THE METEORITE

The Leo Triplet

M66 – M65

NGC 3628

Newsletter of the Mahoning Valley Astronomical Society, Inc.

IN THIS ISSUE:

MARCH 2014

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THE METEORITE

Newsletter of the Mahoning Valley Astronomical Society, Inc.

MARCH 2014

MVAS CALENDAR

MAR 22	BinoBlast 2014. MVCO. 7:00 PM.
MAR 29	Business meeting at YSU, after 8:00 PM show.
APR 12	Chili-fest at the MVCO, 7:00 PM
APR 26	Business meeting at the MVCO. 8:00 PM

NATIONAL & REGIONAL EVENTS

MAR 26-30 **Hodges Gardens Star Party.** Held at the Hodges Gardens State Park, Florien, Louisiana. The Baton Rouge Astronomical Society invites everyone to join them for the 6th Annual Hodges Gardens Star Party (formerly the Kisatchie Star Party). Lodging options include tent camping, RV camping and cabins. http://www.brastro.org/hgsp.html

April 26-27 **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, Getting Started classes for beginners, Space & Astronomy events for kids. http://www.rocklandastronomy.com/neaf/

2014 OTAA Events (so far)

MAY	**3**	MVAS-OTAA Stargaze at Scenic Vista Park.
JUN	**29**	**Chagrin Valley** at Indian Hill Observatory.
AUG	**23**	MVAS-regular convention at the MVCO.
SEP	**20**	**Black River** at Methodist Church in Birmingham.

MVAS, P.O. BOX 564 NEWTON FALLS, OH 44444-9998

MVAS Homepage- http://mvobservatory.com

MARTIAN NEWS NOTES

Dateline: Murray Ridge. A rock, dubbed "Pinnacle Island," appeared in January 2014 next to Mars Rover Opportunity, where it had been absent a few days earlier. Researchers planned to use the HiRISE camera on NASA's Mars Reconnaissance Orbiter to check the remote possibility that a fresh impact by an object from space might have excavated a crater near Opportunity and thrown this rock to its new location. A Feb. 14, 2014 image from the HiRISE showed the Mars Rover Opportunity and its tracks. But no fresh impact crater. Continued observations by the Rover solved the Pinnacle Island mystery. The rock had been struck, broken and moved by a rover wheel. Images show the track over the original rock. The Rover drove over it.

Resembling a jelly donut, the rock is only about 1.5 inches wide. The white-rimmed, red-centered rock caused a stir when it appeared in an image the Rover took Jan. 8 at a location where it was not present four days earlier. More recent images show the original piece of rock struck by the rover's wheel, slightly uphill from where Pinnacle Island came to rest. Examination of Pinnacle Island revealed high levels of elements such as manganese and sulfur, suggesting these water-soluble ingredients were concentrated in the rock by the action of water. Opportunity will now travel south and uphill to investigate exposed rock layers on the slope. The slope is on Murray Ridge which is part of the western rim of Endeavour Crater, an impact scar that is billions of years old and about 14 miles in diameter.

Dateline: Mount Sharp. After detecting in late 2013 that holes in Curiosity's aluminum wheels were accumulating faster than anticipated, the rover team used images taken from orbit to reassess possible routes. These routes will investigate the lower slopes of Mount Sharp, where water-related minerals have been detected from orbit. A reverse drive technique was developed with testing on Earth. This would lessen damage to Curiosity's wheels when driving over terrain studded with sharp rocks. On Tuesday, Feb. 18, the rover covered 329 feet- the mission's first long trek that used reverse driving and its farthest one-day advance of any kind in more than three months. The mission's destinations remain the same: stopping at a science waypoint first (now called Kimberly) and then the long-term goal of investigating the lower slopes of Mount Sharp, where water-related minerals have been detected from orbit. Getting to the chosen route, which appeared to be less hazardous for the wheels, required crossing a 3-foot-tall dune. Curiosity crossed the dune on Feb. 9 with ease and the following terrain was as smooth as it looked from orbit.. There are fewer sharp rocks, many of them are loose. In places there's a little bit of sand cushioning the vehicle. Team members will continue to use orbital images to plan future routes.

Dateline: Palikar Crater/Orbit. Seen from Mars orbit, dark, seasonal flows emanate from bedrock exposures at Palikir Crater. The dark, finger-like markings flow down slopes when temperatures rise. Corresponding seasonal changes in iron minerals on the same slopes coupled with a survey of ground temperatures suggest water flow. This supports a suggestion that brines with an iron-mineral antifreeze, may flow seasonally. Even briny water on Mars today , would be a major discovery.

MINUTES OF THE FEBRUARY MEETING

FEBRUARY 22, 2014 at YSU

Prior to the meeting the web based lecture on spectroscopy was given by Tom Fields. It was an engaging talk that showed how amateur astronomers can do scientific work with their equipment, using a simple diffraction grating filter. Highlighted was the recent work done by Jody, Roy and Lou in analyzing the spectra of supernova 2014J. They detected the expanding shell of the supernova, and measured its rate of expansion. About 18 people attended the talk. Running over, at least half left to watch the planetarium show *Cosmic Castaways*. Those that remained held a Q&A session with Tom. We thank Jodi and Roy for setting this up. We look forward to future talks.

After the show, all members gathered in the planetarium for the meeting. President Lou DiNardo called the meeting to order at 9:14 PM. All Officers and Trustees were present. Roll Call was taken. Twenty-seven members were present. There were several guests in attendance; Aden Rogers, Kaden Osheimer, Dominic and Nick Mattuissi, Tom Seckler and Kimberly Evans. Tom and Kimberly were interested in membership. A Call for the Reading of Minutes was made. Bob Danko moved to suspend the reading and accept the Minutes as published. Karin DiNardo seconded the motion. All in favor, the motion was adopted.

TREASURER'S REPORT: The Report was read by Steve Bartos. there were no questions or discussion. On a motion by Paul Baker and a second from Roy McCullough, the Report was accepted as read, by voice vote.

General Fund	**1/1 thru 1/31 2014**	
OPENING BALANCE:	$	9,508.84
CLOSING BALANCE:	$	9,585.01
AVAILABLE FUNDS (NON-RESERVED):	$	5,355.89
ACCOUNT NET GAIN/LOSS FOR THIS PERIOD:	$	+76.17
INCOME:		
DUES	$	170.00
ASTRONOMY CALENDARS		20.00
INTEREST		0.17
TOTAL INCOME	$	190.17
EXPENSES:		
CK# 2803 DEPOSIT FOR 2014 CHRISTMAS PARTY	$	110.00
TOTAL EXPENSES	$	110.00
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: P. & J. Baker, L. Plante, S. Shanks, and B. McCully. We thank you all for the support.

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

COMMITTEE REPORTS: *IMAGING COMMITTEE:* Lou gave a quick review of the talk by Tom Fields. He reported the findings that he and the McCulloughs obtained on SN2014J. Using the grating filter and their imaging equipment they were able to deduce the expansion rate of the supernova at 31 million miles per hour. The committee did the usual collaborative work with Lou processing the image files taken by Jodi and Roy.

OFFICER REPORTS: *OBSERVATORY DIRECTOR:* Larry has not been to the MVCO lately. Most of his time has been spent shoveling snow. Bob was there recently and reported no signs of water in the 16" building. The vent patch (plastic bag cover) seems to be working. Bob then noted that the 8" building is being flooded as it has been the last few years. It seems the hill to the west is slowly slumping towards the 8" building. We may need to address this in the near future. He suggests we dig out the ground, getting it below the 8" floor/foundation. Installing some sort of culvert along the 8" may be needed as well. Bob went on explain something similar happened in the late 80's when the state installed culverts at the top of the drive. When these overflowed, water would come down the drive, into our buildings. Our neighbors to the north also had flooding problems at that time. It will be interesting to see how this plays out; if the state will correct the situation. *LIBRARIAN:* No Report.

OLD BUSINESS: Phil began discussion on the Mill Creek MetroPark event the following Saturday (March 1st). There had been talk of cancellation due to cold temps. But at least 10-11 members said they would show up even in cold. Current forecast was for clear skies with an overnight low of 10 degrees. We would be setting up at 6:30PM, hopefully earlier. There should be extension cords for those that need power. We'd need at least 5 telescopes, each one dedicated to a specific type of object. The Park's Program Director (Rikki) will have signs made up to place at a telescope/object. She will also have craft work ready for kids. There is a warm building for this. Observing and indoor activates may happen simultaneously. Several DVDs will be available for public viewing. Rikki will be sending out 10,000 e-mails to the Park subscribers list, announcing the event. Jodi gave a quick overview of the indoor activities planned such as play dough models of the planets (size comparison), scale models of the solar system based on one's height as a reference. Planisphere construction and a review of the upcoming lunar eclipse in April (Phil will cover this). Jodi also will speak on things viewed thru the telescopes.

Rich Mattuisi is working on getting the Boy Scouts to attend the Bill Pearce Star Party in June. Steve had the MVAS apparel on hand for anyone interested in purchase of said items. o more Astronomy calendars are left. We sold out!

NEW BUSINESS: Pat Durrell recently received a request for a star party to be held at Bar Mitzvah on May 31st. It's our meeting night. There would be need for astronomers at this event Seeking help he emailed Jodi and Phil. This brought up the notion of forming a contact committee to handle such requests. Two separate issues related to this conundrum were discussed. *First issue:* the May 31st date conflicted with our meeting at the MVCO. There would be well over 200 people at the party. Jodi and Roy were willing to work this event, but would need help. After some debate it was decided to move the meeting to YSU and have it at 6:00 PM. Afterward we would travel to the event. The decision was by vote on a motion from Jodi and second from Pandian. The Bar Mitzvah will be held at the Youngstown Country Club on Logan Ave.

Second issue: Formation of a contact committee for outreach purposes. Jodi is will to chair this. Discussion ranged from how to implement this on out webpage. It was noted that the page needs many updates. Sam or Harry usually handles this. More recently, the late Bill Pearce established the site we now have. Paul Baker suggested he have his students manage the website. There were some objections related to continuity due to graduations and privacy issues. Roy McCullough moved to establish and Outreach Committee, with a link on the MVAS website. Pandian seconded this motion. All were in favor, by

voice vote. Committee members would be Jodi, Lou, Rich and Pat. It will be called “Public Outreach” on the website. Harry or Sam would be contacted to establish this.

The talk at our next meeting will be by Mike Heim on narrow band imaging. Jodi will begin a series of meeting talks based on the Constellation of the Month as seen in your Meteorite. Phil then noted that there is a conflict with the CVAS OTAA on June 28, our meeting night. CVAS is planning a trip to Telescope Park that night as well. Phil suggested that those members that expressed an interest in going to Telescope Park, meet at the MVCO and car pool to the CVAS event. Others would have a regular meeting at the MVCO. Some wanted to move the meeting to a different date or meet earlier. Bob Danko began to describe the Telescope Park weekend schedule and directions on how to get there. No resolution on the June 28th situation was reached. To be discussed later.

Guest Tom Seckler introduced himself. A form physics student at YSU, he owns a C-6 and a new 80mm ED refractor. He is into imaging. He prefers Linux operating system for his computer activities. Kimberly has always been interested in astronomy. Phil nominated them for family membership. Larry Plante made a second. By a unanimous vote, they were accepted as members of the Society. They hail from Hubbard, OH. We welcome you both to the club and we look forward to many great observing or imaging sessions with you.

GOOD OF THE SOCIETY: Nothing reported.

VISUAL REPORTS: Dan Schneider got a sunspot group, Larry sees Venus in the morning sky. Phil got 8 vsos one night. Chris Stephan sent a report that he had 46 variables in February..

ADJOURNMENT: Adjournment came at 10:20 PM. We thank our hosts Chuck and Debbie Iliff for the great subs, Pandian for the tasty pastries and Ed Eaken for the life saving sodas. The next meeting will be at YSU on March 29, 2014. We have our regular talk at 7:00 PM. Meeting begins after the 8:00 PM. Scheduled hosts are Sharon Shanks snack and drinks. Mark Baker will supply desserts. PASSWORD: Name a galaxy. Please avoid catalog numbers. *-minutes by Phil Plante*

MVAS REMINDERS

2014 Dues. One last reminder that it's time to pay your dues for 2014. It is $40.00 for regular adult membership. Add $10 for each member of your household that wants to have membership. It is $10 for Junior membership for those 16 years old or under. Send checks to the Treasurer, made out to MVAS.

BinoBlast 2014. Don't forget the binocular observing event at the MVCO on Mach 22, 2014. Sunset is at 7:38 PM. Arrive by 7:00 PM to get started. Bring your best binoculars and hunt down as many Messier objects as you can. Check e-mails for the latest on weather prospects and if the MVCO is safe to enter. Considering snow depth or soft, muddy parking areas. We will have food as you bring it. Pot luck style. Check e-mails.

Regulus Occultation. On March 20 at 2AM, the bright star Regulus in Leo will blink out for up to 14 seconds as a 12th magnitude asteroid passes in front of ot. You have to be in New York or New Jersey to see this. This is a very rare event, perhaps once in a lifetime. If you can do the drive you might want to arrange to get it done. See the article in the March 2014 issue of *Sky & Telescope.,* page 30. Check internet sites too. These will have all the information you’ll need.

MVAS ACTIVITIES

The Variable Star Observers League of Japan, recently published their 2013 results on eclipsing binary stars. Chris Stephan had 311 estimates listed. He was 1 of 10 observers.

Observer‘s Notes.

Mars: Then and Now

Oppositions of Mars occur every 2 years and 50 days. On April 8th, 2014, Mars will be at opposition. It rises as the Sun sets. This also means that for a month on either side of this date, it will be at its brightest and telescopically, display its largest apparent size for the year. Because of that extra 50 days, oppositions occur when Mars is in a different part of its orbit. Its a cycle with Mars looking big, shrinking at successive oppositions until it reaches its smallest size. It then begins increasing in apparent size. Eventually getting back to its largest appearance. This happens every 15 years or so. “Big” oppositions happens with Mars near its closest point to the Sun (perihelion). Mars then looks as big as it can get. We are in the increasing size part of the cycle. This year (2014) Mars will be 15 arc seconds in diameter. Good but not the best.

When Mars appears larger than 20 arcseconds, we have a good show. It starts to actually look like a world. The super close oppositions are special. Astronomers have always used them to glean as much information about the Red Planet as they could manage. Photography, photometry, spectroscopy and visual work is much easier with a big, bright Mars. The next big Mars opposition is on July 27, 2018. Mars will be 23.4” in diameter. There is one more before that- May 22, 2016 when Mars will be 18.3” in diameter. There are plenty of sources to guide you in observing technique (magazines and internet). Refer to those. We hope that you will enjoy Mars this year, practicing for the next great opposition in 2018. Meanwhile, remember that perihelic oppositions have also been special events in MVAS history. Each generation of MVAS has had a perihelic opposition. Serving as a right of passage. They make a connection to the last one, to the next one. And to the observers of the past. To humanities ever changing understanding of the Red Planet. Read and recall the Mars events of MVAS past.

1938: The American radio drama series called *The Mercury Theatre on Air* broadcast a special Halloween episode on October 30, 1938, which aired over the Columbia Broadcasting System radio network. It was directed and narrated by actor and future filmmaker Orson Welles. The episode was an adaptation of H. G. Wells’ 1898 novel *The war of the Worlds.* It stirred wide spread panic as listeners mistook it for a real, live news broadcast about an invasion by Martians. Perhaps the pending outbreak of war in Europe had “invasion” in the public mind. This may have fueled the panic. One could also speculate that the approaching perihelic opposition of Mars on **July 23, 1939** played a background role. It would be at **24.13” diameter**. And Martian canals were still in public debate at the time. In any case, by Halloween in 1939, the MVAS had formed. A regular meeting, elected officers, a Constitution and name were in hand. The fledgling MVAS held a public star party at a September Warren High School football game in that year of 1939. It was test of public interest in astronomy and of a possible astronomy club. It went exceedingly well. A bit past opposition, Mars was still a prominent object in that night’s sky.

1956. (24.76") By this year, the MVAS had the 16" Draper-Prather Cassegrain telescope mounted on a pier, outdoors. Located on the Hoynos farm (current site of the MVCO), it was kept covered by a tarp. But even this crude arrangement was a source of pride. It was perhaps the largest amateur built telescope in the eastern USA. Ohio at least. Many school and church groups would make visits for a view thru it. Mars was at opposition on September 10, 1956. The MVAS had open house with many dozens of public observers attending. There was even a bus load of scouts that made it there. The event was a feature article in the *Warren Tribune* with a photo of the MVAS gang standing at the telescope (see the photo below).

SEP. 6, 1956: (L-R) John Hoynos, John Mavriogianis, Jack Draper, Jack Shallenberger, Grant Sandy (top) and Bob Palmer,

1971 (24.91"). At this time, the membership had several big projects in the works. The 25" and 50" mirrors were under fabrication. Those projects are stories unto themselves. There was also the photometry committee and a radio telescope was being used. This was on top of getting the property in good shape for the August 28th OTAA meeting. Mars came to opposition on August 10th and it would have been the feature object at that OTAA meeting. But afternoon drizzle gave way to nighttime fog. There were no formal public events other than the OTAA meeting. The Meteorite had several articles on Mars and an orbital diagram showing Mercury, Earth and Mars positions as the year progressed. The 1965 Mariner flyby of Mars revealed a dead, crater scarred world. No canals. No Martians. Perhaps the curiosity about Mars had subsided in the public mind due to this discovery. Thus, a public Mars event may not have been a big draw. In about 40 years, a new Curiosity would be roaming the surface of Mars and in the minds of the public.

1988 (23.81") This was a big Mars public event year. Mars was at opposition on September 22, 1988. Public events were held at Scenic Vista and at the MVO. YSU staff handled the Scenic Vista events while a half dozen MVAS members handled hundreds of visitors at the observatory. The cars were parked all along SR 534, with the Highway Patrol stopping by to find out why there were so many cars obstructing the road. The land lord had his flowers damaged from tires and feet. The line went from the 16" building to the outhouse and down into the lower parking level. The report was that between the two venues, there were around 800 people hoping for a look at Mars. Lesson learned. This was the last big public event at the observatory. The next big one would be held elsewhere.

2003 (25.11"). This was the Big Show! Mars would be closest to Earth barely one day after opposition. They were the closest together in 100,000 years. Opposition was on August 27 and close approach on August 28. On July 17th Mars would partake in a grazing occultation of the Moon as seen from Highlands County in Florida. MVAS member Chris Stephan was team leader and organizer of this observing expedition. It was successful. The team included a mix of seven observers from IOTA and ALPO with such notables as ALPO imagers Jeff Beish, and Don Parker as well as author Andrew Chaikin.

Mars graze July 17, 2003. Image by Parker and Beish (ALPO)

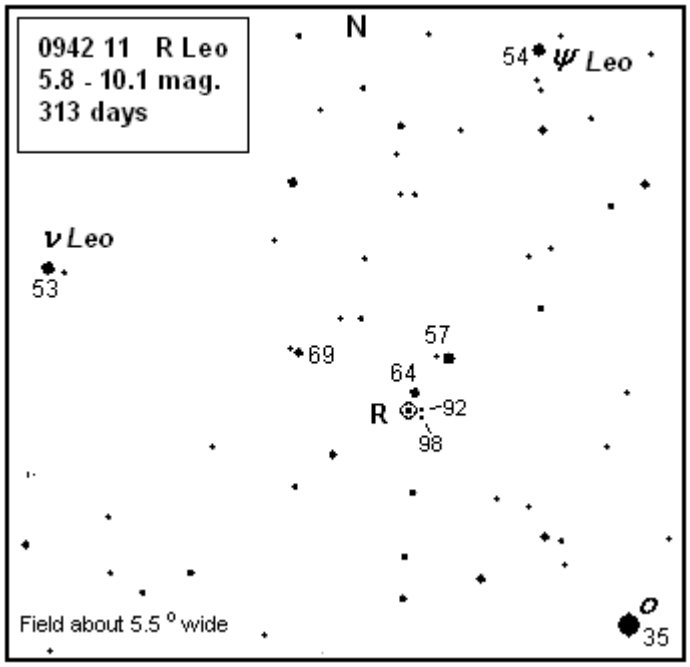
Then on August 6 to 9th, the ALPO met in Boardman, OH for their annual meeting. Notables included ALPO founder and New Waterford native Walter Haas, Don Parker (served as emcee) and Tom Dobbins. Dobbins brought in Eric Ng (Taiwan) and Tan Wei Leong (Singapore). They began the webcam imaging craze in the early 2000's. The event was a success with 64 people attending. The event was covered in *Astronomy Magazine* - an interview with Walter Haas. Phil Plante was the principal organizer with help from Harry Harker and Ken Lowther. Other MVAS members (Virginia Bartos) and the YSU staff also helped. MVAS and OTAA folks attended. Mars was a featured paper session topic. ALPO group shot is below.

This opposition was big news and Scenic Vista requested a second night of observing to accommodate the event. A second date was set for August 30th. September 20th would be the normal Scenic Vista public night. Between the two perhaps 250 people showed up for Mars and other celestial treats. The September stargaze had the most (~150) making it the best attended event at Scenic Vista. Mars remained a prime target well into fall. September treated us to amazingly steady skies

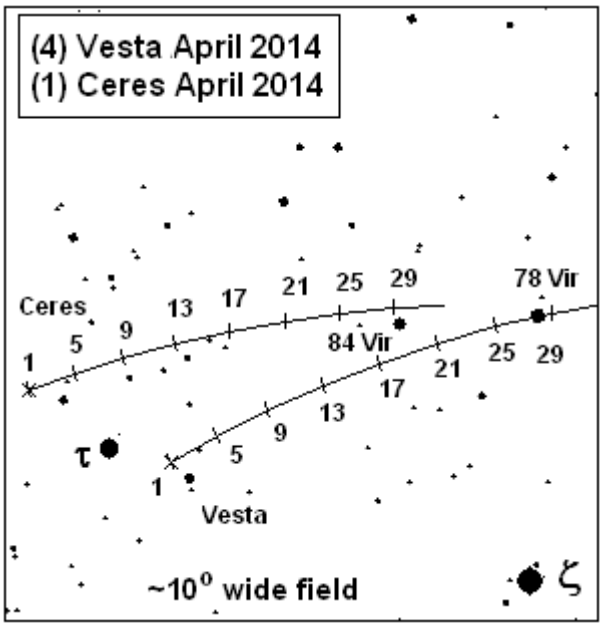
2005 (20.3"). At 20.3" in diameter Mars fever was still alive. The first MVAS event was at YSU for "Mars Madness". We set up high on a grassy knoll -on campus. We called it "Mars Hill". About 50 people trickled thru to see Mars. Then on November 11th the MVAS had perhaps 80 people at Boardman Park to observe Mars. This was from the parking lot across from the park office. After this opposition there were no more public Mars nights conducted. Mars continued to be smaller and oppositions and were in winter months. In four more years Mars will be in prime time again. We have time to think about what we'll do.

MVAS OBSERVER'S CHARTS

Variable star of the month: **R Leonis** (*abbrev:* R Leo). This variable is a good starter star for doing this type of work. When near maximum it can be seen in binoculars. Near minimum it needs a scope. It should be at max magnitude in mid-March. Fading from then on. Give it a try. How long can you follow it?



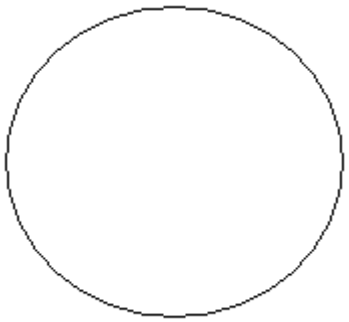
Asteroid of the month: (**4) Vesta**. In the wee hours**,** we continue to follow Vesta and Ceres in April. We'll follow these binocular asteroids until they meet in July. Regular check-ins on these two will help you grasp their slow movements. Ceres will be at magnitude 7.1 thru April. Vesta starts out at 5.9 and also maintains its magnitude thru April. On April 24th around 11PM EDT, Vesta will pass about 1.2 arcmin. south of 78 Vir, a 4.9 mag. star. Regular Imaging during the next few months might make a nice time-lapse video sequence. Chart limit is 8.5mg.



MVAS OBSERVATIONS - DUE APRIL 2014

OBSERVER_____

Featured object: M-65/66 . Please try a sketch. Sketch one or both as you like. That is if both fit in your field of view. You might even fit in NGC 3628. This forms the famous "Leo Triplet". If you don't like sketching and the 10 cent pencil technology, try imaging. The Triplet is a favorite stop for astro imagers. A challenge perhaps but a worthy target to practice on. Images count for home work too! But you have to turn these things in!



M- 65/66 Observation:

Date:_____ Time(EDT)_____ Scope_____

R Leo magnitude estimates:

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

(4) Vesta Observations:

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

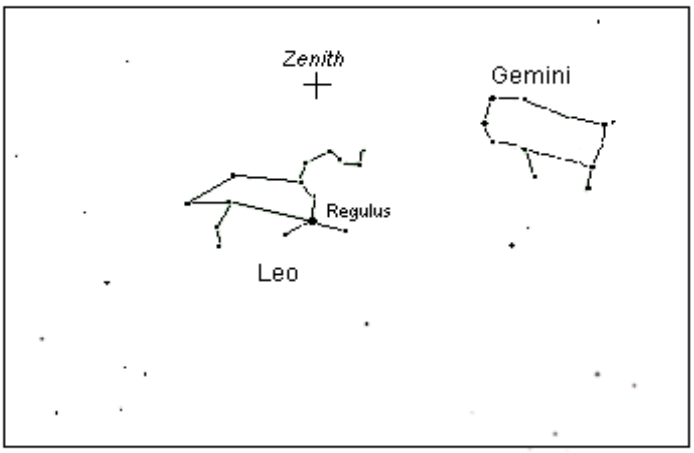
Other Objects in Leo to observe

D. Sky	Date	Scope	**Dbl.**	Date	Scope	SEP	MAG	SPLIT?
M- 95	_____	_____	γ Leo	_____	____	4.6"	2.4 - 3.6	Y / N
M- 96	_____	_____	δ Leo	_____	____	204"	2.6 - 8.6	Y / N
M- 105	_____	_____	54 Leo	_____	____	6.3"	4.5 - 6.3	Y / N

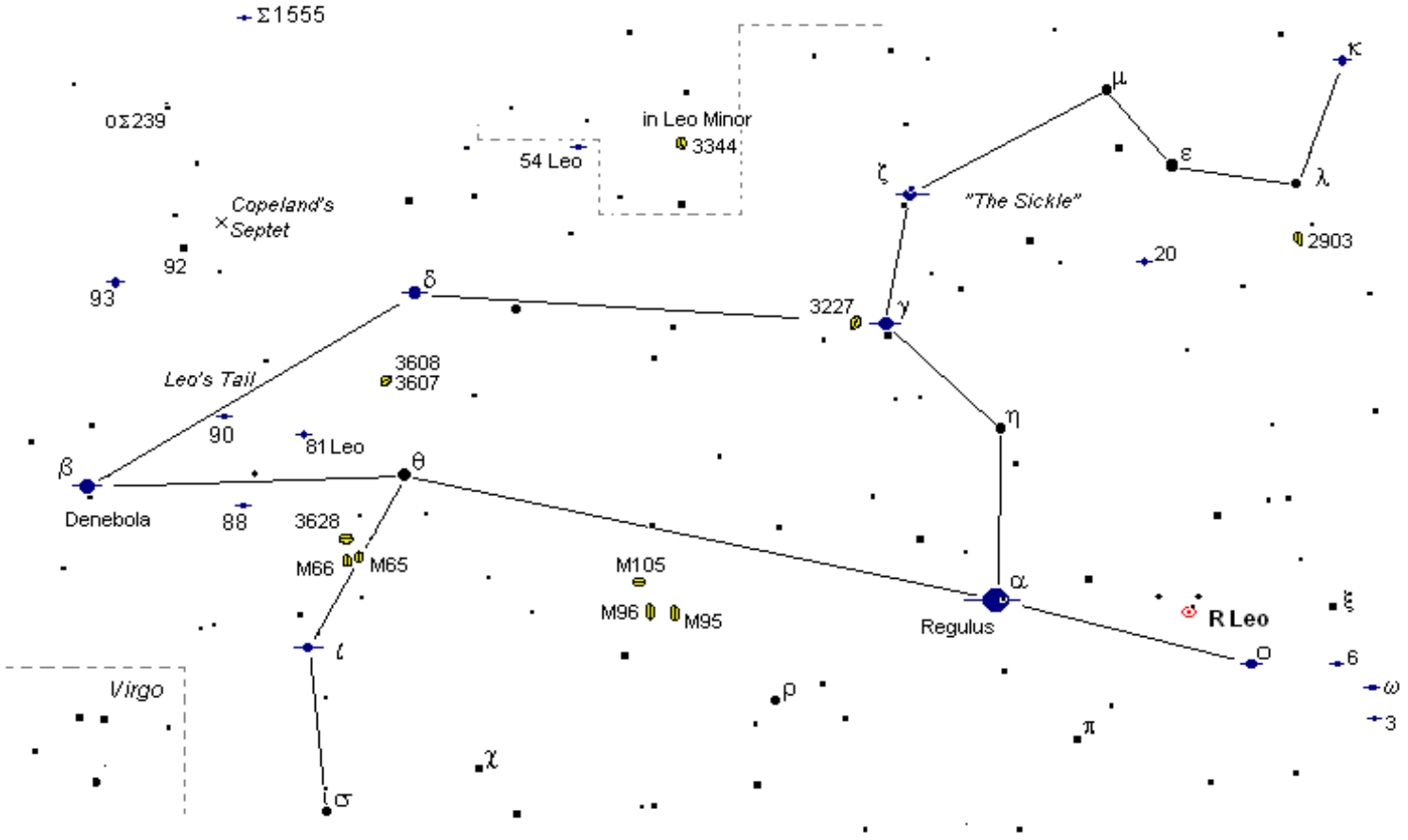
Lunar Occultations (see Sky Almanac):

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

Constellation of the Month — Leo



March is the first month to use Daylight Saving Time which means the sky will darken an hour later than in February. To find Leo at mid month, go out around 11pm and look straight up. The point exactly overhead is called the Zenith. Face south and look down from the Zenith a bit until you see the bright star called Regulus. From there you should try to trace-out a backwards question mark above and including Regulus. This is supposed to be the head or mane of the Lion. It's sometimes called "The Sickle". The tail quarters of Leo are to the left, formed by a triangle of stars. Double stars and galaxies are offered to us this month. A 3 or 4 inch instrument might pick up a few of the galaxies. The double stars listed below should be easy going as well. Check the variable R Leonis a few times and watch it change brightness. Make an estimate with the chart supplied. Remember to check off your successes and record your magnitude estimate of R Leo. The MVAS looks forward to receiving your report.



DEEP SKY	ALL GALAXIES		
M65	10.3 mag.	6' x 2'	SB 12.8
M66	9.7 mag.	6' x 3'	SB 11.9
M95	10.5 mag.	5' x 3'	SB 12.7
M96	10.1 mag.	5' x 3'	SB 12.5
M105	10.2 mag.	3' x 3'	SB 11.3
N3227	10.3 mag.	3' x 3'	SB 13.7
N3607	9.9 mag.	4' x 3'	SB - - -
N3628	10.3 mag.	10' x 2'	SB - - -

Copeland's Septet – 7 galaxies at 13.2 to 15.2 magnitude. 6' dia. fld.

Doubles:	mag.		sep.	"colors"
ι Leo	4.1	6.7	1.7"	yellow-white
δ Leo	2.6	8.6	204"	yellow-silver
κ Leo	4.5	9.7	2.4"	yellow-blue
γ Leo	2.4	3.6	4.6"	gold-greenish
α Leo	1.4	8.2	176"	white-purple
54 Leo	4.5	6.3	6.3"	yellow-saphire
81 Leo	5.6	10.8	55"	yellow-red
0Σ239	6.0	10.2	37"	optical dbl.

Variable Star:

R Leo 4.4 - 11.3 mag. 309 day period

Check list

___M65 ___M66 ___M95 ___M96 ___M105 ___N3227 ___N3344 ___N3607 ___N3628 ___Copeland

___ι Leo ___δ Leo ___κ Leo ___γ Leo ___α Leo ___54 Leo ___81 Leo

Instrument used — date

_____ on _____

_____ on _____

_____ on _____

_____ on _____

R Leo ___mag on ___/___/___

R Leo ___mag. on ___/___/___

2014 APRIL SKY ALMANAC

Solar and Lunar (EDT).

Date	Sunset	Moonrise	Moonset
1	7 : 49	— : —	10 : 12p
5	7 : 53	— : —	1 : 04a
9	7 : 58	— : —	3 : 45a
13	8 : 02	— : —	5 : 47a
17	8 : 06	10 : 52p	— : —
21	8 : 10	1 : 41a	— : —
25	8 : 15	4 : 20a	— : —
29	8 : 19	6 : 42a	8 : 58p

PLANET WATCH

	Jupiter	Mars	Saturn
	Sets	*Rises*	*Rises*
1	3:08 AM	8:24 PM	11:01 PM
5	2:53	8:01	10:44
9	2:39	7:38	10:27
13	2:25	7:15	10:10
17	2:11	6:52	9:53
21	1:57	6:29	9:36
25	1:44	6:07	9:19
29	1:30	5:46	9:02

April 2014

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

Asteroid for April 2014 (4) Vesta

Date	Rises	RA hr.	RA min	Dec. deg.	at 1:00AM EDT Alt.	Azm	Magnitude
1	8 : 35 : PM	13	: 55	+ 01	44º	143º	5.9
5	8 : 14 : PM	13	: 52	+ 02	46	148	5.8
9	7 : 54 : PM	13	: 48	+ 02	48	154	5.8
13	7 : 33 : PM	13	: 45	+ 03	50	161	5.8
17	7 : 12 : PM	13	: 41	+ 03	51	168	5.8
21	6 : 52 : PM	13	: 37	+ 03	52	176	5.8
25	6 : 32 : PM	13	: 34	+ 03	52	184	5.9
29	6 : 12 : PM	13	: 30	+ 04	52	192	5.9

Variable Star of the Month: R LEO 5.8 - 10.1 mag 313 day period

Celestial Highlights

Date	UT hr	
2	01	Algol at minimum
7	08	**FIRST QUARTER**
8	21	**Mars at opposition**
13	12	Vesta at opposition
14	13	Mars nearest Earth
15	05	Spica 1.7º S. of Moon
15	07	**FULL MOON- Eclipse**
15	06	Ceres at opposition
17	07	Saturn 0.4º N. of Moon
22	07	**LAST QUARTER**
22	03	Algol at minimum
22	17	Lyrid meteors peak
29	06	**NEW MOON**

LUNAR OCCULTATIONS FOR APRIL 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.
3	22	18	28	*4*	02	18	28	D	20+	19º	277º	del Tau	3.8	132º	.660"
3	23	03	17	*4*	03	03	17	r	20+	10	284	del Tau	3.8	229º	.660"
3	23	36	02	*4*	03	36	02	D	20+	5	289	68 Tau	4.3	028º	1.82"
6	0	07	06	*6*	04	07	06	D	38+	17	279	xz 934	6.4	080º	NA
7	0	59	47	*7*	04	59	47	D	48+	16	279	41 Gem	5.9	145º	NA
10	2	00	06	*10*	06	00	06	D	76+	24	260	omeg Leo	5.5	109º	.088"
10	21	32	58	*11*	01	32	58	D	83+	54	131	16 Sex	6.6	117º	NA
16	23	10	12	*17*	03	10	12	r	96-	13	125	XZ 2170	6.7	002º	.054"
18	2	20	48	*18*	06	20	48	R	90-	27	155	XZ 2331	6.3	355º	.030"
24	5	59	40	*24*	09	59	40	R	27-	23	123	XZ 3248	6.5	253º	NA

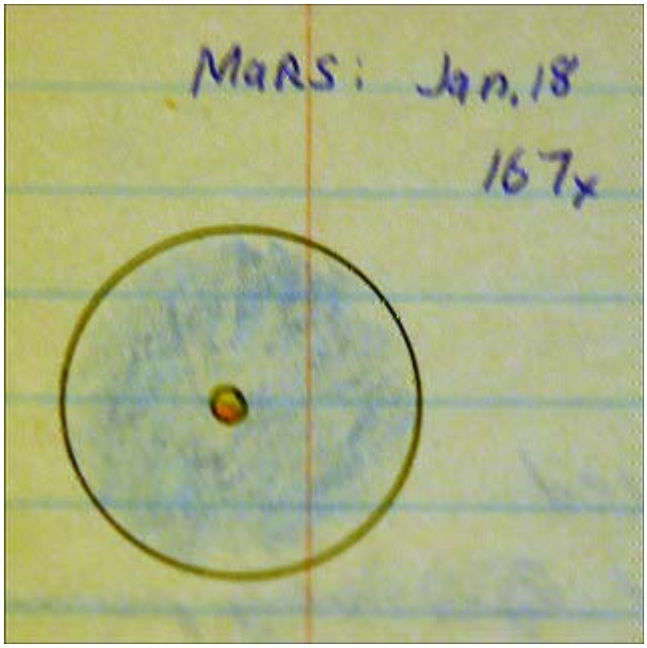
D= disappearance. Good occultation event.
d= disappearance, the star's magnitude approaches the observing limits of 200mm objective
R= reappearance. Good occultation event
r= reappearance, the star's magnitude approaches the observing limits of 200mm objective
All disappearances (D) occur on the eastern 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…..

My Favorite Martian Chronicles.

With apologies to Ray Bradbury and the so named TV series (1963-1966) for combining their titles, I present here my views of Mars over 33 years of observing it. From 1970 to 2003. There were earlier observation and later views, but these are some of my favorites. Mars was never my "favorite" object but yet it is one planet that is eagerly anticipated at each perihelic opposition. Being both a challenge and a delight to observe, I do so when I have the chance. There is still that allure of Martians. I was around when life on Mars was still a debatable reality. (canals, et al.) I was here when Mariner laid that possibility to rest and now I'm with all of you while we search for water and past life on Mars. Perhaps the future will find Humans on Mars.

I hope these images will inspire the reader to build their own chronology of Mars observations. Especially the younger observers. What seems like a tedious activity now, it will pay-off down the road. Sometime in your future, such observing records will evoke fond memories of those times. Like old family photos, they'll make the past alive again. *-P. Plante*



Mars on January 18, 1970 at approximately 8:00 PM EST.

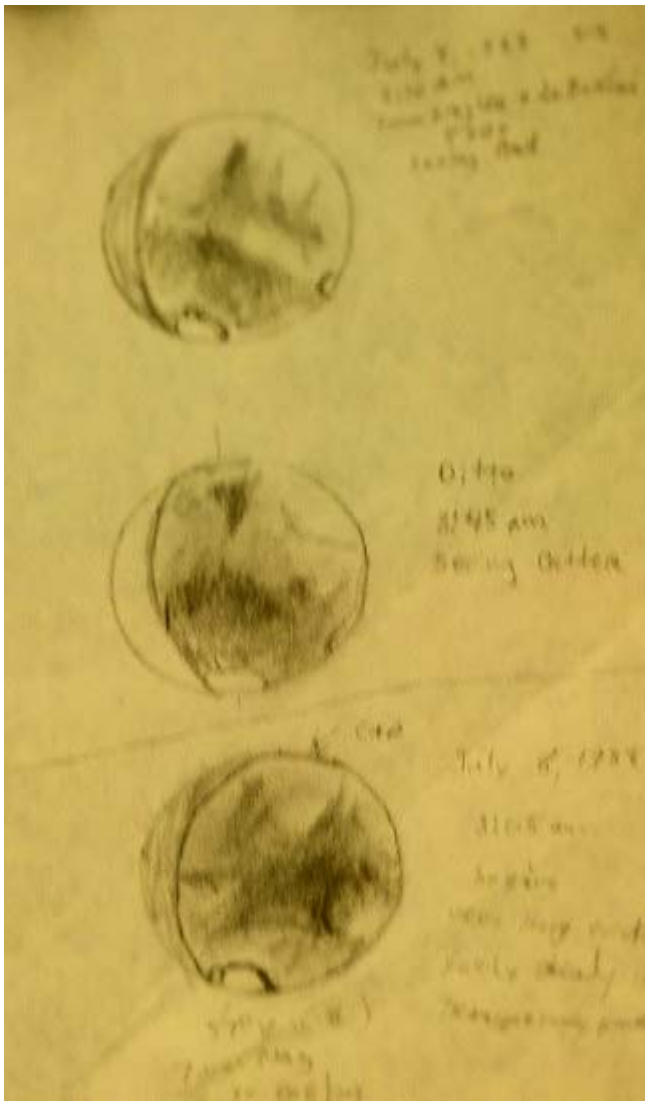
At Jan 19, 1970 1:00 hr UT, Mars was only 5.5" in diameter and had a phase of 91%. The Central Meridian was around 150° which is the Amazonis Planitia area (Olympus Mons, etc). The desert area where not much is visible in most scopes to an average observer. This observation was made with a 60mm Tasco refractor on an equatorial mount. It appears that I used a 12mm eyepiece and a 2x Barlow. I can remember kneeling down in the snow to look into the eyepiece. This is one of my first attempts at sketching. This instrument was shared with my brother Larry and often family members and neighborhood friends would stop by for a look. at what we were observing.

Mars near opposition June 1984

This was my 3rd attempt at sketching Mars. A second attempt was made in August 1971 around the time of that perihelic opposition. That sketch has been lost and it too was in color pencil. I remember the night as cool with dew. It was super clear and the family wanted me to go for a round of Putt-Putt. But I passed and used the Tasco. Weather records show that August 12th was a clear night. It was my first inkling that astronomy was becoming important to me.

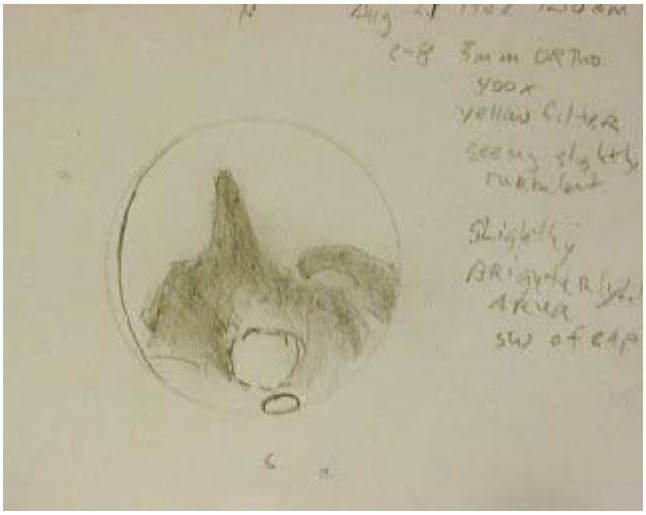
The sketch above was made doing indoor astronomy. This time I used colored chalk sticks (art stuff). By 1984 I had my Celestron 8 and I fully recall aiming the C-8 out the kitchen window. I was better able to sketch indoors with a table and a fan helped keep things comfortable. Records of the observation are missing aside from the sketch. The Full phase of Mars and my memory puts this sketch around the June 4th period. Probably around midnight as Mars was due south and low in the sky. On Jun 4, 1984 at 4:00hr UT. Mars was 13.9" in diameter .with a 97% phase. I can't tell what features are depicted.

Jul 22, 1988 6:10 UT. Mars was 8.6" in diameter with an 86.5% phase. CM was ~30° I switched to No. 2 pencil. Much simpler.



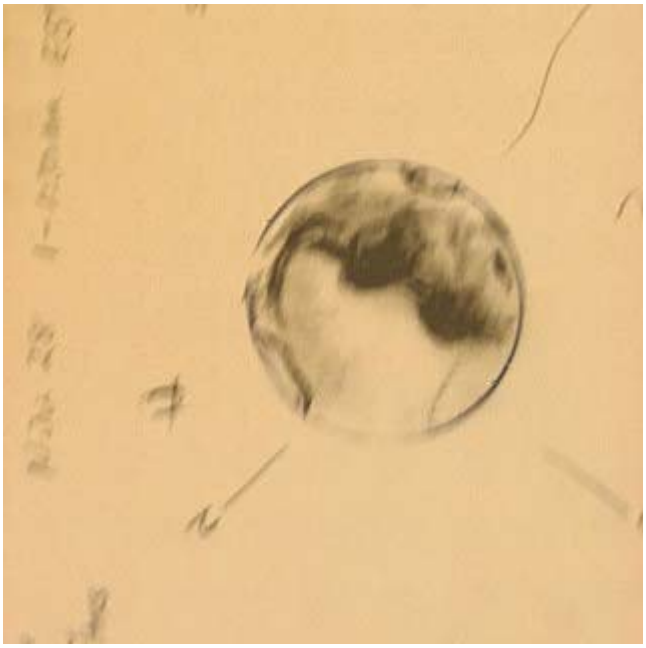
Above is a series of sketches made on July 4, 1988 and July 8 1988. (EDT). I used the C-8 with a 7mm Nagler and 2x Barlow.

Top: July 5, 1988 at 7:10 UTC CM= 207° Disk= 9.6”
Middle: July 5, 1988 at 7:45 UTC CM= 216° Disk= 9.6”
Bottom: July 8, 1988 at 7:05 UTC CM= 177° Disk= 9.4”



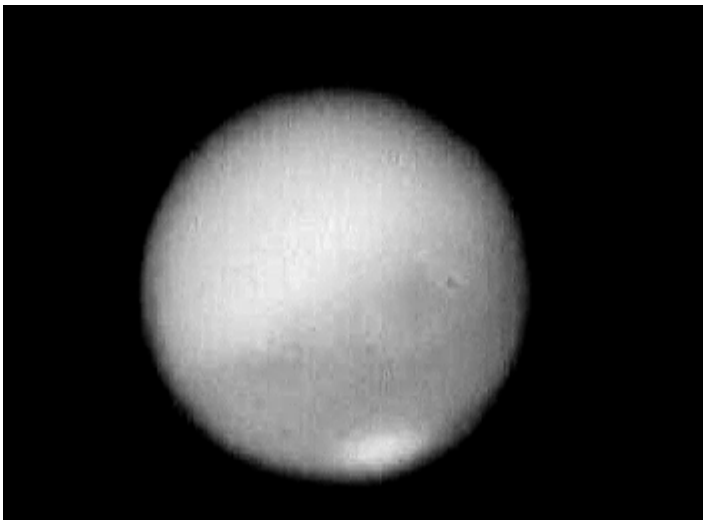
Margarifiter Terra, Argyre Planitia and S. Polar cap below.
August 21, 1988 at 5:30 UTC CM= 30° Disk= 7.4”

Above: Mars sometime in early November 1988. Image was taken with the C-8 using eyepiece projection. Film used was most likely Ektachrome 400. Exposure was made using the “hat trick” method. Usual technique for me back then. Probably 2-3 seconds. Perhaps my best planetary image using film. No records are found. It shows that you not only need to record everything but also use a system that maintains record continuity and keeps them in one place. Syrtis Major is displayed. Mars was about 6” in diameter. Phase of 91%

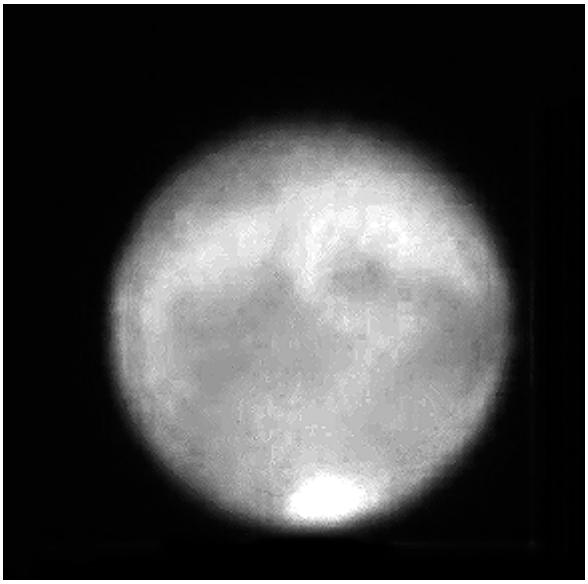


Mars Nov 28, 1990 at 6:20 UTC. CM= 255° Disk= 17.9”
Phase was 100%. It appears that Syrtis Major is off to right limb and is under heavy limb haze or clouds. Hesperia and Terra Tyrrhena are the dark areas - top half.

Mars July 7, 1991 sometime in the wee hours. CM could be around 310°. This should be near Syrtis Major but I see no evidence of it. Mars was 4" in diameter. Using the MVCO 16" Cassegrain, this was my first attempt at tri-color imaging. Proper filters were not available and the results were less than expected. I used frame grabs from video shot with my venerable GBC 505E low light camera. No darks, flats.



Mars from a single frame grab from my StellaCamEX and the C-8. This was made around the time of the OTAA meeting. Image was taken on August 19, 2003, at 5:00 UTC. Mars was 24.1" in diameter. The CM was 121° Phase was 99.3% (full). Sirenum Mare and Solis Lacus (Eye of Mars) dominate the central disk.



Mars taken about 12 hours after opposition. Four video frames were stacked using Astrostack software. Not a great deal of effort went into examining the video for the best frames to grab. The video was taken with a StellaCam EX mounted to a Celestron C8 using a 13mm TV Plossl for eyepiece projection. The image was in red light (Wratten 23A filter). The seeing was rather poor. Green and blue filters were also used but these images came out rather dark. So much for tricolor work.

Above: August 29, 2003 at 5:00 UTC. Mars was at CM 45° it was 25.11" in diameter. Phase was 99.8%. Features are Margarifiter on the left, Terra Meridani on the right (short bar feature). North polar cap at bottom.

It has been a fruitful and interesting 40 years of Mars observations. I have dozens more, many turned into ALPO for their archives. There are a dozen sketches from 2003 but I'll spare you. I hope you enjoyed these and they help you get that pencil and paper out. Actually you should use a 3" x 5" index card with a 42mm circle drawn on the back (plain side). It will be your template for Mars. At that scale 1mm - 100 miles. You can jot down all your data right on the ruled side of the card. Remember to have fun while doing this. Let us see your work.
Good luck and clear skies to all... *-P. Plante*

Elroy and I are getting the place spruced up for the April 8th opposition. We hope you'll enjoy the view. Otherwise I will be very angry.

--- *Marvin*