA	dbl./sep.
12	22 : 04 : 20	13	02 : 04 : 20	D	8+	9°	289°	SAO 94739 7.6	017° NA
14	23 : 51 : 31	15	03 : 51 : 31	D	22+	4	288	SAO 96848 7.1	068° NA
15	21 : 32 : 21	16	01 : 32 : 21	D	29+	36	256	SAO 97580 7.8	107° NA
15	23 : 56 : 45	16	03 : 56 : 45	D	30+	10	280	ZC 1237 6.5	098° NA
17	23 : 33 : 43	18	03 : 33 : 43	D	49+	26	256	SAO 117904 7.3	105° NA
21	23 : 11 : 18	22	03 : 11 : 18	D	87+	37	192	49 VIR 5.2	128° NA
22	23 : 27 : 36	23	03 : 27 : 36	D	94+	34	181	ZC 2017 6.4	173° NA
24	21 : 48 : 02	25	01 : 48 : 02	D	100+	12	130	beta SCO 2.6	042° 13.6"
24	22 : 19 : 43	25	02 : 19 : 43	R	100+	16	136	beta SCO 2.6	344° 13.6"
26	4 : 12 : 07	26	08 : 12 : 07	R	98-	23	206	XI OPH 4.4	253° 3.90"
5	5 : 19 : 46	5	09 : 19 : 46	D	00-	2	34	MERCURY -2.0	067° NA"

at MVCO

M= misses limb, close pass

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.....

PanSTARRS Round-up.

Here is a collection of MVAS images (to date) of Comet PanSTARRS, a.k.a - the dud. Still, it is pretty impressive by CCD. Eyeball, not so much. If you didn't get to see it in binoculars I hope you enjoy the comet as presented here. It's all thanks to the hard work of our MVAS Imaging Committee.



Taken by Jim Haklar in Edison, NJ on March 23, 2013 using a Canon Rebel 3ti. Time around 8:30 PM.



Taken by Tony Mehle from Ocala National Forest in Florida on March 13, 2013. Around 7:30 PM. He used a Canon EOS 60D.

Right: Taken by Jodi and Roy McCullough on March 14th. From Salem, OH.



Taken March 29, 2013 from Salem, OH with a 4" refractor. Imaged by the McCullough's, then processed by Lou DiNardo.

Not the Comet !

Here are few other images that are not the comet.



Jodi, Roy and Lou collaborated on this image of the Monkey Head Nebula in Orion. Image is a stack of 20- 5 minute images. They used a 4" refractor and a Canon 60da.



Mike Heim grabbed this shot of Jupiter on March 14 using an Orion 8" Newtonian.



Mike Heim took this image of M-3 on March 30 using the 8" Orion scope he used for Jupiter.