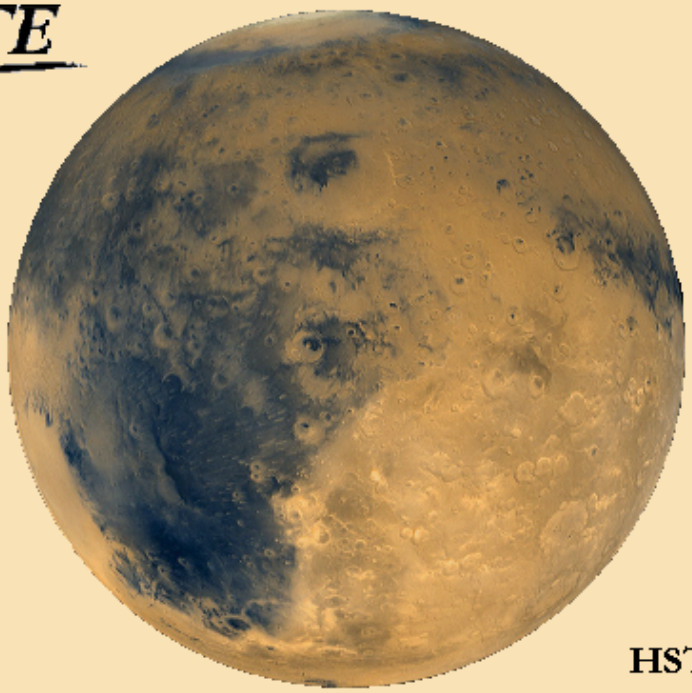
THE METEORITE



MARS

Syrtis Major Region

(South is up)

HST

Newsletter of the Mahoning Valley Astronomical Society, Inc.

IN THIS ISSUE:

APRIL 2014

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

THE METEORITE

Newsletter of the Mahoning Valley Astronomical Society, Inc.

APRIL 2014

MVAS CALENDAR

APR 12	Annual Chili-fest at the MVCO. 7:00 PM start
APR 26	Business meeting at the MVCO 8:00 PM
MAY 3	MVAS-OTAA Stargaze, Scenic Vista, 6:00 PM
MAY 17	Western Reserve camp-out 12:00 PM until.....
MAY 24	Meteor shower watch. 2:00AM Scenic Vista.
MAY 31	Business meeting at YSU at 6:00 PM. Transfer to Mahoning Country club star gaze after meeting.

NATIONAL & REGIONAL EVENTS

April 12-13 **NEAF** (Northeast Astronomy Forum & Telescope Show). Rockland Community College, Suffern, NY, USA. More than 115 on-site vendors, World-renowned speakers, Astro-imaging workshops, Daily solar observing, STARLAB planetarium shows, Astronomy events for kids. http://www.rocklandastronomy.com/NEAF

May 10 **Astronomy Day.** World Wide event. Contact the Astronomy Day Head-quarters (Astronomical League) for more information. http://www.astroleague.org/al/astroday/astrodayform.html

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/

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

NEWS NOTES

A Tetrade of eclipses. A series of lunar eclipses is about to begin with the total eclipse on April 15th. This midnight eclipse is visible across North America. It begins a lunar eclipse tetrad, which is a series of 4 consecutive total eclipses occurring at approximately six month intervals. The April 15, 2014 eclipse, will be followed by another on Oct. 8, 2014, and another on April 4, 2015, and another on Sept. 28 2015. What is most unique about the 2014-2015 tetrad is that all of them are visible for all or parts of the USA. Usually, lunar eclipses come in no particular order. A partial can be followed by a total, followed by a penumbral, and so on. Anything goes. Occasionally, though, the sequence is more orderly. When four consecutive lunar eclipses are all total, the series is called a tetrad.

"During the 21st century, there are 9 sets of tetrads, so I would describe tetrads as a frequent occurrence in the current pattern of lunar eclipses," says Espenak, NASA eclipse expert. "But this has not always been the case. During the three hundred year interval from 1600 to 1900, for instance, there were no tetrads at all." The April 15th eclipse begins at 2 AM Eastern time when the edge of the Moon first enters the amber core of Earth's shadow. Totality occurs during a 78 minute interval beginning around 3 o'clock in the morning on the east coast, midnight on the west coast. Weather permitting, the red Moon will be easy to see across the entirety of North America.

Good Morning! France's National Centre for Space Studies (CNES), in Paris, said that the spacecraft *Philae* had re-established contact with Earth. An "initial signal was received at 3.00 pm (1400 GMT) March 28 at mission control in Cologne, Germany". The 220 pound lander was revived after more than three years of deep space hibernation. It was a key phase of a billion-dollar mission launched over a decade ago. The fridge-sized robot is designed to make the first-ever spacecraft landing on a comet. The lander is traveling aboard an unmanned probe called *Rosetta* which will make an historic rendezvous with Comet 67P/Churyumov-Gerasimenko this summer. The comet is currently 400 million miles from Earth. In November, the Philae lander is due to descend to the comet, then anchor itself before using its 10 instruments to probe the surface.

New filters? MIT researchers have produced a system that allows light of any color to pass through only if it is coming at one specific angle. The technique reflects all light coming from other directions. This new approach could ultimately lead to advances in solar photovoltaics, detectors for telescopes, microscopes, and privacy filters for display screens. Light waves can be defined by their color, polarization, and direction. It has long been possible to filter light according to color or polarization, but filtering based on the direction of propagation has remained elusive. The findings could prove useful in optical systems, such as microscopes and telescopes, for viewing faint objects that are close to brighter objects - for example, a faint planet next to a bright star. By using a system that receives light only from a certain angle, such devices could have an improved ability to detect faint targets. The filtering could also be applied to display screens on phones or computers, so only those viewing from directly in front could see them.

- All articles above edited from Space Dailey News

MINUTES OF THE MARCH MEETING

MARCH 29, 2014 at YSU

Shortly after 7:00 PM Mike Heim gave a talk on using narrow band filters for imaging deep sky objects. He uses mostly his 6" Newtonian. He began with a comparison of DSLR and dedicated CCD/CMOS cameras. He preferred the monochrome camera for its use of all the pixels; higher resolution and sensitivity, over color imagers. He uses mostly OIII, SIII and H-α filters, for tri-color imaging. Jodi McCullough gave the first in a series of constellation talks. These will be based on the Constellation of the month as published in the Meteorite. The March issue was Leo, so Jodi introduced several of the objects to observe and use for Homework reports. Good job by both speakers. The group then moved to the planetarium.

At about 8:10 PM Dr. Pat Durrell gave a talk about his ongoing research on the Virgo Cluster of Galaxies. Most of his data is collected using the Canada-France-Hawaii Telescope on Mauna Kea in Hawaii. The telescope's camera features a mosaic of CCD sensors- called MegaCam. It can cover over one square degree of sky. He used the analogy of galaxy clusters as cities. How galaxies form along filaments in the universe, like cities that develop along major highways. He had many stunning images of the Virgo Cluster, including close-ups of M-87 and "The Eyes" in Markarian's Chain. He concluded with a map of the cluster with all of the hundreds of new dwarf galaxies that have been discovered in deep images. This map was submitted the night before for review and publication. It was a most informative and engaging presentation. eh.

Once the public cleared from the planetarium, the meeting was called to order by President Lou DiNardo at 9:15 PM. Roll Call was taken. All officers and Trustees were present. Twenty-five members gave the password. Guests included Virginia Bartos, Dominic and Nick Mattussi, and John Monsanti, former MVAS member from the late 1960's. There was a call for the reading of the Minutes. Don Cherry and Bob McCully moved and seconded, respectively, to suspended the reading of the Minutes and accept the Minutes as published in the Meteorite. By voice vote, all were in favor and the Minutes were adopted.

TREASURER'S REPORT: The Report was read by Steve Bartos. There were no questions or corrections brought forth. Larry Plante made a motion and Mark Baker seconded it, to accept the Report as read. By voice vote, the motion passed.

General Fund	**2/1 thru 2/28 2014**	
OPENING BALANCE:	$	9,585.01
CLOSING BALANCE:	$	9,925.16
AVAILABLE FUNDS (NON-RESERVED):	$	5,696.04
ACCOUNT NET GAIN/LOSS FOR THIS PERIOD:	$	+340.15
INCOME:		
DUES	$	380.00
MVAS MERCHANDISE		10.00
INTEREST INCOME		0.15
TOTAL INCOME	$	390.15
EXPENSES:		
CK# 2804 SCENIC VISTA SPONSORSHIP-2014	$	50.00
TOTAL EXPENSES	$	50.00
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 dues paid by: *R. Blevins, D. Cherry, B. Danko, R. Mattussi, Chuck & Carol Oiesen, D. Ruck, D. Schneider, G. Thomas, III, T. Seckler, K. Evans. THANKS IS GIVEN TO ALL OF THE ABOVE!*

CORRESPONDENCE: Two letters were on the desk at the MVCO during BinoBlast. One was from a California based T-shirt company and the other was a donation request from Scenic Vista. We already sent this in (see Treas. Report). Phil noted that they have the wrong address and used Mike's. He will contact the Park and give them our P.O. Box number. No other mail was received.

COMMITTEE REPORTS: *IMAGING COMMITTEE:* Jodi And Roy McCullough went to Yellowknife, Canada to view and image aurora. They had success and have may fantastic images. Hometown clouds kept others from imaging. Don Cherry managed some lunar images. *VISUAL COMMITTEE:* No forms turned in. [ed.- someday I will prepare the 2014 forms]

OFFICER REPORTS: *OBSERVATORY DIRECTOR:* Larry Plante reported that the MVCO seemed to be in fine shape when everyone attended the BinoBlast event. There seemed to be very little water on the roof. No obvious leaks. Good news after the nasty winter we have had. No Homework was turned in. *LIBRARIAN:* Nothing to Report.

OLD BUSINESS: Rich Mattuissi asked about the Western Reserve event on our calendar (May 17th). This was set-up though a contact with Sharon Shanks. Phil believed that Jodi had some information. Jodi said it was an all day event conducted by the middle school there. A family campout was planned with the MVAS doing a sky show at nightfall. This needs more investigation. Jodi reminded the membership that the May 31st meeting has been moved to YSU and begins at 6:00 PM. Afterward, members will move to the Mahoning Country Club on Logan Ave. for a star gaze at a private birthday party.

Phil reminded everyone of the Chili-fest on April 12th at the MVCO. At that time members can formulate a plan for observing the lunar eclipse on April 15. It starts at 2AM. Weather forecast will weigh-in heavily on plans. Group observing at the MVCO or just observe from home. Rosemary asked about water for the chili event. Larry can turn the well on for the event. Takes 5 minutes. The refrigerators will likely be turned on for the upcoming observatory season.

NEW BUSINESS: Chris Stephan sent word to Jodi about the new meteor shower radiating from Camelopardalis. See the May 2014 S&T issue for details. There could be many fireballs and it could develop into a storm. Predicted time of maximum is around 7:10 UT on May 24. This is a Saturday morning at 3:00 AM. Chris wanted a group session at the MVCO. He would prepare meteor count observing forms (for the International Meteor Association). Jodi felt that Scenic Vista would offer better skies. On a motion by Pat Durrell and several seconds, an MVAS meteor watch will be held at Scenic Vista. Arrival time will have to be determined for the 3:00 AM event. It will be a mostly moon free evening so stargazing prior to the shower is a possibility. The next meeting talk will be by Roy McCullough on his recent aurora hunt in Canada. Pandian will give a talk on the next Constellation of the month- Virgo. These talks will be after the regular 8:00 PM meeting. There will be no talks at the May meeting since it starts early and we have to set up at the party.

GOOD OF THE SOCIETY: R.I.P. Larry reported that Duke, the landlords dog had passed away in November. Duke was

everyone's buddy. The Golden Retriever was a common visitor when we gathered at the MVCO. He died of cancer, in three organs. He has been replaced by a smaller dog named Baxter.

Phil reported that several friends of Maryanne attended the BinoBlast. One was John Monsanti. He had built the original fork mount for the 25" telescope project spearheaded by the late Bernie Cortese. The others are engineers and all three have expressed interest in finishing the 50" mirror. They have a place to put it, A grant has been written to YSU in the hope of getting capital to begin work on this. Word has it that the work will be done by YSU students. The MVAS will have an opportunity to use this scope, to be located in Hartford, OH.

Many thought this was the best of both worlds in that those that hate the mirror will see it gone but the MVAS can still use it, with no upkeep involved. Dan Schneider wants the 50" money to improve current instruments at the MVCO. Such as a new drive gear on the 8" and digital circles on the 16". Bob Danko wants to buy back the 12" EQ mount from Harry Harker and put it back with the 12" scope, because it has a motor drive. The discussion was getting off course and was ended. Phil noted that we had voted to use 50" sale proceeds for O.A.D. funding.

VISUAL REPORTS: Aurora reports from the McCulloughs, thee vso's from Phil Plante and lunar observations by Don Cherry were all the observations the membership could muster.

ADJOURNMENT: Adjournment came at 10:00 PM on a motion from rosemary. We thank our hosts Sharon Shanks for the pizza and drinks and to Mark Baker for the Dunkin Donut desserts. The next meeting will be at the MVCO on April 26, 2014. Meeting begins at 8:00 PM. Scheduled hosts are Ed and Sheila Bishop (main snack), Rosemary Chomos (dessert) and Phil Plante (drinks). PASSWORD: name a Martian feature. Scheduled talk after eats is Aurora by Roy and Constellation of the month by Pandian. *-minutes by Phil Plante*

MVAS REMINDERS

Chili-fest. On April 12th, 7PM bring your best chili to share. If you bring chili you will be entered into a raffle. Prize is "Starlight Nights" by L. Peltier. Everyone is a winner when they are "full" on MVAS chili. We'll have a gibbous Moon up that night. We can learn craters used for crater timings during the lunar eclipse. Mars and Jupiter are up. With some unusual weather luck, we can feast on all these treats as well. Sunset 8:00 PM.

Lunar Eclipse. In the wee small hours of Wednesday April 15 (2AM) a total lunar eclipse will begin. You will likely need to make plans to accommodate this in your work or school schedule. Hopefully the weather will cooperate. No formal gathering is planned at the MVCO, but a few may be there. It will be just as visible from your yard with the comforts of home a few steps away. Get some crater timings

Dues. Time is running out. Get those 2014 MVAS dues sent in.

MVAS ACTIVITIES

The AAVSO recently published its observer totals for the fiscal year Sep. 2012- Aug. 2013. There were 10 variable star observers in Ohio that submitted observations in that period. Top observer was a R. Poxson (location unknown) with 1,172 estimates. Our own Chris Stephan was second with 649. CVAS friend Bob Modic had 227 at 3rd place. Phil Plante of MVAS was 4th with 109. One name was listed a D. Fowler with 14 estimates (7th place), and could possibly be a former MVAS members and YSU instructor. (needs investigation) Congratulations to all observers. Both Chris and Phil were way down in totals and hope to get more observations this year.

BinoBlast 2014: In typical fashion, the event held on March 22 was a cloudy affair. None the lees, eleven people showed up for some chow and to talk shop. MVCO seemed in good shape. Several guests attended, invited by Maryanne Hoffman. One was John Montsanti, a former member from the late 1960's. John had built the original steel fork mount for the 25" mirror. He had worked closely with Bernie Cortese back then. He was pleased to see the 25" was in use but disappointed that the mount he had worked on had vanished soon after Bernie passed away. Two of his friends, each have engineering backgrounds, expressed an interest in finishing the 50" mirror and building a mount. They have a place to put it. Stay tuned.

My Brain Hurts. About a half dozen members went to Stambaugh Auditorium on March 20th to hear a lecture by renowned physicist Dr. Michio Kaku. Dr. Kaku spoke about the "future of the mind" and on his new book by the same name. Using only one's thoughts to control everyday chores such as computers and room lights, to robots in space was a topic covered. Cures for Alzheimer's and other mental maladies are in the works. Mostly a positive outlook, there were concerns about the abuse of these new powers. It was a great lecture with a generous dose of Kaku's humor to lighten things a bit..

OBSERVER'S NOTES: MVAS Lunar Eclipses

April 13, 1968. It was in the late evening of Friday April 12/13, 1968 when a total lunar eclipse was viewed by millions across the eastern USA. At least 50 MVAS members made it to the new observatory in Braceville to observe the event. Special guest was noted columnist and planetarium director Ted Pedas. The total phase began at 10:10PM EST. The weather was clear. Thousands in the area also watched the eclipse. The event was a feature story in the *Warren Tribune Chronicle* issue on April 13,1968. Allen Heasley was the expert that was interviewed. He told of the MVAS eclipse project that included Danjon brightness estimates and unbral size measurements; Bob Andress made crater timings. It was a grand success. A full report of the MVAS observations were sent to *Sky & Telescope Magazine* for evaluation. At the time, planned lunar landings were on the minds of many. Lunar events were of extreme interest.

May 25, 1975. A total lunar eclipse was to begin at 10:00 PM that Saturday night. The membership voted to move the meeting up one week to coincide with the eclipse. It would be a public night at the observatory. Light refreshments were to be provided. The meeting was held at 8:20 PM. Bob Andress discussed projects to conduct. There is no report of how this event went, but weather records indicate fog and rain after midnight. At least they gave it a try.

June 14, 1992. This was a deep partial eclipse; about 69% of the moon would be in shadow. It was a thunderstorm filled Sunday afternoon. The umbra wouldn't take its first bite until 11:26 PM. Driving to the observatory seemed a bit dubious as clouds lingered. Nonetheless about a dozen members showed up. About an hour before the eclipse began the skies cleared out beautifully. Many took photos. Phil Plante used the 16" for photos and to make crater timings. These appeared in the *Sky & Telescope* report on crater timings. Perhaps most noteworthy

about the event was the fact that two $5 charcoal mini-grills came along to grill up many hot dogs. This was the meager beginning of the now classic MVAS food fest. Sure, they had these before, but it had been a long spell since food was a fall back plan for observing activity. Those two grills were used for several years before we got our first gas grill, donated by (the late) Mark Slack. It was a fun night.

December 9/10, 1992. This was a total lunar eclipse and it was very similar to the one that Christopher Columbus used to persuade natives to spare his life. Under the guidance of Dr. Warren Young (MVAS) several high school students used 2 liter bottles as "egg timers" to time the eclipse contacts and then calculate the longitude. They came close to the correct value. Astounding considering the clouds rolled in after first umbral contact. Their report appeared in *Sky & Telescope*. TV channel WFMJ had a video crew on hand to record the event for the late news report. With one inch of snow on the ground and cloudy skies, there was only one thing to do. Dig out those two grills and have at it!. This time it was more than just hot dogs. Burgers and Italian sausage filled the menu. About 30 people huddled in the 16" building, to stay warm. Even though the eclipse was a washout, everyone had a great time.

April 4, 1996. This eclipse rose about 10 minutes before maximum eclipse, at around 8:00 PM. It was a clear night and as many as 20 members showed up. Several had scopes set up for photography. A bigger charcoal grill joined the little ones for an outstanding feast. Perhaps for the first time, a TV set *and* a VCR made it to the observatory, thanks to Larry Plante. The now MVAS standard Monty Python's *Search for the Holy Grail* was watched for the first time there. Most watched this classic while occasionally poking heads outside for a peek at the eclipse. Perhaps also to grab something from the grill. Now with food and TV, the MVO was becoming more like home. It was around this time that members developed a motto that the MVO was our home, not some future dark sky site.

April 15, 2014. There were several lunar eclipses since 1996. November 2003 and October 2005 are two. These followed the established patterns of food and TV. Fast forward to this year. The eclipse on April 15 is the same eclipse (Saros cycle 122) as the 1996 eclipse. We get a repeat performance, only about 8 hours later in the night. But what is most curious is that the background stars nearly match the setting of the 1968 eclipse. Spica will be 2° west of the Moon this year. In 1968, Spica was 1.3° west of the Moon at mid-totality. So with this eclipse we can relive both the 1968 and 1996 eclipses. Perhaps even some crater timings can be done? If only the skies will permit. Being that this eclipse occurs well after midnight it remains to be seen if the grill or the DVD player at the MVCO gets fired-up. In any case it's a chance for eclipse diehards or those nostalgic types to have their moment in the moonlight.

What to Look For April 15th:

1. If skies are clear, around 1:58 to 2:00 AM, look for the first eclipse "notch" in the Moon made by the Earth's Shadow (U1). Look along the left limb of the Moon. Binoculars will help you catch this. This is the start of the umbral eclipse. The Moon will be just west of due south.

2. The bright, blue-white star Spica will be just to the right (west) of the Moon at the start. By eclipse end, it will be about two lunar diameters west of the Moon (to the right). At eclipse end, the Moon will be low in the southwestern sky.

3. Compare the colors of the eclipsed moon, Spica and ruddy-orange Mars to the upper right. It's the brightest "star" in the area. How dark a lunar eclipse gets depends on cloud cover around the Earth's limb. Sunlight passes through this band of clouds before illuminating the Moon. More clouds means a darker eclipse. The colors can range from bight copper to dark grey. The Danjon Luminosity scale has been used for decades to estimate how dark an eclipse gets. Use the scale below to

0. Very dark, almost invisible.
1. Dark eclipse, dark grey or brownish in color.
2. Deep red or rust colored eclipse.
3. Brick red, usually with a bright yellow umbral rim/edge.
4. Very bright copper-red or orange. Bright bluish rim/edge.

Crater Timings

Timing when the umbral shadow crosses the center of a crater is data that can be used to evaluate the density and depth of Earth's atmosphere. You'll need to use a scope at moderate power, say 100x to 150x. The easiest way to do this is to time the instant the umbral shadow first touches the crater rim and then the moment it touches the opposite rim as the crater becomes immersed in shadow. Determine the exact time that was mid-way between these two rim timings. That's the central crossing time. When it's time for the crater to uncover, watch for the first sign of the crater rim to brighten, then time when the last crater rim comes out of shadow. Use the central time again. Record these times with your Danjon estimates. Some predicted central times in UTC for easy to spot craters are below.

Immersion (shadow covers)		*Emersion (uncovers)*	
Crater	Time	Crater	Time
Kepler	6:13 UT	Kepler	8:45 UT
Plato	6:20	Tycho	8:47
Copernicus	6:21	Copernicus	8:54
Tycho	6:45	Plato	9:03

Use WWV short wave or GPS phone time. Data: 2014 RASC Handbook

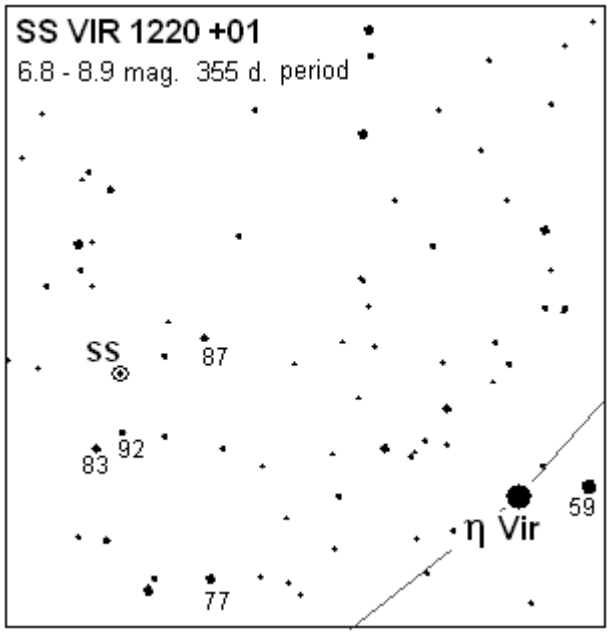
OBSERVER'S HIGHLIGHT: MARS!

Mars reaches opposition on April 8th. For the next 2 months it will be in exceptional view. Perhaps the most famous and easily recognized visual feature is Syrtis Major; resembling the continent of Africa. Unfortunately, Syrtis Major will not be visible from the Americas until late April. Listed below are the rise time of Mars, the time of transit (when it's due south and highest in the sky), the Central Meridian of Mars at transit and finally the most prominent feature displayed at transit. These features are equally interesting and are good practice for Syrtis Major. The Tharsis and Amazonis regions are the dessert areas. Mars will look bland. Find a good Mars map on line, in S&T or the RASC Handbook. Good luck.

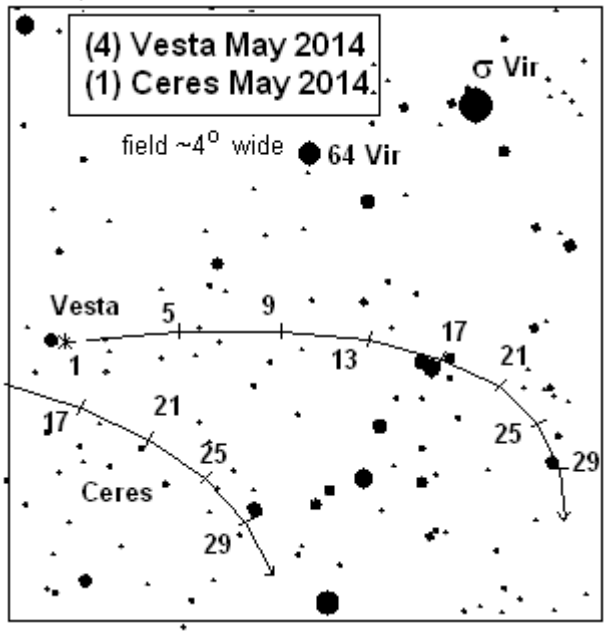
Date	Rise	Transits	Trans CM	Feature
Apr 8	7:44 PM	1:30 AM	160°	Mare Sirenum
Apr 12	7:21 PM	1:11 AM	120	Tharsis
Apr 16	6:58 PM	12:50 AM	089	Solis Lacus
Apr 20	6:35 PM	12:29 AM	040	Mare Acidalium
Apr 24	6:13 PM	12:08 AM	005	Meridani Sinus
Apr 28	5:51 PM	11:42 PM	318	Sabaeus Sinus
May 2	5:31 PM	11:23 PM	283	Syrtis Major
May 6	5:12 PM	11:04 PM	238	Mare Cimmerium
May 10	4:53 PM	10:46 PM	198	Amazonis

OBSERVER'S CHARTS

Variable star of the month: SS Virginis (*abbrev:* SS Vir). This variable is another easy target for medium size binoculars. It is a carbon star with a color index of 4.2. It shines deeper red than even Antares. Makes it easy to pick out, but don't stare at it for long. The retina tends to make red stars gain in brightness like a long exposure image does. Star hop NE from eta Virgo. It will be at peak brightness at the end of May. Have at it!



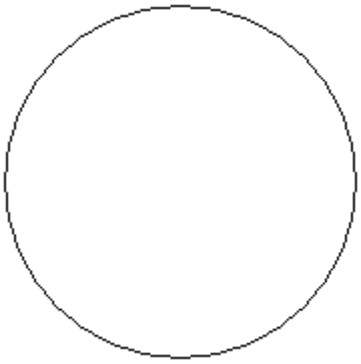
Asteroid of the month: (**4) Vesta.** While you are on SS Vir, sweep about 13° NE to Vesta and Ceres just south of σ Vir. These two asteroids are putting on a close dance this summer. From May 15th to the 17th, Vesta passes north of a group of stars; 6.6, 6.9, 7.9 magnitude. Ceres goes from 7.2 to 7.9 magnitude while Vesta drops from 6.0 to 6.4 mag. as May progresses. Can you see them both in your binos? An image sequence of Vesta on the 16th might make a nice movie.



OBSERVER REPORTS (HOMEWORK)

OBSERVER_____

Featured object: Mars. Please try a sketch of Mars. Use the circle below for the disk of Mars. Mark north, west, etc. near the circle, as appropriate. Please observe the other objects in Virgo. Use the Constellation Chart, charts at left and the Lunar Occultation list in the Almanac. Fill-in the spaces below. Photo copy this form as needed. Turn in *Homework* to the O.D. or Secretary. Thanks!



Mars Observation:

Date:_____ Time(EDT)_____ Scope_____

SS Vir magnitude estimates:

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

(4) Vesta Observations:

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

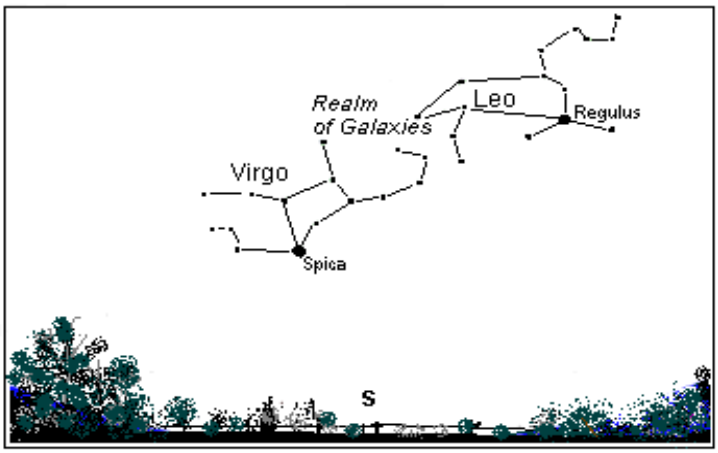
Other Objects in Virgo to observe

D. Sky	Date	Scope	**Dbl.**	Date	Scope	SEP	MAG	SPLIT?
M- 49	_____	_____	γ Vir	_____	____	2.1"	3.5 - 3.5	Y / N
M- 61	_____	_____	θ Vir	_____	____	6.9"	9.4 - 8.6	Y / N
M- 104	_____	_____	Σ 1627	_____	____	19.8"	6.6 - 6.9	Y / N

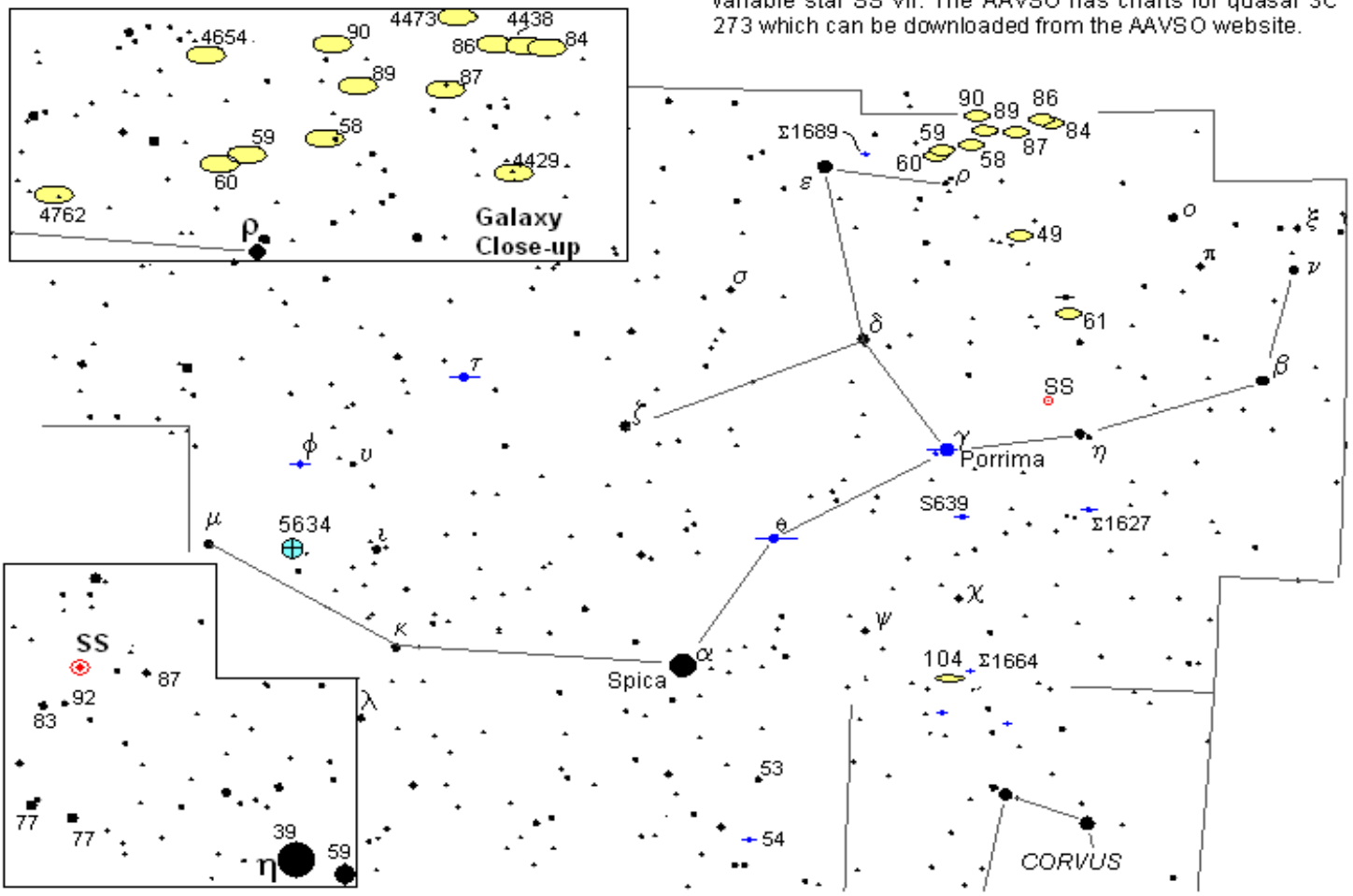
Lunar Occultation's (see Sky Almanac):

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

Constellation of the Month — Virgo



In mid April, Virgo is high in the SE by 10 PM. Around midnight it transit's the meridian and is due south. The bright star Spica is easy to find. From there you can hop northward to the Realm of Galaxies. Go to epsilon, and ther move west to rho. From there go west, using the close-up chart to hunt down the Messier Galaxies. These galaxies are all brighter that 10th magnitude and should be seen in a modest scope under a dark sky. There are several double stars to try. These would be good targets when the sky is not so good. Follow gamma (Porrima) over the next decade as the components slowly open up. You'll be watching a double star's orbital motion in action. There are many more NGC galaxies in Virgo that a bigger scope could tackle. Use a better atlas than the one charted below for these fine NGC's. The brightest quasar is also just north of the variable star SS Vir. The AAVSO has charts for quasar 3C 273 which can be downloaded from the AAVSO website.



DEEP SKY

M49	8.4 mag.	8.1' x 7.1'
M58	9.7 mag.	5.5' x 4.6'
M59	9.6 mag.	4.6' x 3.6'
M60	8.8 mag.	7.1' x 6.1'
M84	9.1 mag.	5.1' x 4.1'
M86	8.9 mag.	12' x 9.0'
M87	8.6 mag.	7.1' x 7.1'
M89	9.8 mag.	3.4' x 3.4'
M90	9.5 mag.	10.' x 4.0'
M104	8.0 mag.	7.1' x 4.4'
N5634	9.4 mag.	3.7' dia.

STARS

DOUBLES:

τ Vir	4.3, 9.5	81"	both white
φ Vir	4.9, 10.0	5.3"	yellow, blue
γ Vir	3.5, 3.5	0.4"	silver, yellow
θ Vir	4.4, 9.4	6.9"	white, violet
54 Vir	6.8, 7.2	5.3"	yellow, blue
Σ1627	6.6, 6.9	19.8"	white, blue
S 639	6.8, 10	56"	yellow, blue

Variable Star

SS Vir 6.6 to 8.7mag. 358 days

Check list

____ M49
____ M58
____ M59
____ M60
____ M84
____ M86
____ M87
____ M89
____ M90
____ M104
____ N5634

____ τ Vir
____ φ Vir
____ γ Vir
____ θ Vir
____ 54 Vir
____ Σ1627
____ S 639

SS Vir

Instruments used:

_____ on _____
_____ on _____
_____ on _____
_____ on _____

____ mag. on ___/___/____
____ mag. on ___/___/____

2014 MAY SKY ALMANAC

Solar and Lunar (EDT).

Date	Sunset	Moonrise	Moonset
1	8 : 21	— : —	22 : 53p
5	8 : 25	— : —	1 : 09a
9	8 : 30	— : —	3 : 17a
13	8 : 34	— : —	5 : 24a
17	8 : 38	11 : 37p	— : —
21	8 : 41	1 : 47a	— : —
25	8 : 45	4 : 03a	— : —
29	8 : 48	— : —	9 : 36p

PLANET WATCH

	Mars	Jupiter	Saturn
Date	*Transits*	*Sets*	*Transits*
1	11:27 PM	1:23 AM	2:03 AM
5	11:08	1:10	1:47
9	10:50	12:57	1:30
13	10:33	12:44	1:13
17	10:16	12:30	12:56
21	10:00	12:17	12:39
25	9:45	12:04	12:22
29	9:30	11:48 PM	12:05

May 2014

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

Asteroid for May 2014 (4) Vesta

Date	Transits	RA hr.	RA min	Dec. deg.	at 1:00AM EDT Alt.	Azm	Magnitude
1	12 : 21 AM	13	28	+04	51°	196°	6.0
5	12 : 02 AM	13	25	+04	50	203	6.0
9	11 : 43 PM	13	23	+04	49	210	6.1
13	11 : 25 PM	13	20	+04	47	216	6.2
17	11 : 07 PM	13	18	+04	45	221	6.3
21	10 : 50 PM	13	17	+03	42	226	6.3
25	10 : 33 PM	13	15	+03	40	231	6.4
29	19 : 17 PM	13	15	+03	37	235	6.5
				+			

Variable Star of the Month: **SS VIR** 6.8 - 8.9 mag 355 day period

Celestial Highlights

Date	UT hr	
1	03	Mars: Syrtis Major on CM
6	07	eta Aquariids peak
7	03	**FIRST QUARTER**
8	06	Regulus 4.9° N. of Moon
10	18	**Saturn at opposition**
11	11	Mars 2.8° N. of Moon
12	04	Algol at minimum
14	19	**FULL MOON**
15	03	Mars: Nix Olympica - CM
21	13	**Last Quarter**
21	03	Mars: Solis Lacus on CM
25	06	Mercury 23° E Elong.
28	18	**NEW MOON**
30	00	SS Vir at maximum

LUNAR OCCULTATIONS FOR MAY 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.
0	21	24	15	*1*	01	24	15	D	3+	005°	289°	XZ 590	6.3	035°	NA
3	23	47	01	*4*	03	47	01	Gr	23+	6	288	26 Gem	5.2	011°	.004"
5	0	04	54	*5*	04	04	54	D	31+	10	282	67 Gem	6.6	117°	NA
5	0	09	11	*5*	04	09	11	D	31+	10	282	68 Gem	5.3	070°	.019"
6	23	18	14	*7*	03	18	14	D	50+	32	255	kap Cnc	5.2	087°	.020"
12	1	35	52	*12*	05	35	52	D	92+	30	222	XZ 1886	5.6	100°	.100"
16	4	38	41	*16*	08	38	41	R	97-	24	209	XZ 2436	6.6	296°	4.40"
18	2	35	10	*18*	06	35	10	R	84-	24	148	XZ 2755	6.6	241°	NA
18	4	27	51	*18*	08	27	51	R	84-	30	177	XZ 2764	5.9	250°	.100"
21	2	48	59	*21*	06	48	59	r	53-	10	112	XZ 3199	6.5	328°	NA
30	21	36	36	*31*	01	36	36	D	5+	7	287	XZ 970	5.7	140°	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=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…..

The 9th OTAA SCENIC VISTA STARGAZE

May 3rd, 2014

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 2014. 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

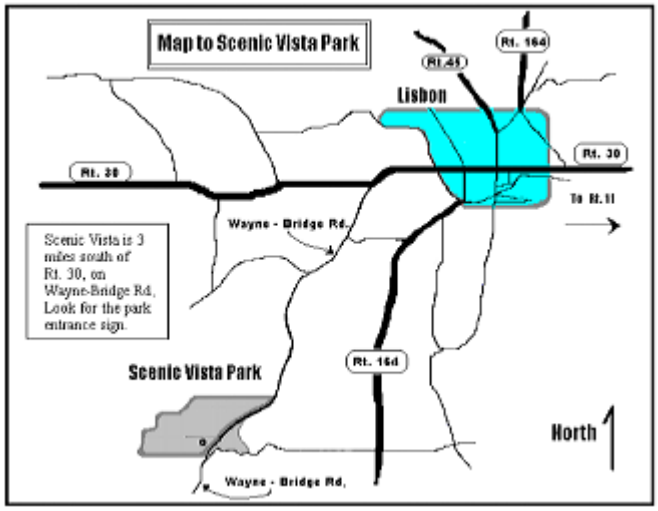
SCHEDULE OF ACTIVITIES

6:00 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.

7:30 PM Informal welcome for OTAA folks at the pavilion. Questions about the Park and observing? Pass along your club news and/or contact info.

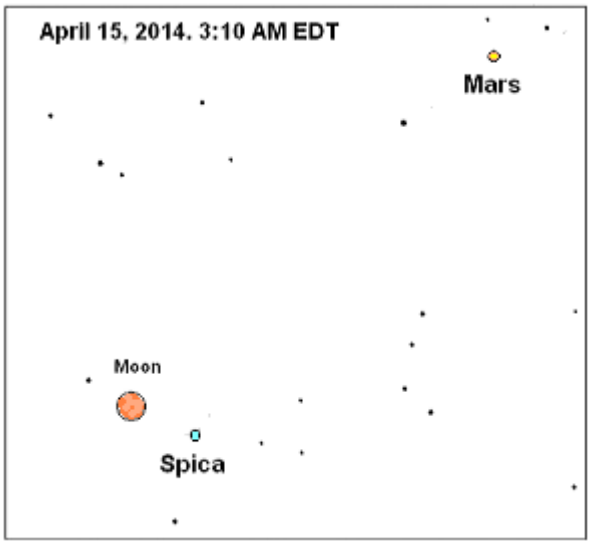
9:00 PM Sunset is at 8:23 PM. Star party begins as darkness sets in. You may use the pavilion for breaks. A coffee pot should be on, so help yourself. For a safe drive home, consider a nap.

6:00 AM ***May 4th…..Sunrise, Official End of Stargaze***

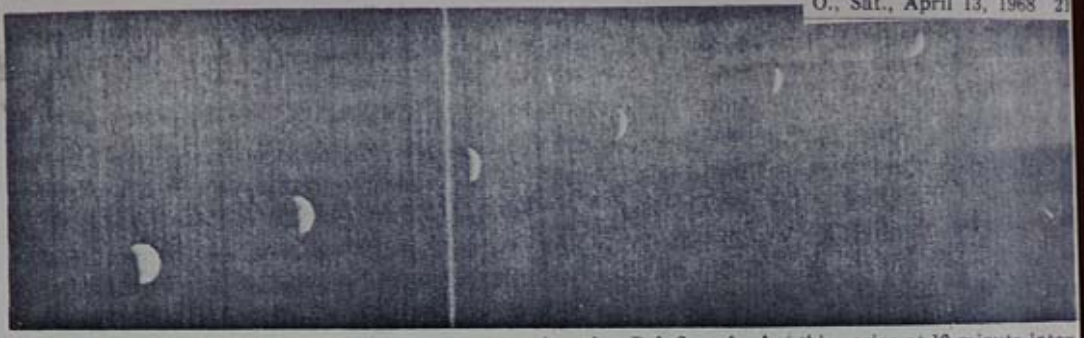


More MVAS Lunar Eclipses

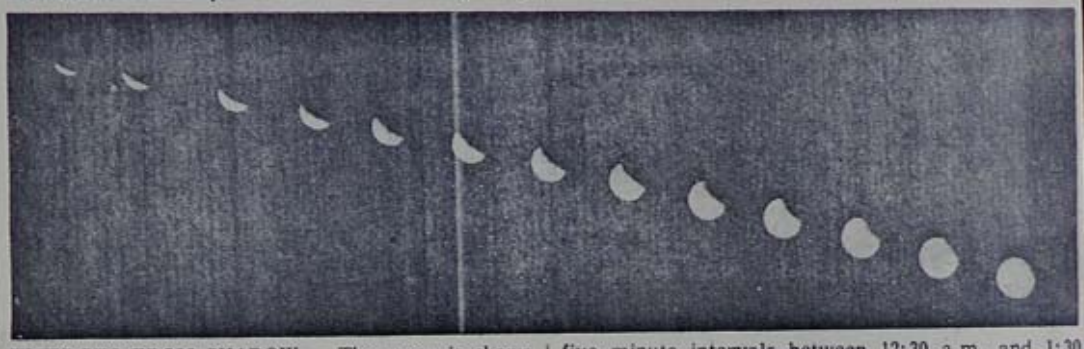
If we are lucky with the weather (HA!) we will have an opportunity to collect valuable data on this eclipse. Luminosity estimates and crater timings are two. The eclipse pace is leisurely enough that one can collect data, take images and have time to sit back and enjoy. You will be busy for sure, but not so rushed to miss something. But always, something goes wrong and if you get hung up on something or passing clouds block the view, don't panic. Continue with your program and do what you can. Use the info given in this Meteorite to work up an observing schedule. Below is a sky map during mid- eclipse.



Below is a photo taken by your editor during the 1996 lunar eclipse at the MVO. Back then the medium was all film. Most definitely, I used a print film with an ISO of 400. Exposure time is lost but most likely it was at least 4 seconds. Image was through a Celestron 8" SCT at prime focus (F/10). These days digital cameras allow one to make exposure adjustments on the fly. This image should give you a basic starting point in your exposures. Take many, keep refocusing and adjust exposure. Depending on how dark the eclipses is, you may have to compromise between shadowed and non-shadowed areas of the Moon. During partial phases, the uncovered part of the moon will tend to be overexposed if you try to get the eclipsed portion's color. Do your best and let us see your results!



HOW ECLIPSE LOOKED HERE — Fine weather last night gave Warren district residents an excellent view of the total eclipse of the moon. Tribune photographer Bob Semple shot this series at 10 minute intervals between 10:30 and 11:20 p.m. (Tribune Photos by Bob Stemple)



EMERGES FROM SHADOW — The moon is shown emerging from the earth's shadow following total eclipse last night. Semple shows this series at five minute intervals between 12:30 a.m. and 1:30 a.m. Both sets of photos were shot at one one-hundredth of a second at F11.

★ ★ ★ ★ ★ ★

Thousands In District See Eclipse Of Moon

(Photos On Page 21)

Thousands of Warren area residents were among millions of amateur skygazers in the U.S. who were treated to a lunar spectacular Friday night and early today as the moon turned a coppery red during a total eclipse.

The weather here was ideal for the eclipse.

Cloud cover curtailed viewing in a number of areas but excellent visibility was generally reported along the Eastern Seaboard, east of the Mississippi and in some sections of the far West.

The first noticeable effects of the eclipse came at 10:10 p.m., EST, when the earth's umbra, or deep inner shadow, began to edge into the silvery disc.

By 11:22 p.m. the moon was completely obscured and that phase of the eclipse lasted until 12:12 a.m. The moon finally cleared the umbra again at 2:25 a.m.

The dull, ruddy appearance of the moon as it passed into and out of eclipse was caused by sunlight being refracted in the earth's atmosphere, according to astronomers.

A total lunal eclipse occurs only when the sun, earth and a

(Please Turn To Page 21, Column 5)

(Continued From Page One)

full moon fall into a direct line. At such times the moon passes through a cone-shaped shadow that extends 860,000 miles into space from the earth.

Eclipse watchers gathered atop the Empire State Building with assorted telescopes and in lower Manhattan's Battery Park about 150 observers assembled along the sea wall or stretched out on blankets.

In Washington an information officer for the Geological Survey described it as "a textbook eclipse—beautiful."

And in the Boston area some skywatchers got an unexpected bonus—an apparent meteor flashed across the northern sky while they were peering at the darkened moon.

The Smithsonian Astrophysical Observatory said several persons reported a bluish ball of fire which left a small trail.

Society Views Eclipse

More than 50 members of the Mahoning Valley Astronomical Society gathered at the observatory in Braceville Township for the viewing of last night's moon eclipse to make official observation.

Allen Heasley, the observatory director, said the eclipse which he described as a "dark" eclipse, was one of the most perfect in a number of years.

"Conditions were excellent for viewing and the timing of the eclipse was perfect," Heasley commented. Ted Pedas, who writes a column on astronomy for The Tribune, was a special guest.

Heasley said the society gathered considerable information on the phenomenon including color, brightness and other estimates which were recorded as a club project. He said scientists use the information to discover the density of the earth's atmosphere. The information is sent to a central agency for evaluation, Heasley reported.

One observation was noted by the amateur astronomists last night. They said:

"In this age of projected space travel and the possibility of a moon landing by man in the not so distant future, had a man been on the moon last night he would have been viewing an eclipse of the sun just as we were viewing the eclipse of the moon."

The 1968 lunar eclipse was viewed throughout the Mahoning Valley. The news media was not sleeping on this one. The Warren Chronicle Tribune featured an article on the eclipse and asked the local experts about this event. Our own Allen Heasley gave a rundown of the eclipse and what the MVAS was doing in regards to gathering data. At this time, a US lunar landing attempt was eagerly anticipated. To occur sometime in the coming months; All attention was on the Moon and what we could learn about it before humans set foot on the lunar regolith.

The MVAS archives have several copies of the article. The one at left was cobbled together by someone at the time. It appears that the left most column was from the front page. The two center columns are from page 21. The Tribune photographer did a fine job with the lunar image sequence. Something our imagers might hope for this time around..... Remember, Spica was to the west of the Moon that night. It will be again this April.

If you want to read the article you may have to zoom in with your PDF Reader. Apologies for the poor copy of this article. I had to resort to a hand held camera, getting this and the next two images done in a rush.

Mahoning Valley Observatory

Mahoning Valley Astronomical Society, Inc.

BERNARD CORTESE, President
JOHN HOYNOS, Vice President
RONALD DOMEN, Secretary

ALLEN HEASLEY, Treasurer
JOHN GODJICS, Curator
ALLEN HEASLEY, Observatory Director

April 14, 1968

The Editors
Sky and Telescope
49-50-51 Bay State Road
Cambridge, Mass. 02138

Dear Sirs:

This has reference to the lunar eclipse of April 12, 1968.

Members of our Society met at our observatory in Warren, Ohio to observe the eclipse. The weather conditions were very good, the seeing being rated as 9 on a scale of 10.

We had worked out an observing program along the lines of those suggested in the April issue of your fine magazine.

I have analyzed the results of our observations and they are as follows:

THE PENUMBRA

1. It was extremely difficult for our averse viewers to detect any penumbra shadow until long after the predicted first contact of 9:11 P.M. EST. The first indication was noted at 9:40 P.M. EST by one of our more trained observers using 7 x 50 binoculars. At the same time another member detected it using a projection screen on our 16" F-17 cassegrain telescope.

2. We later estimated the width of the penumbra shadow as being 1/4 to 1/3 the moons diameter.

COLOR

1. Copper and orange during partial stages changing to dark brown during totality.

BRIGHTNESS

1. Estimated L number was 1.

2. Estimated stellar magnitude ranged from -2 to -2.7 by various of our members. The method used was binocular held reversed to the normal method of use. Our more experienced variable star observer estimated it as -2.7.

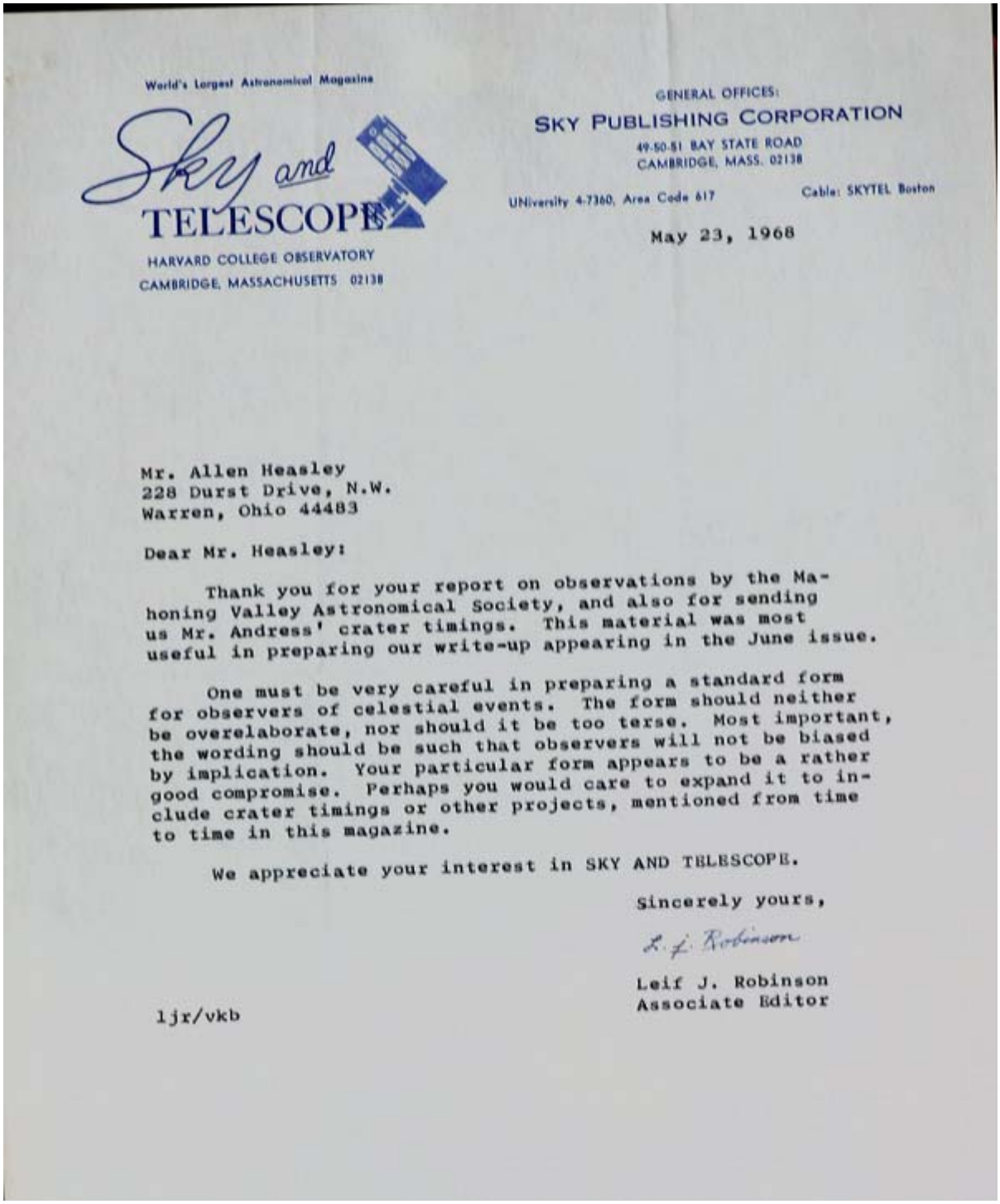
COMMENTS

I am enclosing a copy of the observing form this writer designed for use on this project. I am sure we will be able to expand the form to include a number of other projects for use during future eclipses. I offer the suggestion perhaps you could design and publish a better form for use by your many subscribers who would want to

Eclipse Report!
The MVAS was active in submitting observations to the various organizations that needed the particular information. Lunar eclipses were no exception. Several members made Danjon luminosity estimates while Bob Andress made crater timmings. The MVAS team came up with an observing form, which observers used for the eclipse. A summary form was submitted to *Sky & Telescope Magazine* for evaluation.

The letter at left was sent to S&T. It summed up the luminosity estimates. Bob's crater timings were also sent with the letter. In closing the letter, Allen Heasley suggested that S&T adopt a similar form for their readers to use in future eclipse campaigns. There were three additional closing lines on a second page, to this effect. They have been left out to save space and time.

This letter was found in the archives along with the reply letter sent by S&T.



World's Largest Astronomical Magazine

Sky and TELESCOPE

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CAMBRIDGE, MASSACHUSETTS 02138

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49-50-51 BAY STATE ROAD
CAMBRIDGE, MASS. 02138

UNiversity 4-7360, Area Code 617 Cable: SKYTEL Boston

May 23, 1968

Mr. Allen Heasley
228 Durst Drive, N.W.
Warren, Ohio 44483

Dear Mr. Heasley:

Thank you for your report on observations by the Mahoning Valley Astronomical Society, and also for sending us Mr. Andress' crater timings. This material was most useful in preparing our write-up appearing in the June issue.

One must be very careful in preparing a standard form for observers of celestial events. The form should neither be overelaborate, nor should it be too terse. Most important, the wording should be such that observers will not be biased by implication. Your particular form appears to be a rather good compromise. Perhaps you would care to expand it to include crater timings or other projects, mentioned from time to time in this magazine.

We appreciate your interest in SKY AND TELESCOPE.

Sincerely yours,

L. J. Robinson

Leif J. Robinson
Associate Editor

ljr/vkb

Here is the reply letter sent by S&T editor Leif J. Robinson to Allen Heasley. It appears that the suggested form was on track. If you look in the files at the MVCO, there were other forms in use: meteor counts, sunspot counts. Of course many used the AAVSO report forms for variable star work. In 1992, Phil Plante introduced a series of observation forms for all types of observations. They were based on report forms of various organizations: ALPO, IOTA, IMO, AAVSO. This was done because there seemed to be a constant complaint that the club didn't do anything astronomical. The forms were never used. The complaints magically ceased. Instantly.

Now-a-days we have the Homework page in the Meteorite
It was being used for a while, (thank you all) but submissions have dwindled to next to nothing. There is also a Visual Committee Report that you can take a year to fill out. It just takes some planning and effort. Once you get into the habit of marking off an object you saw, it becomes a natural part of the day. It's almost like keeping a diary. Do some observing and record what you see. Let's try to be more like our predecessors. We do celebrate all they did to get us here on a 75th anniversary. Observation reports would be a fitting way to pay tribute. *- P. Plante*