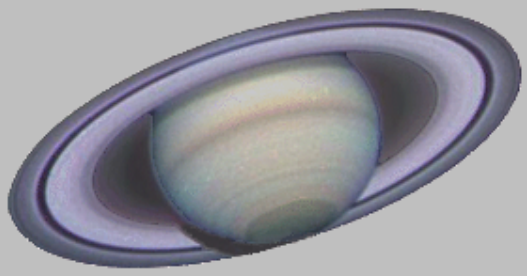
THE METEORITE



Saturn

Hubble Space Telescope Image

Newsletter of the Mahoning Valley Astronomical Society, Inc.

MARCH 2012

IN THIS ISSUE:

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

THE METEORITE

MARCH 2012

Newsletter of the Mahoning Valley Astronomical Society, Inc.

MVAS CALENDAR

MAR 24 Binocular Marathon at the MVCO.

MAR 31 Business meeting at YSU. Show at 8:00 PM.

APR 21 Chili Quest at the MVCO. 6:00 PM Chili Cook-off, Sunset at 8:00 PM start Galaxy Quest.

APR 28 Business meeting at the MVCO. 8:00 PM

NATIONAL & REGIONAL EVENTS

APR 15 - 22 **2012 Texas Star Party**, at the Prude Ranch, Fort Davis, Texas. It's $60 if you pre-register with payment **postmarked by March 18, 2012**. (Each additional family member is just $40 more). $150 if you pre-register on or after March 19, 2012, or At-The-Door (Each additional family member is $50 more.) Details on website. http://texasstarparty.org/

APR 26-27 **NorthEast Astro Imaging Conference**. (NEAIC) Crowne Plaza Conference Center, Suffern, NY. http://www.rocklandastronomy.com/NEAIC/index.html

APR 28 - 29 **NEAF 2012,** held at the Rockland Community College. Suffern, NY. Tickets $20.00 for adults or $35.00 for two-day admission ticket. Under 16 free with parent. The preimier vendor expo. The NEAF Solar Star Party runs concurrent with the expo. http://www.rocklandastronomy.com/NEAF/index.html

APR 28 **International Astronomy Day.** Cleveland Museum of Natural History. 10am to 4pm. Family activities.

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

NEWS NOTES

Titan Dunes. Detailed analysis of radar observations gathered during the Cassini spacecraft's flybys of Titan is enabling scientists to understand the distribution, shape and dimension of its exotic dunes. While Titan's dunes resemble the dunes found on Earth, they are made of tiny particles of organic (carbon-rich) material which have fallen to the surface as a never-ending "drizzle". As such, they are the largest known reservoir of organics on Titan, playing a key role in the moon's carbon and methane cycles. With the exception of seemingly featureless plains, these dune fields are the most widespread landform on Titan. However, they cover only about 13 per cent of the surface. These dunes are also confined to the tropical regions, between latitudes 30 degrees north and south.

Titan's dunes are linear in morphology, but their morphometry (width, length, spacing, thickness of the sand cover in the interdune area) seems to vary with location. Shaped by east-west zonal winds, they are typically 1-2 km wide, 1-4 km apart and perhaps 100 m high. Now, detailed studies by an international team, led by Alice Le Gall from the Laboratoire Atmospheres, Milieux, Observations Spatiales (LATMOS-UVSQ), Paris, have attempted to explain the regional variations amongst these dunes. Data suggest that the quantity of windblown sand tends to decrease towards the north. This could result from a gradual increase in surface moisture with latitude, possibly caused by the asymmetrical seasons associated with Titan's current orbital configuration. "Radar images show that dunes cut across most of the other geological features suggesting that they are among the youngest geological features on Titan," said Le Gall.

Understanding dune formation, their shape, size and distribution, is important in improving our knowledge of Titan's climate and geology. As the dune material is made out of frozen atmospheric hydrocarbons, the dunes might provide important clues on the puzzling methane/ethane cycle on Titan, comparable in many ways to the water cycle on Earth.

Source- SpaceDailey: Staff Writers Paris, France (ESA)

IceMole. Jets of water ice are shot into space by 'cryovolcanoes' on the surface of Saturn's moon Enceladus. Flying through these jets, the Cassini spacecraft has detected organic compounds- hinting at the possibility of life. Europe plans a mission to Enceladus. German researchers would like to study the water source for traces of life. In support of that endeavour, the German Aerospace Center is sponsoring a collaborative project entitled 'EnEx - Enceladus Explorer', which was launched on 22 February 2012. The researchers are faced with several problems. Landing directly on a cryovolcano is too risky. Secondly, any possible forms of life could already have been destroyed during ejection and subsequent exposure to the hostile conditions of space. For this reason, the researchers are interested in obtaining samples from the depths of Enceladus. Current theory has the jets powered by liquid water reservoirs deep below the icy surface. German engineers have devised a plan to have a base station land safely away from a cryovolcanoe. A tethered, roving "IceMole" would melt/drill into the crust up to 100 to 200 meters deep after arriving at a water-bearing crevasse. The probe will be able to obtain a sample of the liquid water and examine it in situ for the presence of microorganisms. - *SpaceDaily: Staff Writers, Berlin, Germany*

MINUTES OF THE FEBRUARY MEETING

FEBRUARY 25, 2012 at YSU

Members and guests assembled in the Ward Beecher Planetarium to watch the show "Oasis In Space". One of the more visually pleasing shows we've seen. Sharon Shanks gave a nice sky tour afterwards. She even took us to the southern hemisphere for a look at the Southern Cross. The Goto projector seemed to be spectacular this night, except for poor old Jupiter, who was still not shinning bright as he should; still waiting for a repair call. Sharon seemed to have some well deserved fans in the crowd, aside from the MVAS regulars.

The meeting came to order at 9:26 PM, once the public cleared out. President Sam DiRocco presided, with all officers on hand. Roll Call was answered by 23 members. Eleven guests included former MVAS member Dennis Czacherski (Parkman, OH), Dominic Mattuissi (former Family Member), Kaden and Natalie Ostheimer (Iliff's grandchildren), Karin DiNardo, Virginia Bartos, Steven Bartos, Allan & Jane Avnet, Bob McCully, and Mark Tatarka. A nice attendance this night.

A Call for the Reading of the Minutes was made. Lou DiNardo moved to suspend the reading and accept them as published. Larry Plante seconded the motion. With no further discussion a unanimous voice vote was made to accept the Minutes, as published.

TREASURER'S REPORT: The Report was read by Steve Bartos. Several donations, dues payments and other transactions have occurred in 2012 and these will be reported in the next report. There were no questions or discussion. Bob Danko moved to accept the Report as read. Dennis Marko seconded this motion. The motion carried by voice vote.

General Fund	**1/1 thru 31/1 - 2012**	
OPENING BALANCE:	$	7,326.87
CLOSING BALANCE:	$	7,327.18
AVAILABLE FUNDS (NON-RESERVED):	$	3,163.06
ACCOUNT NET GAIN/LOSS FOR THIS PERIOD:	$	0.31
INCOME:		
INTEREST	$	0.31
TOTAL INCOME	$	0.31
EXPENSES:		
CK# xxxx NO EXPENSES THIS PERIOD	$	0.00
TOTAL EXPENSES	$	0.00
Reserved Funds		
KEY DEPOSITS (MVCO)	$	250.00
CASH FROM ORIGINAL OAD FUND (FOR LAND)		3,914.12
TOTAL RESERVED FUNDS	**$**	**4,164.12**

CORRESPONDENCE: Bob reports no correspondence arrived at the P.O. Box in Newton Falls.

COMMITTEE/OFFICER REPORTS: *IMAGING COMMITTEE:* No report. *VISUAL COMMITTEE:* Phil is working on the 2012 Visual Committee form (same as 2011) but wants to have a double column "Homework" generic form on the back. Either side could be photocopied by members as needed. The Homework form could be used instead getting/using the one in the Meteorite- making it easier to do the Homework. He hopes to hand out copies at the next meeting. *LIBRARIAN: (Given during New Business)* Rosemary expressed concern that all of the *Sky & Tel* and *Astronomy Magazines* in the Terry Biltz Library are showing signs of damage due to moisture. Bob Danko noted that he saw some issues with mildew. Rosemary suggested we look into obtaining the DVD sets from both magazine companies, to replace the paper issues. She has not purchased any books in a long while and this seems like a worthy investment. Sam directed her to get prices.

OBSERVATORY DIRECTOR'S REPORT: Larry Plante has not been to the MVCO in a while to check its status. Dave Ruck has been there and reports everything seems in good shape. Dave noticed standing water on the table on the 16" stage (from the dome-roof leak), the ground around the buildings is soggy so use normal precautions when parking. Stay on the drive or park between the buildings. If the weather stays on the nice side leading up to the Binocular Marathon, Rosemary will turn on the refrigerators. The water pump will probably stay off until the April 21 Galaxy Quest / chili cook-off. Larry is waiting for a fair weather day to investigate the leak around the dome. This will involve removing panels, etc. It may happen the week after this meeting. Dennis Marko volunteered to help with any work. He and Larry will be in touch to coordinate this project. It was decided to stay with the current gate lock as it seems to be working okay. Larry had been looking for a replacement lock. Some Homework and a Visual Report was turned in to the O.D.

OLD BUSINESS: Getting the gutters repaired is on the maintenance list. Pricing that included fascia work is still in the works. Dave reported that the back gutter is still bent but holding up. Rosemary pointed out that we need to fix the roof leak before addressing the gutter repair. Sam agreed this was a good strategy which we should and will follow. Phil reported some minor changes to the Scenic Vista schedule have been phoned in to the Park. All dates remain the same as previously reported. However, the Ham session has been moved back from the June 23rd date to the September 8th date. The Radio SIG folks will be otherwise occupied on the June 23 date and will not be able to be at Scenic Vista for that public event. There was some discussion on the various OTAA dates but only MVAS and Black River were known at this time.

In 2008, Tom Bopp visited the MVCO and donated several dozen 11" x 17" high quality color photos. Mostly HST type images. Sam has had them in an envelope ever since, being there was no space or other means to display them safely at the MVCO. Sam has investigated the possibility of having them laminated (UV protected too) and bound into a spiral bound book for the Library. He had a sample of the plastic cover/page material. He obtained a price from Kinko's of around $2-3 per page. To do this it will cost around $100 to $150 depending on how many photos are used. Bill Pearce moved to do this project, Bob Danko seconded it. The motion was adopted by voice vote. After a brief discussion it was deemed by unanimous consent to keep costs under $150 for this book.

Last but not least, Sam reminds all members to pay their 2012 Dues ($40) by the end of March. If not you will be dropped from the roster. It is normal practice to pay by January meeting.

NEW BUSINESS: In regard to an MVAS observing plan for the June 5th Venus Transit, Bill Pearce and Sam have discussed two possible sites near Bill's house. This event begins at 6:04 PM with the Sun at 29.2° altitude, and 275.6° azimuth- at the MVCO. We can see the transit until sunset at 8:58 PM. Duration is 2 hours and 53 minutes. (US Naval Observatory data) These times should be close to times in NE Ohio or western PA. The western tree line at the MVCO will only allow the first half hour or so to be observed- depending on where you set-up maybe more. Bill says that there is the needed clear views of the

western horizon from the MetroParks Bike Trail near his house and from the Canfield Experimental Farm, a short drive away from his house (Rt46-Leffingwell Rd). The farm has a nice parking lot that lends itself to a public event, if this comes to pass. Public observing has been done there before with YSU hosting the event. Of course some sort of post transit BBQ will be involved. Chuck Iliff noted that he and Debbie has had several successful observing events in Ashtabula County with the MetroParks system. Sam instructed Bill to contact the Farm about using this site. Phil Plante posted the email message from ACA's Dave Jessie. Dave has a website that will list various transit observing sites. Lou DiNardo said that the event times on the webpage appear to be off several minutes.

Phil asked if we still wanted to have a chili cook-off as a contest- with a winner. There have always been complaints about how the scoring was done no matter how may different ways the votes were tallied. It was decided to make this more of a chili-fest than a cook-off type contest. As always, anyone can bring their chili to share. Dennis Marko said a "Mr. Food" firehouse recipe he tried was "ooo it's sooo good!"; and it is believed Dennis will treat us to a batch. Sam suggested a 50/50 raffle in lieu of a chili recipe winner. (There might still be a prize raffle-Editor) This is also the Galaxy Quest night- if clear skies bless us. Be prepared to stick around and observe!

GOOD OF THE SOCIETY: Steve reminded us he could still order Astronomy Calendars until the end of February. He still has several 2012 RASC Handbooks for $25 each. Bob suggested putting one at the MVCO. Sam DiRocco and Harry Harker spoke at the Western Reserve Amateur Radio Club meeting on Feb. 21. It turned out to be one of the better attended meetings of the Radio club.

VISUAL REPORTS: Larry Plante used an Orion 80mm short tube on Feb. 20 to observe Jupiter, M41, M42, etc. and a red star near Procyon (identity still under investigation). Lou DiNardo used his new 63mm Orion binoculars to view deep sky stuff and Jupiter's moons. He was able to pick out the faint companion cluster to M35 (NGC 2158). He also saw Comet Garradd near M92. Phil had 22 vsos in February, as well as sketches of Jupiter, Mars, M42 and some homework doubles. It was noticed that there has been a rash of binocular purchases. The Orion binoculars have been given great reviews from members - including the 15x70mm pair for $89. Could the pending Binocular Marathon have hit upon something?

ADJOURNMENT: Adjournment came at 10:10 PM. We thank our host Mark Baker for the great sandwich tray. We also thank Sharon Shanks for always letting us stay in the conference room to chow down. The next meeting will be at YSU on March 31, 2012. Meeting begins after the 8:00 PM show. Scheduled hosts are Ed and Sheila Bishop. PASSWORD: Name your favorite planet. Now that's a tough one! *-minutes by Phil Plante*

MVAS REMINDERS

DUES. One last reminder that 2012 MVAS membership dues are still being accepted. Regular membership is now $40 per years. Members in arrears after March 31st will be dropped from the roster as procedure dictates. We appreciate your membership, friendship and your participation in MVAS events, whenever you are able. If you have paid already, thank you. If not, please renew now. We look forward to another great year having you alongside as a fellow observer.

You should get this before the **Binocular Marathon** so study the observing list in this *February Meteorite.* Then get your binoculars and observing chair ready. If you don't have a lawn chair or don't want to bring one, we have plenty of the green plastic chairs at the MVCO to use. See if your binoculars have a tripod socket, usually at the front of the center hinge. Using a monopod or a homemade "stick and bolt" arrangement is recommended for comfortable viewing. An angle bracket will be needed to mount the binocular to the monopod. While sitting, this monopod device would pass between your knees to the ground, while holding the binoculars to your eyes. Adjust position as needed. You might even use a regular tripod in such a fashion with the legs extended as needed but kept closed to serve as a monopod. You'll also probably need an L-bracket to mount the binos to a pan head. A few wraps of masking tape around the top section of the legs should help keep them under control, and closed. Such monopod tools will take the weight of the binoculars away from your arms and hands while they steady the image immensely. All while reducing arm fatigue. This makes it a joy to observe with higher power binoculars.

While you're fiddling with a homemade monopod, get your galaxy hunting scope cleaned up and aligned. This is in preparation for the Galaxy Quest on April 21. We have a great target this year in "Markarian's Chain". Some galaxy aficionados have said this to be the best single view of a galaxy cluster. Markarian's will be about 30° high and just south of east (103° azimuth) by 10PM that night. It's in a better/darker part of the sky at the MVCO and at a comfortable angle for binocular viewing. This equipment preparation work could be a nice gloomy weather project to undertake while you cook-up a practice batch of your famous chili.

MVAS ACTIVITIES

Sam DiRocco and Harry Harker spoke at the Western Reserve Amateur Radio Club on February 21 in Canfield. They summarized the MVAS history and explained radio vs. visible light astronomy. They hoped this would stir interest in the MVAS and vice-versa and increase membership in both organizations.

Asteroid Occultations: Extra Homework?

ASTEROID OCCULTATIONS: There are two asteroid occultation predictions based on the Boardman/Poland area (editor's location). Given in the columns below: date, asteroid name, UT of the event, magnitude of the star, magnitude drop of the star, duration in seconds, distance of the central path from Mathews Rd. / Sheridan Rd. intersection and altitude and azimuth of the star. Both will be low in the sky but the star should be easy in a six inch or bigger scope. Check the links below for charts and path "details". Check-in again, a few weeks before the event for updated astrometry on star and asteroid positions. Note: these are very short occultations. Blink at the wrong time and you'll miss it! Anyone for video?

Apr 2, Karin, this event should pass over the MVCO at 3:48 AM. The star is between μ Sgr and θ Oph:
http://asteroidoccultation.com/2012_04/0402_832_27529.htm

May 6, Ilsibill, there is no data yet except for a general map.
http://asteroidoccultation.com/2012_05/0506_919_27641.htm

Day 2012	Asteroid name	Time U.T.	Star magn.	Magn. drop	Dur. sec.	Dist. km	STAR alt	STAR azm
APR 2	Karin	7:48.1	10.2	6.4	2	37N	15.9	143.0
MAY 6	Ilsibill	3:55.6	7.9	9.0	1	26S	14.1	273.8

Observer's Notes.....

APRIL'S GALAXY QUEST: Markarian's Chain

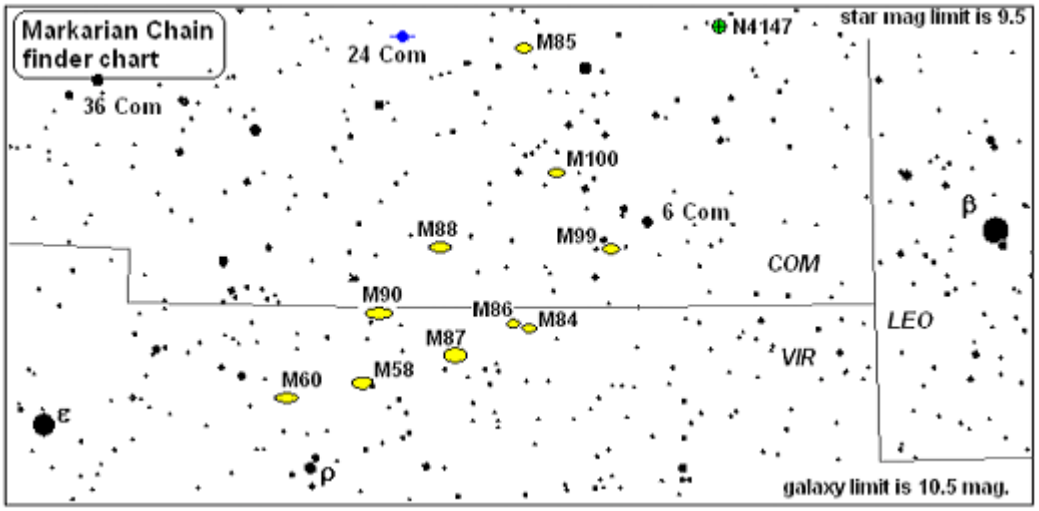
This group is named after a 1961 paper published by Armenian astrophysicist Benjamin E. Markarian. He pointed out this chain of galaxies that straddles the Coma Berenices and Virgo border and the possibility of a common gravitational connection. At least seven of the galaxies have identical angular velocity while the whole chain as a group, moves away from Earth at 700km/s. It's about 40 million light years away.

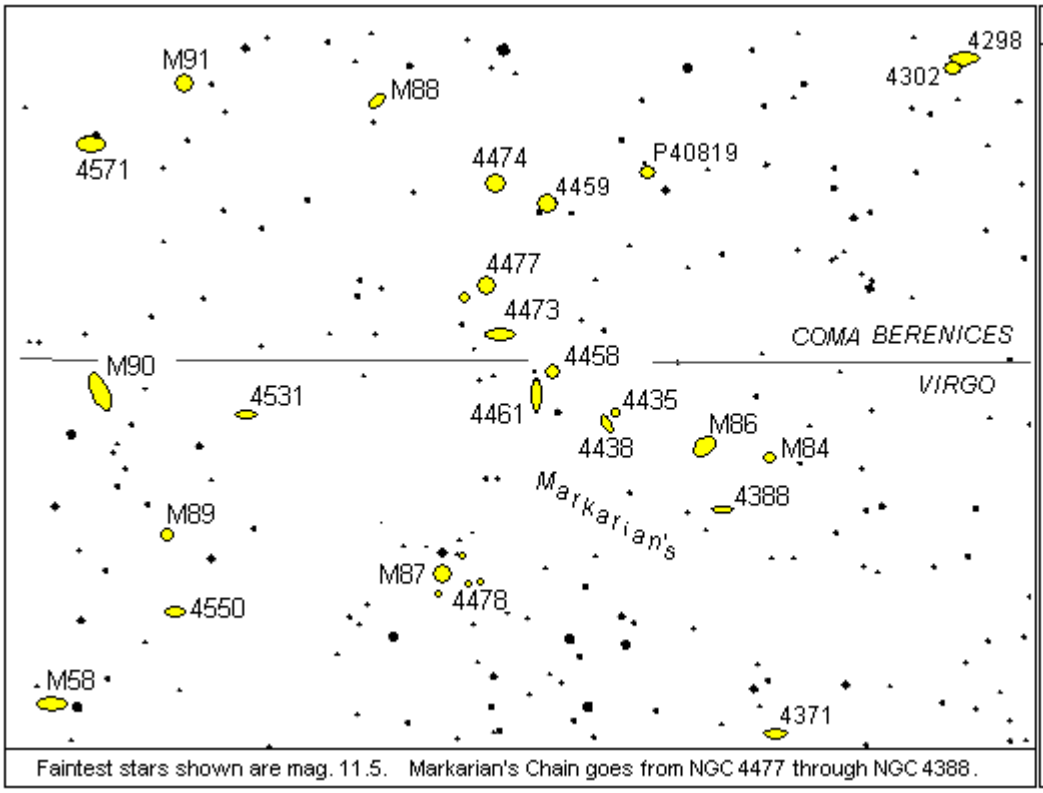
This year's Galaxy Quest on April 21 will focus on "Markarian's Chain", but many other Virgo Cluster galaxies are in this part of the sky which can be added to the Quest. Markarian's Chain lies halfway along a line between β Leo and ε Virgo. Go To scopes have it made, but old school astronomers will have to star hop from either β Leo or ε Virgo (half the fun- ain't it?). An 8" to 12" RFT should have the light grasp needed and just might squeeze-in the whole 1.7° long chain with a wide field, low power eyepiece. But do crank up the magnification as this will help separate the galaxy from the background sky glow.

Obviously the darkest skies will facilitate your success. Transparency is also very important. Haze will ruin the view even under the darkest skies. You probably already know that the slighter the haze, the less light pollution hinders the view. From this writer's experience, one can just pick out galaxies that are listed about 1.5 magnitude brighter than the faintest stellar magnitude seen with the scope in use. This seems to be due to the usual high altitude lake effect haze and light pollution. Also in play will be the galaxies angular size and your vision. Your mileage may differ.

Galaxies M84, 86 and 87 are fair game for 80mm binoculars under ideal skies. Small scopes of 4" to 6" aperture, using 20x or more might grab most of the 10th mag. galaxies It will be interesting to see what Titan can do. Don't be shy, give it a try. The Quest will begin after the 2012 Chili Cook-off. If bad weather ensues or a belly full from the chili cook-off hampers your search, feel free to tackle the area any moon free night this spring. Happy hunting.

TIP. A scope's faintest visual magnitude is m= 2.7 + (5 x logD) as given in the *RASC Handbook,* with D= scope diameter in millimeters, used under darkest skies and the magnification in use being equal to D. Based on 15 yrs of variable star estimates under Ohio skies, it's closer to: m= **1.2** + (5 x logD). See below





Magnitudes:	
M58	10.4
M84	10.0
M86	8.9
M87	9.5
M89	10.4
M90	10.2
M91	10.9
4298	12.0
4302	12.5
4371	11.7
4388	11.7
4435	11.6
4438	10.9
4458	12.1
4459	11.3
4461	11.2
4473	10.2
4474	12.4
4477	10.4
4478	12.1
4531	12.4
4550	12.4
4571	11.8
P40819	12.3

Below: Average NE Ohio sky mags. given for various scopes. v= visual stellar limit, gal= faintest galaxy magnitude expected. (v-1.5)

<u>635mm (25")</u>
15.2v, 13.7gal

<u>406mm (16")</u>
14.2v, 12.7gal

<u>317mm (12.5")</u>
13.7v, 12.2gal

<u>254mm (10")</u>
13.2v, 11.7gal

<u>203mm (8")</u>
12.7v, 11.2gal

<u>151mm (6")</u>
12.1v, 10.6gal

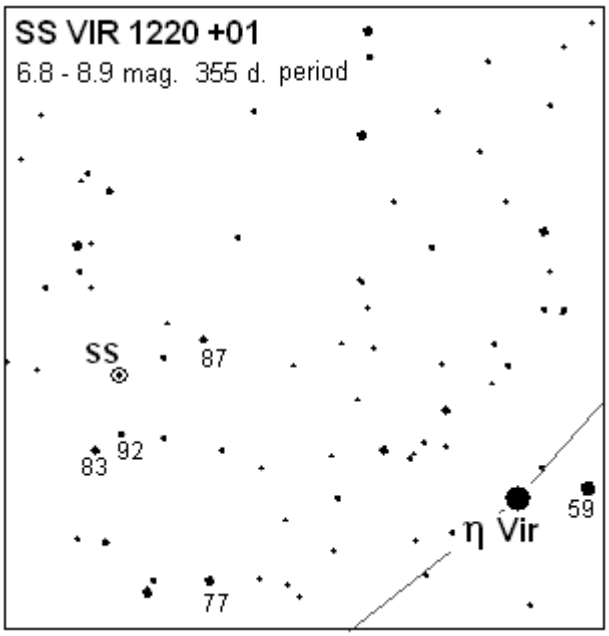
<u>102mm (4")</u>
11.2v, 9.7gal

<u>50mm binocs</u>
9.7v, 8.2gal

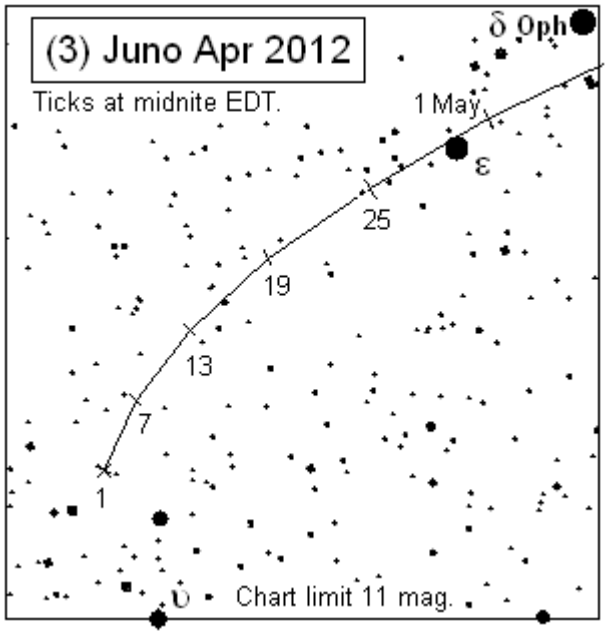
MVAS OBSERVER CHARTS

Variable star of the month: **SS Virignis** (*abbrev:* SS Vir).

SS Vir is a pretty easy variable star to find with binoculars. Scan north-east of η Virginis. SS Vir was one of the four original variables used in the MVAS Observing Program introduced in 1992. In typical fashion, no reports were made. Now members have another shot. It is also a carbon star, so it should stand out with a deep pinkish-red color. It is headed for maximum light in early June, 2012. Do give it a try!



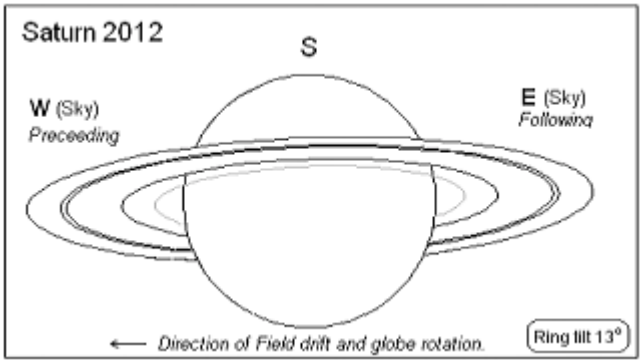
Asteroid of the month: (**3) Juno.** When April comes around, Ophiuchus is up late. But here we stop to look for 10th magnitude Juno. It brightens about 0.5 magnitude during the month. It starts off around 10.8 and is at 10.3 as the month of May begins. A small scope should work best for this hunt. Juno will not get much better than this in 2012 so have at it.



MVAS OBSERVATIONS - DUE APRIL 2012

OBSERVER_____

Featured object: Saturn. Fill in this template of Saturn with pencil shadings & maybe a black marker or black ink pen for the shadows. South is up in this form, turn the sheet around if your scope has north up. The north face of the rings are showing now. Rings A, B, and C are outlined. The innermost C Ring is very faint. Remember to black-out the Cassini Division if seen.



Saturn Observation:

Date:_____ Time(EDT)_____ Scope_____

SS Vir magnitude estimates:

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

(3) Juno Observations:

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

Other Objects in Virgo to observe

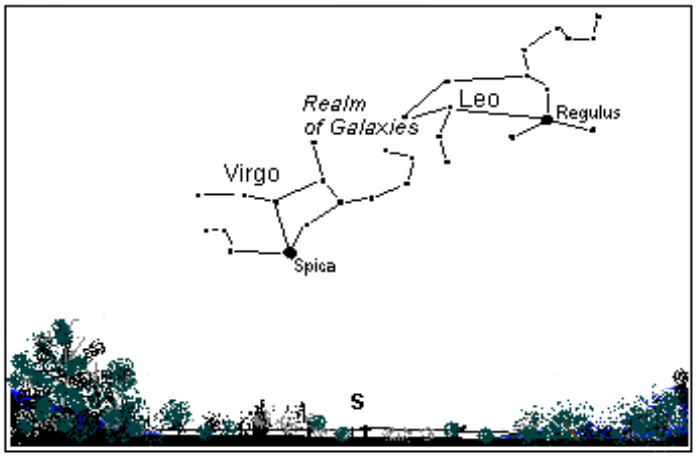
D. Sky	Date	Scope	**Dbl.**	Date	Scope	SEP	MAG	SPLIT?
M- 49	_____	_____	γ Vir	_____	____	1.8"	3.5 - 3.5	Y / N
M- 104	_____	_____	Σ 1627	_____	____	19.8"	6.6 - 6.9	Y / N
N- 5634	_____	_____	54 Vir	_____	____	5.3"	6.8 - 7.2	Y / N

Lunar Occultations (see Sky Almanac):

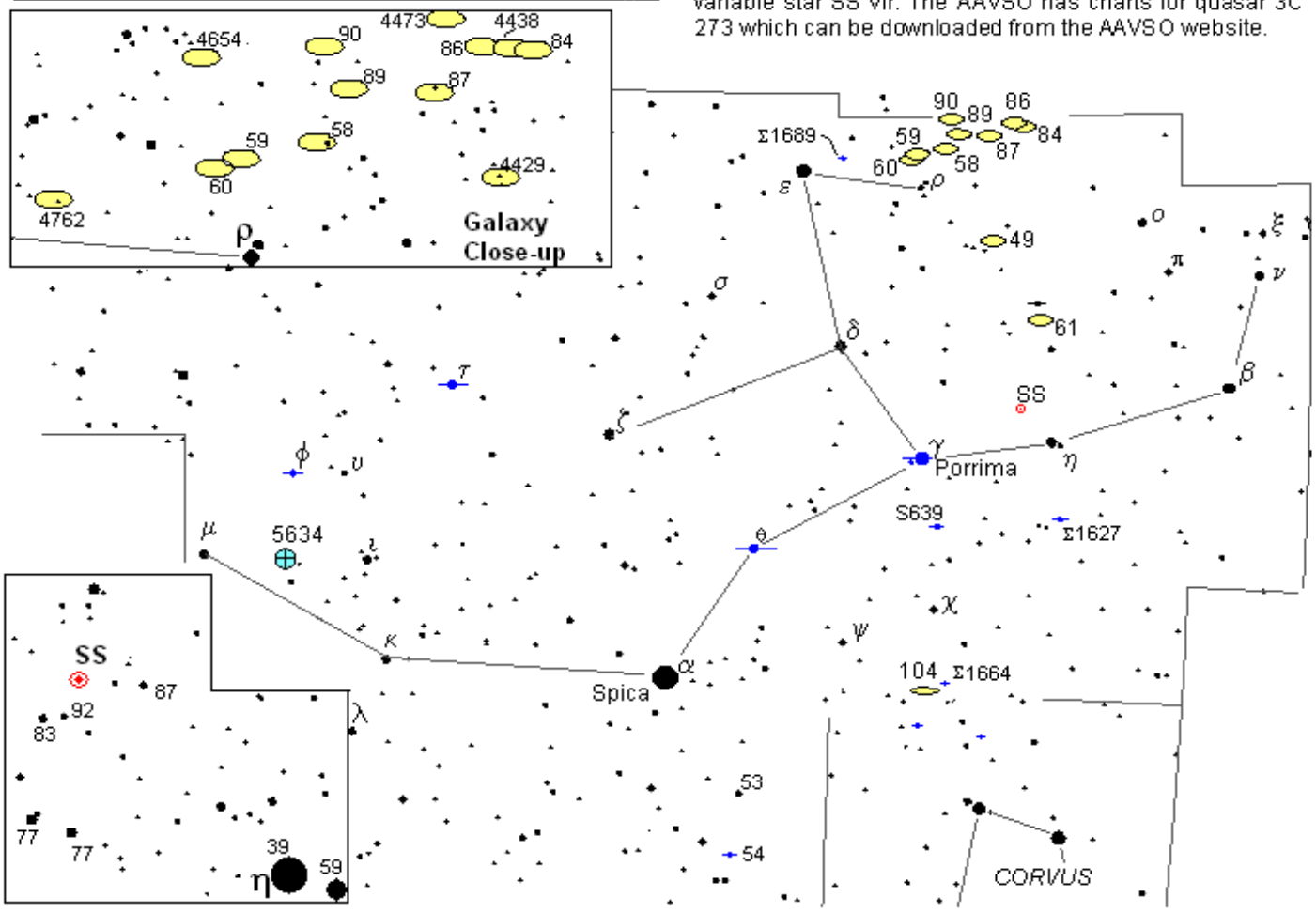
Star	(UT) Date	Time	Scope	magx.	Event(circle)
_____	_____	_____	_____	____x	R D
_____	_____	_____	_____	____x	R D

Asteroid Occultation: *Karin,* UT Time: _____off _____ on
Scope used_____ _____x Location: _____

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	1.8"	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 ___/___/____

2012 APRIL SKY ALMANAC

Solar and Lunar (EDT).

Date	Sunset	Moonrise	Moonset
1	7 : 50	2 : 16p	3 : 45a
5	7 : 54	6 : 57	5 : 56a
9	7 : 58	11 : 55	8 : 38a
13	8 : 02	2 : 34a	12 : 47p
17	8 : 07	4 : 40	4 : 57
21	8 : 11	6 : 30	8 : 52
25	8 : 15	9 : 12	— : —
29	8 : 20	1 : 07p	2 : 18a

PLANET WATCH

	Venus	Mars	Saturn
	Sets	*Transits*	*Transits*
1	11:55p	11:11p	2:29a
5	11:59p	10:53p	2:12a
9	12:02p	10:36p	1:55a
13	12:05p	10:20p	1:39a
17	12:06p	10:04p	1:22a
21	12:05p	9:49p	1:05a
25	12:03p	9:35p	12:48a
29	11:58p	9:21p	12:31a

April 2012

S	M	T	W	T	F	S
1	2	3	4	5	6 ○	7
8 Easter	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 2012 (3) Juno

Date	Rises	RA hr.	RA min	Dec. deg.	Alt.	Azm	Magnitude
		topocentric					
1	11 : 33 pm	16 : 29	-	07.2	4°	103°	10.8
7	11 : 06 pm	16 : 28	-	06.7	9	107	10.7
13	10 : 39 pm	16 : 27	-	06.1	13	111	10.6
19	10 : 11 pm	16 : 24	-	05.6	18	115	10.5
25	9 : 42 pm	16 : 21	-	05.0	23	120	10.4
31	9 : 12 pm	16 : 18	-	04.5	28	126	10.3
	EDT	*(at midnight)*			*(at midnight)*		

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

Celestial Highlights

Date	UT hr	
3	19.5	Venus within Pleiades
6	19	**FULL MOON**
13	11	**LAST QUARTER MOON**
15	18.2	Saturn at opposition
18	17.2	Mercury greatest W. 27°
21	07	**NEW MOON**
22	04	Lyrid meteor shower
28	04	alpha Scorpid meteors
29	10	**FIRST QUARTER MOON**

LUNAR OCCULTATIONS FOR: APRIL 2012

Civil (24hr) date	hr	min	sec	UT date	hr	min	sec	Ph	Moon % illum.	Moon alt	Moon azimuth	Star name	Star Mag.	event PA	dbl./ sep.
1	0	36	38	1	04	36	38	D	63+	33°	262°	ZC 1190	7.2	132°	0.03"
1	2	08	00	1	06	08	00	D	64+	17	277	1 CNC	5.8	124°	NA
1	22	43	49	2	02	43	49	D	73+	57	217	45 CNC	5.6	158°	0.05"
4	0	13	02	4	04	13	02	D	90+	49	206	ZC 1543	6.6	159°	NA
5	2	32	20	5	06	32	20	D	96+	34	228	87 LEO	4.8	117°	NA
12	4	04	12	12	08	04	12	R	62-	18	142	ZC 2704	5.9	209°	0.10"
12	4	56	28	12	08	56	28	R	62-	23	154	ZC 2708	5.9	285°	NA
14	5	38	10	14	09	38	10	R	40-	22	136	ZC 2995	6.1	271°	0.10"
25	21	25	25	26	01	25	25	D	19+	30	272	ZC 881	6.3	105°	0.58"
26	21	17	40	27	01	17	40	D	27+	40	262	ZC 1025	7.3	094°	NA
27	21	50	57	28	01	50	57	D	36+	41	256	ZC 1141	5.5	167°	NA

at MVCO

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.

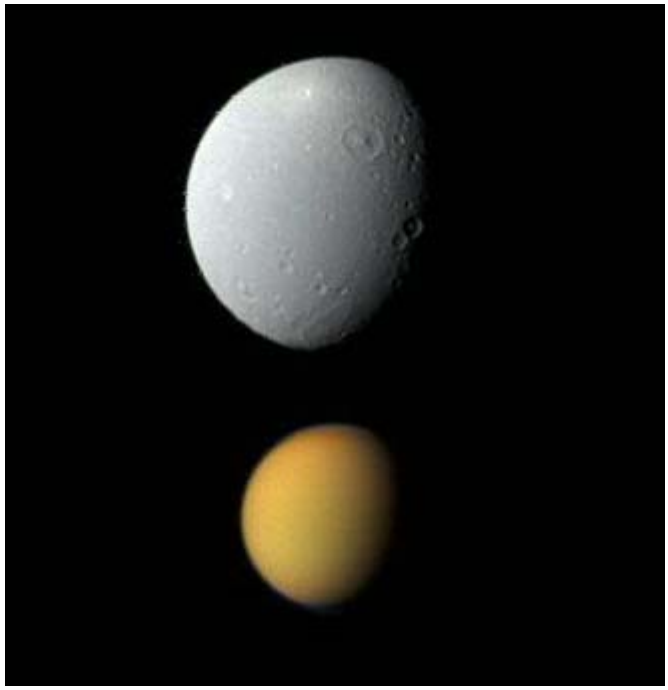
PA is referenced to celestial north: North=0° East=90° South=180° West=270°

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

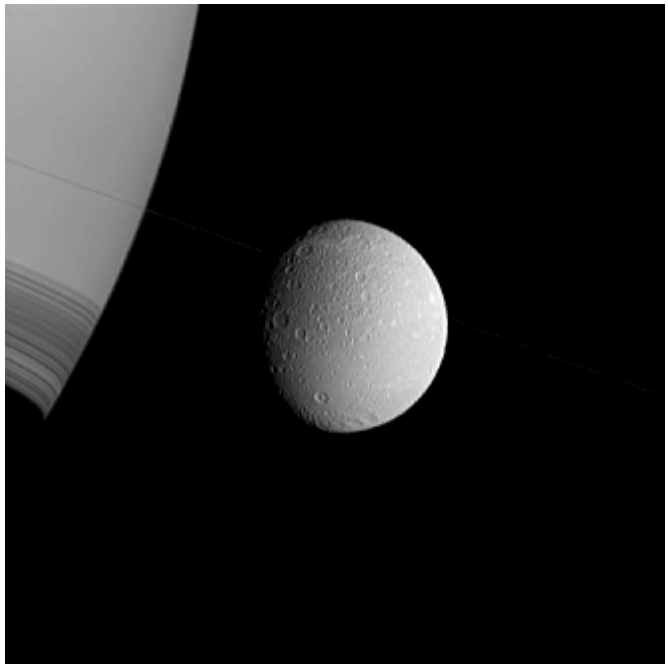
Variable star data from AAVSO. All other data computed with MICA 1800-2050 (Willman-Bell)

GALLERY.....

SATURN'S MOONS UP CLOSE: Recent images from Cassini feature snap-shots of Saturn's moons. We can only see these as star-like points in our telescopes. But Titan can show a tiny disk about 0.8 arcsecond in diameter. So enjoy these close-up shots and keep them in mind when hunting down Saturn's Moons this apparition. Here are some of the images from the Cassini website. Go there for more.

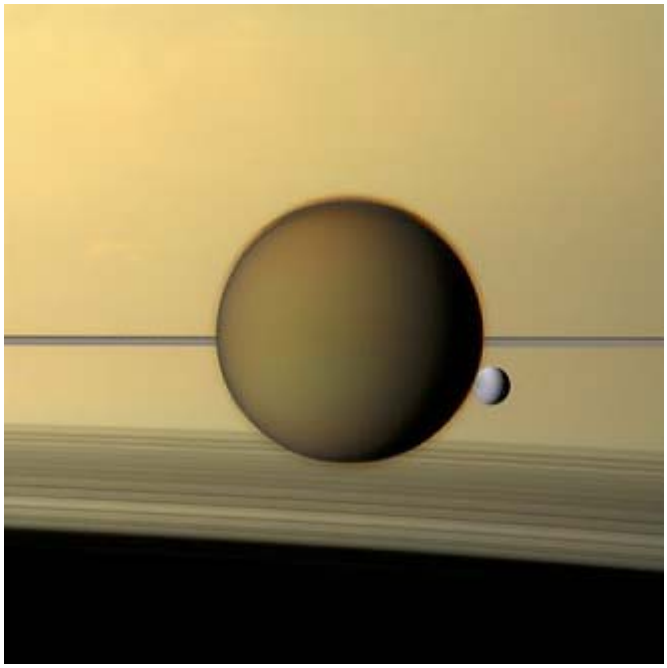


Dione hovers in the foreground over much larger Titan. Released Dec. 22, 2011. Cassini Image/ JPL



Dione on a Diagonal.The Rings are seen edge-on casting their shadow on the planet at lower left. Released Jan 30, 2012. Cassini Image/ JPL

Rhea transits Titan. Cassini Image / JPL, released Feb. 13, 2012.
Titan, Dione and the Rings. Released Dec 22, 2011. Cassini /JPL



Titan, Dione and Rings. Released Dec. 22, 2011. Cassini / JPL

There are even a few APOD's from the Cassini Solstice Mission!

Iapetus: APOD Jan. 13, 2012. This moon varies in magnitude from one side of its orbit to the other. Its leading hemisphere is dark as coal. Because Iapetus is in a locked orbit, we always see the same side when at elongation. Thus when Iapetus is on the west side of its orbit, the bright white side is always presented to us. When at the eastern elongation we always see the darker side. The magnitude ranges from 10.2 at brightest to 11.9 when faintest. Look for it when it is directly south of Saturn on April 5 and June 23 (a Scenic Vista night). Or, when directly north of Saturn on May 24, 2012. It should be midway in brightness at these times.

Enceledus: APOD Feb. 8, 2012. This moon is a faint one for telescope users being at magnitude 11.7. But this could be the most fascinating moon of Saturn besides Titan and its nitrogen atmosphere and organic rain clouds. If you look closely at the bottom left limb you should see the water ice plumes jetting out of the "Tiger Stripes" at the south pole. It was these plumes that the Cassini spacecraft flew through and detected organic material. (See News Notes this issue "IceMole"). It is believed there may be a vast under-ice water reservoir or even an ocean of liquid water. Perhaps even salt water.

The presence of organics in the ice plumes would suggest, at least, the possibility of primitive life forms such as microorganisms. These could live in the deep oceans. The deep ice is believed to be heated above melting point, by tidal friction. Once turned into liquid water under pressure, it explodes into space through fissures and cracks in the ice surface. You can see that the surface is covered with many such old cracks. The lack of craters also indicates this is a fairly young surface- freshly re-made with a covering of new water ice.