THE METEORITE

BODE'S GALAXIES
M-82 & M-81
IN URSA MAJOR

Newsletter of the Mahoning Valley Astronomical Society, Inc.

IN THIS ISSUE:

MAY 2014

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1982 Mathews Rd. #2
Youngstown OH 44514

THE METEORITE

MAY 2014

Newsletter of the Mahoning Valley Astronomical Society, Inc.

MVAS CALENDAR

MAY 24	Meteor watch 3:00 AM at Scenic Vista.
MAY 31	Business meeting at -- **YSU at 6:00 PM**
MAY 31	Star Party Mahoning Country Club 8:00 PM
JUN 7	Bill Pearce Memorial Star Party Austintown Park
JUN 21	Public Night at Scenic Vista. Sunset 9:00 PM

NATIONAL & REGIONAL EVENTS

May 22-26 **RTMC Astronomy Expo ("Riverside").** Held at Camp Oakes, Big Bear City, CA. Located high in the San Bernardino Mountains near Big Bear City, CA. The RTMC Astronomy Expo is the premier astronomy gathering in the west. http://www.rtmcastronomyexpo.org/

May 25-Jun 1 **Texas Star Party.** Held near Ft. Davis, TX. Week-long gathering of 500+ amateur astronomers under very dark skies. Afternoon and evening talks, vendors, astrophotos, sketching, ATM, and observing activities and contests. http://texasstarparty.org/
New! The Texas Imaging Symposium held during the TSP. http://texasstarparty.org/tais/

Jun 12-14 **AAVSO 103rd Spring Meeting.** Joint meeting with the SAS and CBA. To be held in Ontario, CA. All events will be held at the Ontario Airport Hotel. Registration open at the SAS website. http://socastrosci.org/symposium.html

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

MAY 31 MVAS BUSINESS MEETING MOVED TO YSU AT 6:00 PM

Just a prominently placed reminder that we have moved the May meeting to YSU. The start time is at 6:00 PM. This meeting will be held before the last planetarium show of the season. There should be plenty of time for members to move to the Mahoning Country Club on Logan Ave. after the meeting. They say it's a ten minute drive from YSU to the Club. MVAS has been asked to conduct a star gaze at a birthday party being held at the club. There is no host for this May meeting.

NEWS NOTES

Growing up fast. A telescope at the South Pole has detected a cosmic fossil from the earliest moments of creation. In March, scientists announced they have the first hard evidence for cosmic inflation. This is the process that made the infant universe swell from a microscopic size to a more cosmic size- in an instant. Inflation was first theorized more than three decades ago, yet only now has a "smoking gun" proof appeared. Far from the quiet whisper that was expected, the inflation signal turned out to be a relatively loud drone. That brings with it, many implications. This new finding rules out many theoretical models of inflation; most of them were based on the prediction of a signal much weaker than the one detected. In addition, the discovery also seems to disprove a theory that says that the universe expands, collapses and expands again in an ongoing cycle. Theorists will continue to carefully asses these ideas and their implications over the coming months and years. Meanwhile, the signal still needs to be experimentally confirmed. Confirming observations from other telescopes are expected in the coming year.

Asteroids from Mars. A new image from NASA's Curiosity Mars rover is the first ever from the surface of Mars to show an asteroid, and it shows two: Ceres and Vesta. Currently these two asteroids are featured on our Homework Page (in this *Meteorite* issue). This image was part of an experiment to check the opacity of the atmosphere at night at Curiosity's location on Mars. Usually water-ice clouds and hazes develop during this season. Ceres and Vesta appear as short, faint streaks in a 12-second exposure taken by Curiosity's Mast Camera (Mastcam) on April 21, 2014, UTC. Earthbound observer's and imagers can follow Ceres and Vesta in a close dance this summer- with binoculars or digital camera. No need to go to Mars!

Now that's cool! Kevin Luhman, a Penn State University astronomer used NASA's WISE and Spitzer Space Telescopes to detected a "brown dwarf" star. It appears to be the coldest of its kind. Images from the space telescopes place the object's distance at 7.2 light-years away, making it the fourth closest system to our Sun. The newfound brown dwarf, named WISE J085510.83-071442.5, has a chilly temperature between -54 and -9 degrees Fahrenheit. Previous record holders for coldest brown dwarfs, also found by WISE and Spitzer, were about room temperature. It is estimated to be 3 to 10 times the mass of Jupiter.

MINUTES OF THE APRIL MEETING

APRIL 26, 2014 at the MVCO

The meeting was called to order at 8:06 PM by President Lou DiNardo. The meeting was held in the 16" building. All six Officers were present with two of three Trustees attending. Roll Call was taken. Twenty members gave the password. Three guests joined the group. Zachary Blevin, Dominic Mattuissi and Virginia Bartos were the three. Lou called for suspending the Reading of the Minutes and accepting them as published. Rosemary Chomos made a motion to that effect with Chris Stephan making a second to the motion. By unanimous voice vote the Reading was suspended with Minutes accepted.

TREASURER'S REPORT: The Report was read by Steve Bartos. With no further discussion, Rosemary moved and Chris seconded. to accept the Report as read. By unanimous voice vote the motion was adopted.

General Fund	**3/1 thru 3/31 2014**	
OPENING BALANCE:	$	9,925.16
CLOSING BALANCE:	$	9,965.31
AVAILABLE FUNDS (NON-RESERVED):	$	5,736.19
ACCOUNT NET GAIN/LOSS FOR THIS PERIOD:	$	+40.15
INCOME:		
DUES	$	40.00
INTEREST		0.15
TOTAL INCOME	$	40.15
EXPENSES:		
CK# XXXX NO CHECKS	$	0.00
CASH PAYMENTS		0.00
TOTAL EXPENSES	$	0.00
Reserved Funds		
OBERVATORY ACQUISITION & DEVELOPMENT FUND	$	3,914.12
MVCO KEY DEPOSITS		285.00
SUNSHINE FUND		30.00
TOTAL RESERVED FUNDS	**$**	**4,229.12**

2014 Membership dues paid by: J. HAKLAR

CORRESPONDENCE: Bob Danko reported no mail received at the P.O. Box. No other correspondence was presented.

COMMITTEE REPORTS: *IMAGING COMMITTEE:* In the absence of Jodi McCullough, Lou reported that the McCullough's had sent dslr image data of M81/82 that included an Ha channel along with the usual RGB set. Lou processed these and was amazed at the spiral structure in M81 as revealed by the Hαband Several had images of Mars including Mike Heim and Jim Haklar. Jim had sent a neat movie of Mars rotating and of a solar image that faded from white light into Hα light.. *VISUAL COMMITTEE:* No reports sent in.

OFFICER REPORTS: *OBSERVATORY DIRECTOR:* Larry Plante noted that everything seemed in fine shape at the Chili-fest. Upon further review this night, he noticed that birds have entered the outhouse and the 12" Building. Nesting prospects seem to be the motivation since birds don't use telescopes and they prefer newly washed cars for their business. He has some steel mesh at home and installation of the material at both buildings should prevent further transgressions. He also noted that the electrical outlet on the deck is not working. It was repaired just last year. We will need to find out the cause (critters?) and perhaps try a different fix. [addendum: The well is on now] *LIBRARIAN:* Rosemary Chomos had no news to report.

OLD BUSINESS: Phil Plante reminded the membership of the Scenic Vista Stargaze the next weekend. There was a general reluctance to discuss the event due to a possible rain jinx cast upon the event. Forecast were calling for cloudy skies for several days before the Stargaze. With that said, we all know that forecasts are always wrong. Check emails for a go/ no-go call and who will be bringing snacks, etc. You all now the drill. We have had good times and chow there even in down pours. Starts at 6:00 PM with solar viewing. No one had any information on the provisional Western Reserve Family Camp-out or the Mahoning Country Club event. Remember this is the night of the May 31st meeting. This meeting has been moved to YSU and begins at 6:00 PM. Lou was asked by Jodi to find out how many would be willing to bring telescopes. A hand count showed at least six members that were present. Larry noted that there is supposed to be fireworks at 10PM, just when it gets dark. No one knew how late we would be able to observe. Other local Parks close at 10:00PM which makes star parties next to impossible. Phil will email Jodi and Pat Durrell to see if they knew the scheduling of this event.

Rich Mattuissi noted that we have the Bill Pearce Memorial Stargaze on June 7th. It is to be held at Austintown Park. All above events are weather dependant of course. Phil brought up the discussion on moving the June meeting as it conflicts with the CVAS -OTAA meeting. There is no date to change to. Our June Scenic Vista date (21st) has been announced. Phil recommends that we keep the scheduled June 28 meeting at the MVCO. Those that want to go to Indian Hill and onto Telescope Park should formulate a plan to meet at the MVCO and car pool/caravan. The MVAS meeting will proceed as usual at the observatory. Weather will factor into any road trip to CVAS. Phil reported that the individuals interested in the 50" mirror were not present. At the Chili-fest he was told that they would know by April 18th if YSU would award them a Grant of $10,000 to start the project. Their absence may not bode well for this project. At the time they were very enthusiastic and had plans to finish the mirror at YSU.

NEW BUSINESS: Chris Stephan raised his concern that the MVAS website seemed to be lacking of upkeep. He said that if you look at other websites they are updated and have a fresh appearance. It was noted that Sam and/or Harry maintain this site, but so far have seemed to drop from MVAS participation. Phil noted that both have asked him for calendar and email data in recent months. He has complied with their requests but no activity noted on the website. Lou noted that such a website is a dynamic source of information for members. Chris also reported that the new S&T website still has Jerry Jackson listed as president. These online issues will need to be addressed. Looks like Phil will email Harry and Sam concerning these problems.

Rich Mattuissi spoke about Allen Heasley and his knowledge of MVAS history. He has always filled us in with the news of those by-gone eras. With that in mind, he moved that Allen be given a title of MVAS Historian. In addition, since Phil Plante maintains all of the historical document, he should be give the title of MVAS Archivist. Rich suggested that we pass out MVAS flyers to people as they leave, when we return to meeting at YSU. He would be willing to do that. It was noted that we have done this in the past, as a means of attracting new members.

GOOD OF THE SOCIETY: Bob noted the mention of a D. Fowler in last month's Meteorite; the Ohio variable star observers. He said it is indeed Doug Fowler, a former MVAS member and YSU instructor. Doug is back in town. In reference

to Telescope Park, Bob tells us it is well worth the trip. The difference in MVCO skies and Telescope Park Skies is remarkable. Bob can see galaxies in his 102mm at the Park that are invisible in the MVCO 8". There is a Park Ranger on duty on Saturdays. Bob noted there is a feeling of safety there. Tom Seckler agreed with the stated observing conditions, having been to the Park several times.

Steve had boxes of MVAS merchandise for sale. It appeared there was a rush of knit hat purchases. As expressed in an earlier e-mail, Chris Stephan purchased some items from the MVAS to use as merchandise in his new online Antigua Scientific Equipment store. Chris bought the 60mm Tasco that was for sale for nearly a year with no takers. He also purchased a box of small lenses and prisms and other parts that had been in the tool shed since 2000. They belonged to the late Bob Clyde, his dear friend of the past. Lastly he purchased the mirror grinding machine given to MVAS by YSU. Total sale price was $125. Thus some clutter has been removed, we have $125 in the account and Chris has merchandise to sell. [A check was accepted before the meeting and a vote was never called for. After the meeting, the Trustees met and approved of the action, pursuant to their duties as custodians of club assets.]

VISUAL REPORTS: There have been a few observations of Jupiter, Mars and Saturn. Phil managed 8 variable estimates. Chris used his new Explore Scientific 6" refractor on deep sky and some doubles.

ADJOURNMENT: Bob Danko and Larry Plante moved and seconded respectively, to adjourn. All were in favor. Adjournment came at 9:03 PM. We thank our hosts Rosemary Chomos for the great pies while Phil Plante supplied the drinks. **The next meeting will be at YSU on May 31, 2014. Meeting begins at 6:00 PM**. There is no scheduled host as this was to be a bbq at the MVCO. PASSWORD: name a double star (springtime preferred) *-minutes by Phil Plante*

After refreshments, Chris Stephan gave a talk/demonstartion of some neat antuque microscopes (1908 to 1944). Some of them had historical significance to Cleveland, OH comapanies. Next J. R. Pandian gave a talk about the constellation Virgo. He covered a bit about galaxy clusters, but focused on the multi-culture history and myths surrounding the constellation and the star Spica. A nice change of pace from the usual lists of objects to observe in the constellation. Great job and thanks to both Chris and Pandian. There will be no talks at May's meeting.

MVAS REMINDERS

May Meeting Moved. The May 31st meeting has been moved to YSU. The meeting starts early **at 6:00 PM.** This was done to accommodate a star gaze to be conducted at the Mahoning Country Club later that evening Members will caravan to the Club after the meeting at YSU. The MVCO BBQ is canceled, thus no hosts. Some soft drinks may be on hand at YSU after the meeting. Have your scopes packed and ready to go. Details on the weather dependant event will be given at the meeting.

New Meteor Shower. On Saturday morning May 24th, around 3:00 AM EDT, a new meteor shower is predicted to put on a display. There could be some fireballs. Plans are to observe from Scenic Vista. The moon is favorable for observing beforehand. Stay in touch via the e-mail group for last minute plans and weather prospects, arrival times, chow, etc.

Last Call: You need to get your 2014 dues payment submitted by the end of May. If not, you will be dropped from the roster. Rules is Rules. And we already stretch them. You are important as members, not just for dues payments or hosting duties. Friendships evolve, there is the exchange of ideas and shared observing sessions. The astronomy "teachers" need students and vice versa. There is room for both in the MVAS.

MVAS ACTIVITIES

Chili vs. Humans. Fifteen folks showed up for this year's eat'em up. Along came 5 pots of chili. This is down from past events, but it was plenty enough chow. Lot's of other treats and pastries were available to sample as well. Thanks to all that made chili or brought desserts. The chili blitz began early and continued for over an hour. By a raffle drawing, Don Cherry won the book "*Starlight Nights*" by Leslie Peltier. Congrats to Don. Our special guest was John Monsanti. John was a MVAS member from the late 1960's. It was a treat to sit around and talk about the MVAS those many years ago. It was a mostly cloudy night. But- last to leave, and about to lock the 16" door, the Moon and Mars were peeking thru the thin clouds. Couldn't resist, so I opened-up the 8" building. It was great using the 8" scope. It has been a long time since I used it. You all know I trend towards Titan. All in all, a most wonderful evening. We'll do it again next year.

MARS ATTACKS! Many of our imagers were active in imaging Mars in late April. Those that are on the MVAS email group got to see them as they were posted. Good work everyone! As clear nights become more frequent, we should be getting the scope out more often. Please try sketching or imaging for Homework.

Observer's Notes: A May Day Sun

Although there are no special celestial events in May of 2014, in past years the MVAS has had some notable events. May has had its share of Mercury transits and solar eclipses. These often translated into group activity. This being an anniversary year, we'll continue with our monthly historical review. This time we'll re-visit some of those May Days under the Sun. And one in the future.

May 9,1970 Transit of Mercury. It was a Saturday morning sunrise; Mercury was already in transit across the Sun. In the April 1970 *Meteorite* there was a paragraph about observing this event with notes from the ALPO Mercury section. There were the obligatory warnings on safe solar viewing and reference to *Sky & Telescope* for observing details. Subsequent Meteorite's or meeting Minutes had no mention of members' observations. . I seem to recall stories of the YSU folks also observing this transit. I suspect a few MVAS types got a peek as well.

But this scribe was 18 years old at the time and didn't know what an "MVAS" was. But I spent the night sleeping on the ground next to the 60mm Tasco, set-up in the backyard. I woke to observe doubles from time to time during the night. I didn't want to miss the transit and also didn't want to wake the house with an alarm clock plus dragging equipment outside. Thus the camp-out. Sunrise came with parting clouds. Using eyepiece projection onto the scope's solar viewing screen, I saw tiny Mercury against the solar disk. Success! This was my first telescopic solar event. My observing career began in the mid 1960s with that Tasco, but this transit plus the view of Comet Bennet a month earlier sealed the deal- amateur astronomer!

May 30, 1984 Annular Eclipse. This was a special annular eclipse. The angular size of both sun and Moon were nearly the same. It was almost a total. The annularity would be broken by all the lunar mountains and valleys seen in profile. Bailey's Beads all around the limb. Several local groups went to the east coast as the eclipse path followed the coastal states north to south. Then Meteorite editor Bob Clyde traveled to South Hill, VA to meet with former MVAS member Rich Taibi ('78-'79). Several other groups from Washington DC gathered there. All were greeted with pouring rain and then lingering clouds.

There were conferences held in hotel rooms and 1AM phone calls about weather and where to move to for clear skies. It was cloudy at eclipse time. About ten minutes after maximum eclipse there was a thin spot in the clouds and a view of a crescent eclipse was had. Photos snapped as quickly as possible. Tom Willmitch found a clear spot in Petersburgh, VA and got some photos. The June Minutes reported a group from YSU saw the eclipse from South Carolina. This scenario may play out again for the eclipse in 2017. Portions of the track will most certainly be clouded out. Mad scrambles along the interstate highways will ensue. But social media and internet weather forecasts will make things easier. Movement can be earlier and less hectic. Perhaps not as many 1AM eclipse phone calls this time.

Once again, your scribe was a 6 months away from meeting the MVAS. Fully aware there would be a partial eclipse from home, I managed a few shots through the kitchen window using a 200mm zoom and a piece of Mylar solar film supplied by *Astronomy Magazine.* My first solar eclipse photos. The next would be for the Big One in 1991. But that was in July, not May. For the record, several MVAS members saw that one. Ed and Sheila Bishop, Warren and Sandy Young went to Hawaii, Rick Pirko and ?? went to Baja Peninsula while Larry and Phil Plante went to Mazatlan, Mexico. MVAS members have traveled to other solar eclipses (1998, 2012) but there were not in May!

May 10, 1994 Annular Solar Eclipse. This was the perfect eclipse. The weather gave a scare early but cleared nicely. The northern limit line would pass near the MVO. Perhaps 25-30 members came to the MVO to watch. Almost a dozen scopes were set up and most were hooked up to a camera. They gobbled up a few rolls of film, for sure. Rick Pirko flew to the centerline near Toledo and captured a stunning sequence of the eclipse on one frame. This was by far one of the best group events ever held at the MVO. As the tradition was just starting, a BBQ grill had the food ready for celebration. On April 8, 2014 a total eclipse of the Sun will follow almost the exact track that the 1994 annular took. That means we'll have a total eclipse pass right over the observatory. But it is April in Ohio. It can be 60 and clear blue sky or it can be snowing. Can we be lucky again? Some of us star geezers (right now) might not be so eager to travel elsewhere to see an eclipse ten years from now.

May 20, 2012 Annular Solar Eclipse. Bill Pearce went to Mill Creek Experimental Farm to see the sunset eclipse. He managed a difficult shot of the partial phase with the Sun half set. Meanwhile members Jim Haklar (from NJ) and Phil Plante traveled to Albuquerque, NM to catch the annular at sunset. They met with friends from California and Tennessee to observe and image the eclipse from west facing hotel balconies. Luxury at its best. Amentias and AC in the room behind and nature's spectacle outside. No crowds to deal with, no traffic or hours under a hot Sun. The logistics were the best. Such a plan will not work for the 2017 total eclipse across the USA. The Sun will be too high in the sky mid-eclipse. Balconies will block the view.

May 9, 2016 Mercury Transit. There is a cycle of Mercury Transits that repeat every 46 years (from Jean Meeus). The same circumstances repeat- a similar transit occurs. In 2016, exactly 46 years to the day after my first 1970 transit - another Mercury Transit takes place. This time we will be able to watch the entire event. It begins (ingress) on a Monday morning at 8:13 AM EDT. It ends (egress) at 2:41PM EDT. It should be a splendid viewing event from the MVCO. That is if the weather gods permit. (I've jinxed it already!)...The last time, I slept on the ground next to the Tasco 60mm scope. Awaiting a sunrise transit in egress. I'm pretty sure I will not be sleeping on the ground this time around. Maybe in my car at the MVCO. If it is clear, I just might set up the old Tasco 60mm along side my current equipment. For me, observing these transits will serve as bookends to a lifetime of observing. *- P. Plante*

MVAS Homework: M- 81, Bode's Galaxy

Messier 81 was first discovered by Johann Elert Bode in 1774. Thus, the galaxy is sometimes referred to as "Bode's Galaxy". In 1779, Pierre Méchain and Charles Messier re-discovered Bode's object, which they subsequently listed in the Messier Catalogue. Also known as NGC 3031, M81 is a spiral galaxy about 12 million light-years away in the constellation Ursa Major. Due to its relative closeness to Earth, it displays a fairly large angular large size. It has an active galactic nucleus which harbors a 70 million solar mass supermassive black hole. Messier 81 has been studied extensively by professional astronomers.

The galaxy's large size and high brightness make it a popular target for amateur astronomers M-81 and its neighbor galaxy M-82 can both be viewed easily using binoculars and small telescopes, under dark skies.

M-81 on the left, M-82 on the right.

The two objects are generally not observable to the unaided eye, although highly experienced observers may be able to see Messier 81 under exceptional observing conditions. Telescopes 8 inches or larger are usually needed to distinguish structure in the galaxy, such as the spiral structure.

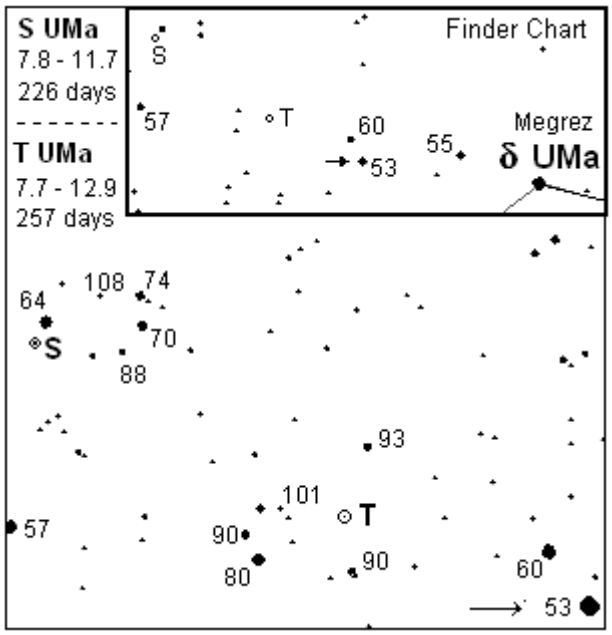
Only one supernova has been detected in Messier 81.The supernova, named SN 1993J, was discovered on 28 March 1993 by F. Garcia in Spain. At the time, it was the second brightest supernova observed in the 20th century. It was viewed by this scribe using the MVCO 16" Cassegrain. It was a very clear night in April and the views of both M81 and M82 were exceptional. The supernova was easy to pick out compared to earlier photographs. The spectral characteristics of the supernova changed over time. Initially, it looked more like a type II supernova (a supernova formed by the explosion of a giant star) with strong hydrogen spectral line emission, but later the hydrogen lines faded and strong helium spectral lines appeared, making the supernova look more like a type Ib.

Messier 81 is the largest galaxy in the M81 Group, a group of 34 galaxies located in the constellation Ursa Major. At approximately 11.7 Mly from the Earth, this group and the Local Galaxy Group, are all relative neighbors in the Virgo Supercluster.

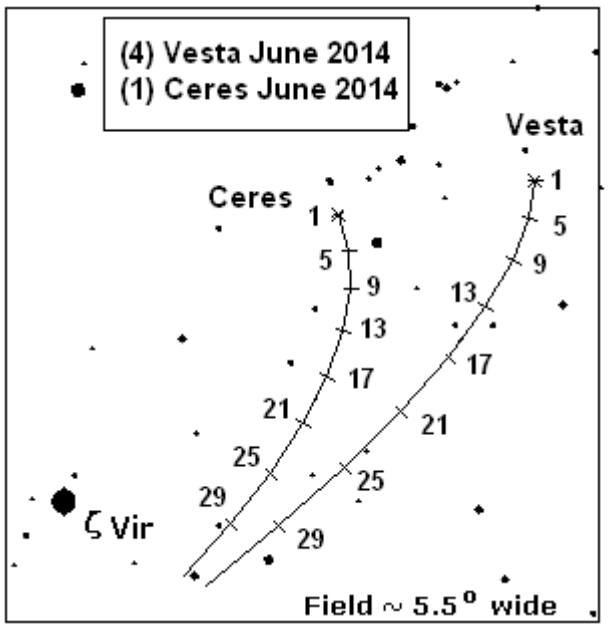
MVAS OBSERVER'S CHARTS

Variable star of the month: **S Ursa Majoris** (*abbrev:* S UMa). This month while we visit Ursa Major, we'll check the variable star S UMa and the nearby variable T UMa. T UMa is at minimum light mid-May (13th mag), while S UMA was dimmest in early April. Watch both gain in brightness over summer.

S UMA should win the race. Star hop from δ UMa to the two bright stars (6.0 & 5.3 mag.) The 5.3mag star has an arrow indication on the charts below. Use a scope and observe twice per month. Keep notes of your estimates. Later you'll be able to trace the light curve by plotting magnitude estimate vs date.



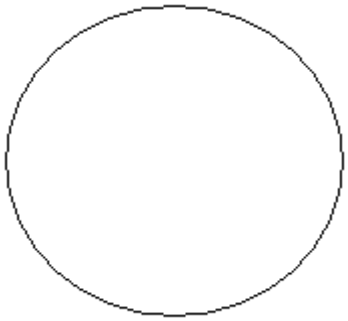
Asteroid of the month: (**4) Vesta.** Vesta starts off at 6.6 magnitude and drops to 7.0 by month's end. Ceres goes from 7.8 to 8.3. This is our last visit to the pair. Try to follow them as the get close at the end of June. They will be low in the SW sky.



MVAS OBSERVATIONS (Homework)

OBSERVER_____

Featured object: M-81 . Please try a sketch. Remember to place field stars first to establish reference points. Next trace a faint outline of the galaxy. Then use the side of your pencil to shade-in the details. You will be making a negative image. Heavier graphite represents brighter areas (light). Give it a try!



M-81 Observation:

Date:_____ Time(EDT)_____ Scope_____

T UMa magnitude estimates:

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

(4) Vesta Observations:

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

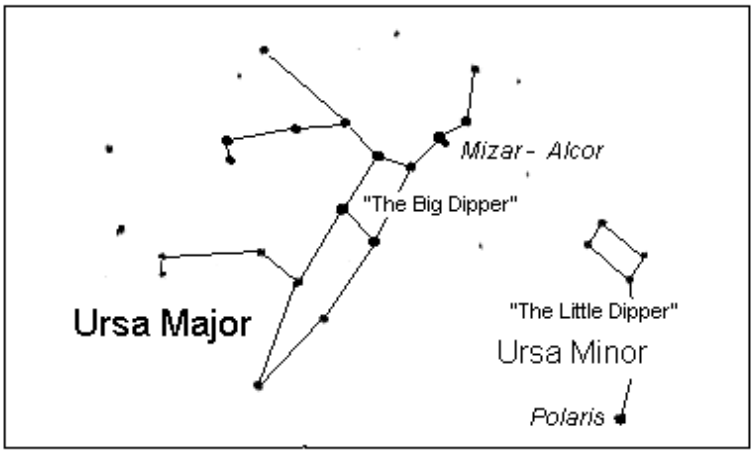
Other Objects in Ursa Major to observe

D. Sky	Date	Scope	**Dbl.**	Date	Scope	SEP	MAG	SPLIT?
M- 82	_____	_____	Σ 1415	_____	____	16.5"	6.7 - 7.3	Y / N
M- 97	_____	_____	Σ 1520	_____	____	12.3"	6.5 - 7.8	Y / N
M- 108	_____	_____	ξ UMa	_____	____	1.7"	4.3 - 4.8	Y / N

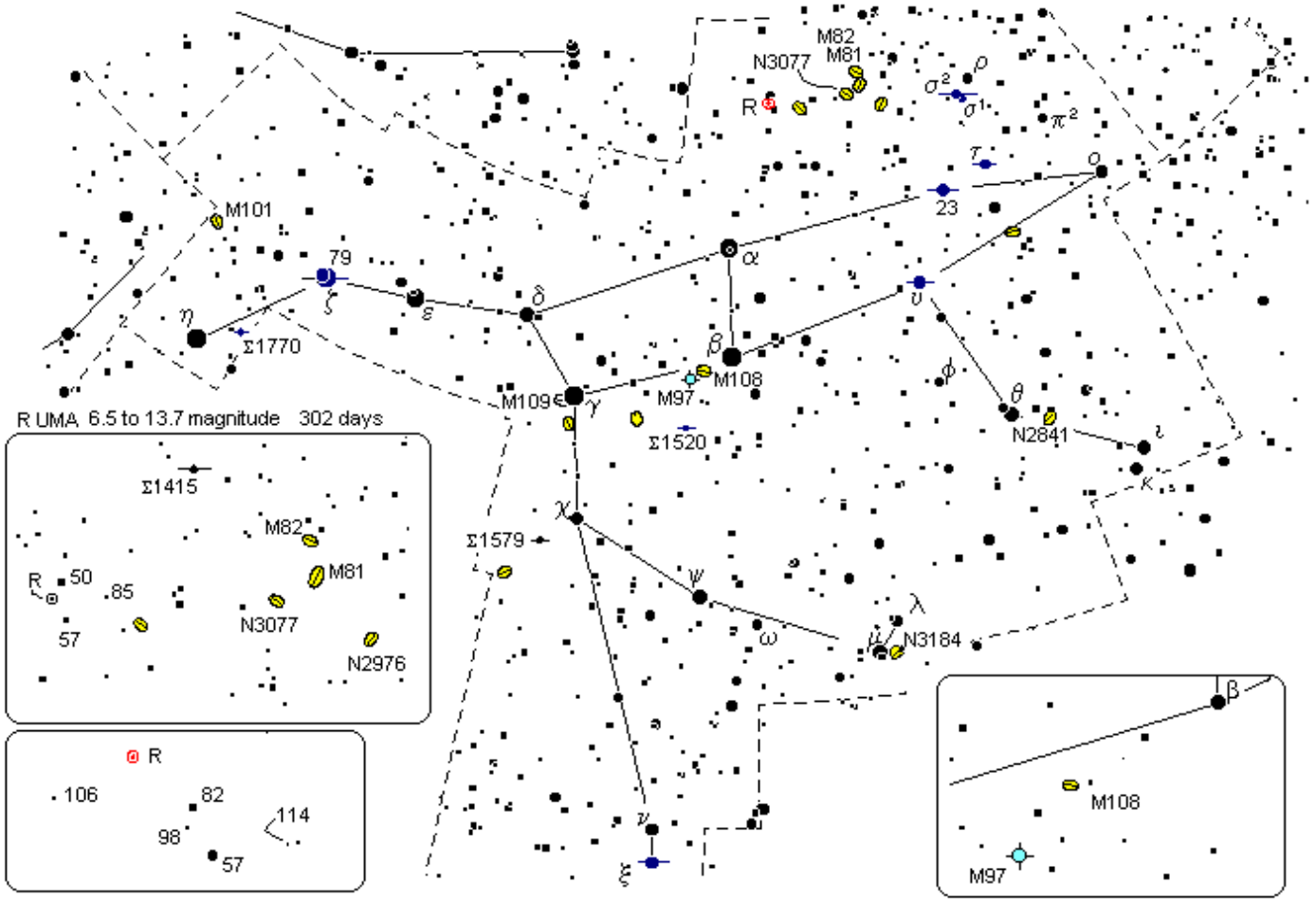
Lunar Occultations (see Sky Almanac):

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

Constellation of the Month — Ursa Major



Everyone can find the Big Dipper. Most seem to know the Dipper is not a constellation, but is in fact only a part of Ursa Major. It's the hind quarter and tail of the great bear. In dark skies try to trace out the outline of the entire constellation. It seems this isn't done so often because the Dipper draws all the attention. Ursa Major is comfortably placed high in the NW at mid-May around 11pm. With naked eye, try to split Miza and Alcor. Using binoculars makes it an easy split. With larger binoculars (50+mm) you might detect M81/82 in dark skies. These are the two brightest galaxies in Ursa Major. You'll need a scope for the rest. The chart below shows about a dozen galaxies brighter than 10.9 magnitude. If your scope can reach 12th magnitude galaxies then you have over 60 from which to work on. Use a good atlas! Note that M101 is known as the "Pinwheel Galaxy" and M97 is the "Owl Nebula". There are enough doubles to keep any scope busy if galaxies are out of reach. It's easy work splitting Mizar and Alcor with optical aid. Look closer at Mizar (the brighter star) and you'll see it's a close double too. When you look for M81/82, pan over to find the variable R UMa. You might follow it with binoculars when it's near maximum light. A scope will have to be used as it fades.



DEEP SKY			
M81	GAL	7.9 mag.	23' x 12'
M82	GAL	9.3	10' x 4'
M97	PN	12.0	2.8'
M101	GAL	8.3	25" x 23'
M108	GAL	10.7	7' x 2'
M109	GAL	10.6	6' x 4'
N2841	GAL	10.1	7' x 3'
N3077	GAL	9.9	5" x 3"
N3184	GAL	10.4	6' x 6'

DOUBLE STARS			
σ^2	4.9 - 7.9 mg.	3.5" sep.	gm & orng.
ξ	4.3 - 4.8	1.8"	- - -
ν	3.8 -11.5	11.3"	yell. & orng.
23	3.7 - 9.2	22.8"	yell. & lilac
79	2.3 - 4.0	14.4"	Mizar
Σ1415	6.7 - 7.4	16.7"	yell. & blue
Σ1520	6.5 - 8.0	12.7"	yell. & purple
Σ1579	6.5 - 8.4	4.0"	white & blue
Σ1770	6.7 - 8.1	1.8"	yell. & ash

Check list

- ____ M81
- ____ M82
- ____ M97
- ____ M101
- ____ M108
- ____ M109
- ____ N2841
- ____ N3077
- ____ N3184
- ____ σ^2
- ____ ξ
- ____ ν
- ____ 23
- ____ 79
- ____ Σ1415
- ____ Σ1520
- ____ Σ1579
- ____ Σ1770

Instruments used:

____ on ____

____ on ____

____ on ____

____ on ____

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

2014 JUNE SKY ALMANAC

Solar and Lunar (EDT).

Date	Sunset	Moonrise	Moonset
1	8 : 51	— : —	11 : 44p
5	8 : 53	— : —	1 : 18a
9	8 : 56	— : —	3 : 19a
13	8 : 58	— : —	6 : 29a
17	8 : 59	— : —	11 : 06a
21	9 : 00	2 : 06a	— : —
25	9 : 01	4 : 43a	— : —
29	9 : 01	— : —	10 : 19p

PLANET WATCH

	Jupiter	Saturn	Venus
	Sets	*Transits*	*Rises*
1	11:38 PM	11:48 PM	4:12 AM
5	11:26	11:32	4:09
9	11:13	11:15	4:05
13	11:00	10:58	4:03
17	10:47	10:42	4:01
21	10:34	10:25	3:59
25	10:21	10:09	3:58
29	10:09	9:53	3:58

June 2014

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					

Asteroid for June 2014 (4) Vesta

Date	Transits	RA hr.	RA min	Dec. deg.	at 1:00AM EDT Alt.	Azm	Magnitude
1	10 : 05 PM	13	: 15	+03	35º	237º	6.6
5	9 : 50 PM	13	: 15	+02	32	241	6.6
9	9 : 35 PM	13	: 16	+02	29	243	6.7
13	9 : 20 PM	13	: 17	+01	27	246	6.8
17	9 : 06 PM	13	: 18	+01	24	249	6.8
21	8 : 52 PM	13	: 20	+01	21	251	6.9
25	8 : 39 PM	13	: 23	- 00	18	251	7.0
29	8 : 26 PM	13	: 25	- 01	15	255	7.0

Variable Star of the Month: **S UMA** 7.8 - 11.7 mag 226 day period

Celestial Highlights

Date	UT hr	
5	20	**FIRST QUARTER**
13	04	**FULL MOON**
19	01	**LAST QUARTER**
19	18	Mars: Solis Lacus on CM
21	00	Summer Solstice
21	10	R Boo at maximum
24	00	chi Cyg at maximum
24	13	Venus 1.3º N. of Moon
27	08	**NEW MOON**
29	01	Jupiter 5.4º N. of Moon

LUNAR OCCULTATIONS FOR JUNE 2014

Civil date	hr	min	sec	UT date	hr	min	sec	Ph	Moon % illum.	Moon alt	Moon azimuth	Star name	Star Mg	event PA	dbl./ sep.
11	2	: 06 :	24	***11***	06	: 06 :	24	**d**	95+	22º	219º	33 Lib	6.7	107º	40.0"
14	1	: 53 :	03	***14***	05	: 53 :	03	**R**	98-	29	171	U Sgr	6.6	305º	.720"
14	3	: 54 :	11	***14***	07	: 54 :	11	**r**	98-	27	202	XZ 2699	6.8	246º	NA
21	3	: 48 :	47	***21***	07	: 48 :	47	**d**	33-	18	95	zet Psc A	5.2	073º	23.7"
21	3	: 49 :	32	***21***	07	: 49 :	32	**d**	33-	18	96	zet Psc B	6.3	073º	23.7"
22	3	: 31 :	23	***22***	07	: 31 :	23	**R**	23-	8	83	XZ 301	6.5	242º	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.)

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

GALLERY…..

Some May Day Sun events.

May 30, 1984 Annular. Several members traveled to the east coast to watch the annular eclipse that day. Rain and clouds foiled most attempts. No photographs are in the records from the few that were successful. Phil Plante (not a member yet) photographed the partial eclipse from Youngstown. He used a sample piece of Mylar solar filter material that was included in a issue of *Astronomy* magazine. It was intended for visual use, but a quick -made slide mount filter was used on an 80-200mm zoom. Several successful images were obtained. This started an interest in solar eclipse photography. Note: The blue streaks are artifacts from the Mylar film. They were also seen visually and if you wondered, they are not the corona.

May 10, 1994 Annular. Ten Mays after the 1984 annular, the MVAS enjoyed an annular solar eclipse from its backyard: the MVO. This time the gathered crowd enjoyed clear skies. Traditional MVAS good cheer and chow was also in abundance. I believe this was the first appearance of our future "Comet Baby" at the MVO. She was a few months old.

The MVO was near the southern limit line of the eclipse track. We barely got the annular, which means we had some Bailey's Beads. Image by Phil Plante. Prime focus on a C-8 with a full aperture glass filter. Film was Kodachrome 64.

Joanne (Comet Baby) with proud parents Virginia and Steve.

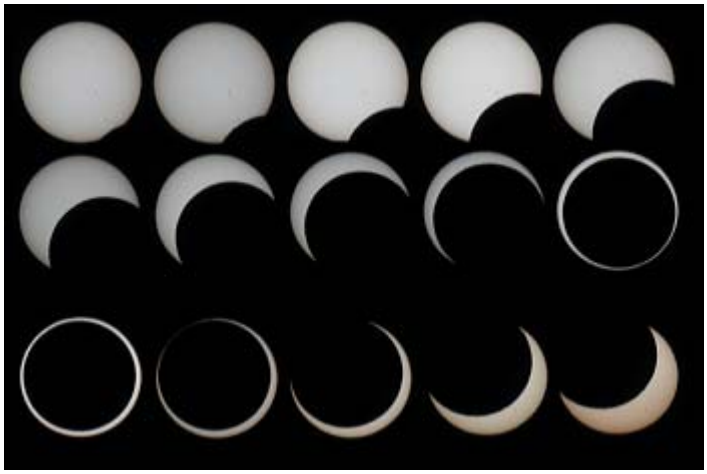
Early morning clouds served up some anxious moments. Members sat with hope that they would go away quickly. But when prime solar time came, they were out of the way.

Several big scopes were put to use. Greg sets up his 12" Meade SCT while Larry (hidden behind) had his 10" Meade SCT ready to go. The sound of WWV time signals could be heard below the excited chatter. Shouts of Bailey's Beads rang out as the visual observers spotted them. Photo-bugs had the sound of shutters snapping, all out of synch with the time signals. A symphonic jangle of sound, chaos distilled and organized on one moment.

May 20, 2012 Annular. Once again the USA was witness to an annular eclipse in May of 2012. Annular eclipses don't have the same visual impact that a total eclipse has, but they are worth seeing. Just traveling to be in the right place at the right time is sometime of an accomplishment. MVAS members Jim Haklar and Phil Plante went to Albuquerque, NM to see this eclipse. They met with fellow eclipse chasers Heidi, Isaac and Juan. The fab five got to see the eclipse from hotel balconies. Meanwhile back in Gotham City, a superhero effort was put forth by Bill Pearce to catch the tiny notch of the moon carved into the solar limb. The Sun sat on the horizon.

Only a small notch was visible from Canfield, OH…and Bill got it! Check the bottom limb of the Sun.

Close-up of Third contact with some small Bailey's Beads action. *Photo credit: P. Plante*



Eclipse sequence assembled by Jim. Note that the first image looks like it was taken very close to the time Bill Pearce took his shots in Ohio. The second from left image, bottom row looks close in time to Phil's 3rd contact image. *Photo credit: Jim Haklar*

Eclipse Sunset, composite photo. *Photo credit: Jim Haklar*

The eclipse group outside Fuddruckers (after lunch). L-R: Jim, Phil, Heidi and Isaac. Photo taken by Juan.