

# THE METEORITE



## The Helix Nebula NGC 7293



Newsletter of the Mahoning Valley Astronomical Society, Inc.

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Meteorite Editor: Phil Plante  
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Youngstown OH 44514



**AUGUST 2011**

**NEWS NOTES**

**Amateur Planetary Nebula.** NASA's Kepler mission monitors a 105 square degree portion of the sky in Cygnus. The spacecraft continuously stares at more than 150,000 stars in this patch of sky looking for small changes in star brightness. Kepler's goal is to search for transiting Earth-sized planets around Sun-like stars. In the process, the effects of other close stellar and/or planetary companions are detectable. Austrian amateur astronomer Matthias Kronberger found a new planetary nebula (named Kronberger 61, or Kn 61) within the Kepler field. Professional and amateur astronomers are working as partners to comb through the Kepler field looking for planetary nebula candidates. As a member of the amateur group called the "Deep Sky Hunters." Kronberger searched data provided by the Digital Sky Survey (DSS) to find this planetary. To date, two have been found in the Kepler Field, including Kn 61.

Some recent theories suggest that planetary nebulae form only in close binary or even planetary systems. The conventional explanation is that most stars, even solo stars like our Sun, will form planetary nebulae. But this might be too simple an explanation. There is current speculating on how companion stars or even planets may influence and shape the intricate structure seen in many planetary nebulae. To date, a low percentage (about 20%) of planetary central stars have been found with companions. This low fraction may be due to the fact that most companions are too small or distant for current ground-based observations to detect. Then the space-based Kepler telescope will likely be able to fill this observational gap. Kn 61 may help solve the mysteries of planetary nebula formation. The discovery of Kn 61 and a Gemini image of it, were to be presented at the International Astronomical Union Symposium: "Planetary Nebulae: an Eye to the Future," in Puerto de la Cruz, Tenerife, Spain in July 2011.

**Pluto's Family.** Astronomers first spotted what appeared to be a new 4th moon around Pluto in Hubble images taken on June 28 using the Wide Field Camera 3 instrument. The new moon was confirmed in Hubble pictures taken July 3 and July 18. Astronomers estimate that the tiny fourth moon is between 8 and 21 miles wide. By contrast, Pluto's largest moon, Charon, is 648 miles across. The dwarf planet's other moons, Nix and Hydra, are both in the range of 20 to 70 miles wide. The new moon has been given the temporary designation P4. The team had been taking the long-exposure shots of Pluto because they were looking for theorized rings around the planet. The moon probably wasn't seen in earlier Hubble images because the exposure times were shorter. The New Horizons spacecraft is on its way to Pluto. Closest encounter during flyby will occur at 7:49 AM EDT, July 14, 2015. Methods on how to observe P4 during Horizon's flyby are already being studied.

**Stopping By.** NASA's Dawn spacecraft entered orbit around Vesta on July 15, 2011. It became the first probe ever to enter orbit around an object in the main asteroid belt between Mars and Jupiter. As July closes out, JPL has released several images with resolution of 1.2 miles for the smallest features seen. A large and prominent bulging feature is seen near Vesta's south pole, in one image. Dawn will remain in orbit for one year, then move on to orbit another main belt asteroid-namely Ceres.

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**MVAS CALENDAR**

- AUG 20** OTAA work day, prep the MVCO. 1 PM start.
- AUG 20** Business meeting at the MVCO 8:00 PM
- AUG 27** MVAS-OTAA meeting at the MVCO, Braceville.
- SEP 3** Public Night at Scenic Vista. 7:00 PM
- SEP 17** Business meeting at the MVCO. 8:00 PM

**NATIONAL & REGIONAL EVENTS**

- SEP 10** **ScopeOut 2011**, at Cincinnati Observatory Center 3489 Observatory Place, Cincinnati, OH 45208. Noon till 10:30 PM. Includes tours, solar viewing, telescopes, door prizes, classes. Adult fees \$6.00. <http://www.cincinnatiobservatory.org>
- SEP 22- 28** **AstroBlast 2011**. At Two Mile Run County Park, Lockwood Campground, Oil City, PA 16301. Conducted by the Oil Region Astronomical Soc. Fees: \$24 single/ \$48 family. <http://www.oras.org>
- SEP 23 to OCT 2** **2011 Maine Starlight Festival**.... is a statewide celebration to promote the enjoyment and protection of Maine's stellar night sky. Featuring events provided by astronomy clubs, planetariums, science centers, and other leading members of Maine's starlit communities. *Locations include:* Kennebunk, Portland, Camden, Orono, Bar Harbor, and The Entire state of Maine. <http://www.starlightfestival.org>

**MVAS BOARD OF TRUSTEES**

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Appointed Trustee (2010 & 2011)	Bill Pearce
Elected Trustee (2011)	Dan Schneider

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Librarian	Rosemary Chomos

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Assistant Editor	Steve Bartos
MVAS Webmaster	Harry Harker
MVAS Webmaster	Bill Pearce

**MVAS REPRESENTATIVES**

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

## MINUTES OF THE JULY MEETING

JULY 23, 2011 at the MVCO

Meeting began at 8PM sharp with 13 in attendance. Visitor - Tim Klesch, ended up joining. Minutes read, motioned by Greg Higgins, second by Dan Schneider... passed and accepted.

**TREASURER'S REPORT:** Steve Bartos read the Treasurer's report. Bob Danko presented the P.O. Box fee of \$23.00, which he paid. Rosemary Chomos motioned to accept the Report and pay Bob back; Linda Miyashita second, passed and accepted.

### **General Fund** **6/1 thru 6/30 2011**

OPENING BALANCE:	\$	10,545.00
CLOSING BALANCE:	\$	10,724.93
ACCOUNT NET GAIN/LOSS FOR THIS PERIOD:	\$	+179.93

#### INCOME:

DUES	\$	65.00
MVAS CLOTHING		180.00
INTEREST		<u>0.88</u>
TOTAL INCOME	\$	245.88

#### EXPENSES:

CK# 2756 SKY & TEL RENEWAL	\$	<u>65.95</u>
TOTAL EXPENSES	\$	65.95

### Reserved Funds (KEYS AND OAD FUNDING)

KEY DEPOSITS	\$	250.00
YTD: 50" PROCEEDS RESERVED FOR OAD (LAND)	\$	3,500.00
CASH FROM ORIGINAL OAD FUND (FOR LAND)	\$	3,914.12
FUNDS AVAILABLE FOR MVAS OPERATIONS	\$	<b>3,060.81</b>

2011 Dues Paid: R. Blevin, F. Boyer, Mr. & Mrs. Capella.  
There is one name on the roster in arrears of payment- as of July 15.  
We have 49 paid members. Again, thank all of you for the support.

**CORRESPONDENCE:** None.

**COMMITTEE/OFFICER REPORTS:** *VISUAL COMMITTEE:* No report. *IMAGING COMMITTEE:* No report. *Radio Astronomy SIG:* Sam purchased a SuperSID receiver & antenna kit so the group can begin to dabble in the realm of radio astronomy. He and Greg spent an afternoon building the antenna, attaching the hardware and installing the software necessary to run the equipment. What is a SuperSID and what is it used for? See the article by Harry Harker to in the August 2011 *Meteorite*. pg. 5.

**OBSERVATORY DIRECTOR'S REPORT:** We got new gravel for the drive on July 11th. Steve, Larry and Robert Blevins were on hand to spread the gravel but had little to do, thanks to the driver's nice job of spreading the gravel with the truck. The guys only had to work one small area by hand. Driver initially showed up with some pretty crappy gravel, which was quoted at \$20 per ton. Larry pointed out what we really wanted; the driver went back to swap loads and returned with the correct product. This gravel was \$25 per ton. We ended up needing 20 tons, so final cost was \$500 and they waived the delivery fee. Steve and Larry had made some repairs to the 10" enclosure, after it had sustained some damage. Monday the 25th, Steve and Larry will be at the MVCO to have the outhouse pumped. Larry also 'fogged' the outhouse; he had found that it was heavily infested with mosquitoes. Since the fogging, the outhouse has been nearly bug free. Larry stated we should upgrade the breaker box in the 16" building, we've pretty much out grown it. Discussion ensued, and all agreed we should replace the box and ensure that it's more than adequate to handle current plans we have for growth and to be able to deal with future growth as well. Greg

motioned to have Larry move forward with the work, Bob seconded the motion which passed, but Larry is to notify the trustees if the expense will be over \$200. Greg mentioned that he, Sam and Harry have some concerns regarding the ground rod supplying ground for the 16" building and asked that he check that too while doing the upgrade. There was no homework turned in this meeting.

Sam asked Larry if there has been any progress on the gutters, Larry reported there have been no calls returned to a contractor he reached out to. Harry and Sam have formulated a plan to fix the gutters, in case an acceptable contractor and cost is not found before we head into fall and winter.

**OLD BUSINESS:** Harry made note of the Cuyahoga OTAA, the OTAA work session & monthly meeting, the date of our OTAA, start time and cost. At this time, somebody mentioned our sign by the road, that with visitors coming we may want repaint the frame because it's looking rusty. Everybody agreed. Harry mentioned how he's been thinking that we need to repaint the sign as well- over this coming winter. Discussion didn't go much further, nobody really volunteered. Maybe we can get the frame painted during the work day. OTAA volunteers: Dan Schneider - 8" building, Rosemary - traffic, Phil - Titan, Rosemary - coffee, overnights - Greg, Sam, Michael, Fred, Rosemary, Larry, Phil. We as a group figured we didn't need coverage on the 16", but we'll discuss this later. This is mainly due to a couple of us volunteering previously and nobody came to use it. Steve made mention that we need to update the web site to highlight the OTAA meeting and mention (give credit to) a vendor (O.P.T.) that is willing to make donations.

Linda brought in a couple books for the OTAA; *Stargazer: Track The Night Sky From Your Own Back Yard* by Robin Scagell and *The Illustrated Atlas Of The Universe* by Mark A. Garlick, with maps by Wil Tirion. Rosemary also has some DVD's and other items. Oceanside is going to donate, Steve doesn't know what yet. S&T does not do donations any more.

Since Borders is closing, the club decided to take advantage of the discounts and authorized Rosemary to spend up to \$250 for books which can be placed in the library and used for OTAA door prizes. Harry suggested to obtain books that are particularly nice and don't seem that they'd become old or invalid in a year or two, that we get at least two, so that we are also preparing for next year's OTAA.

NASA has confirmed that they will be sending a speaker, his name is Jay Reynolds. (topic and time info TBA). Pat Durell is speaking on 2012. *The Business Journal* from Youngstown will be at the OTAA to do a report on the club. They are running a series on their online news cast called "Off The Beaten Path", which will feature businesses and events in the area which people may not be aware of. They plan on talking to some of us, taking pictures and videos. Harry has not been able to confirm if this will also be in print, in *The Business Journal*.

Dan Schneider asked about the status of the 50", Harry reported that plans are still on for pickup the weekend of the OTAA. Harry would ask Bill Pearce to follow up with the purchaser. Discussion returned to the 10" enclosure and centered on the stability of the repairs. Where is the scope and what's going to be done to make the enclosure more usable for somebody if they are alone or somewhat intimidated by its size? Sam stated that it was still difficult to use in his experience since the repairs. Sam has the scope and computer controller at his house for cleaning of the scope and for repairs due to corrosion of the contacts for the controller. Larry felt the repairs were okay, but that there were still a few problems. Some members

questioned how well they would hold up over another winter or long term use. At this time Rosemary motioned that it should be dismantled and another approach be taken. Bob seconded the motion and it was passed. Larry and Steve committed to take it down while at the MVCO on Monday the 25th, while having the outhouse pumped out. They will keep any hardware that is reusable, any frame timbers that are reusable, and will place the siding on Mike's burn pile.

Gutter discussion came back around, Greg mentioned a local contractor that he passes nearby but can't remember the name and exact location, and asked that those in the area try to remember to watch for it and get the phone number. Ironically, Bob knows who it is (T&J Roofing & Spouting) and he's used them before, as well as had their number in his wallet. This information was passed on to Larry; he will contact them to get a quote.

**NEW BUSINESS:** Greg motioned that Sam be reimbursed \$105 for the SuperSID purchase, Dan seconded the motion, and it passed. Sam's birthday fell on the day of the meeting, Happy Birthday Sam! Tim Klesch, the lone visitor this meeting, asked to join the club. Harry sponsored him, Greg seconded and the club voted him in. Welcome Tim! Greg noted that the club grill is pretty much shot. It's still usable, but is easily on its last leg. He asked that as we approach end of season sales, that members keep their eye out for good deals and notify the trustees so we can buy a new one.

The heat of the 16" building in summer was brought up. Adding A/C was discussed, but settled on looking into adding solar powered vents. These would add no cost to Mike, and thus to the club, and would provide an automated method to remove excess heat from the building when nobody is around.

Steve made note of an interesting web site he found called World Science at <http://world-science.net>. There are interesting articles, including astronomy, and that he even found an article where you can listen to stars: <http://tinyurl.com/3ftuz9> This article found via a Google search, included audio and voice commentary as well. Steve also says that *LightBuckets Online Telescopes* is going out of business. It seems it's not due to a lack of business, rather that the owner is taking a new direction in life in the Silicone Valley. If anybody is interested, it seems the site and equipment is for sale. You can check it out at: <http://lightbuckets.com/>

**GOOD OF THE SOCIETY:** Sam took a moment to thank Bob Danko for the extra effort he puts in at the MVCO and especially with all the work he does to help keep the grounds up. During the past heat wave, Bob stuck to it and has been out there mowing for us with a push mower and weed whacker. It's good that Sam made note of this, Thanks Bob! It's often a thankless job and often forgotten.

Rosemary asked about the status of door prizes for the OTAA. Sam said to watch for an updated list in the Meteorite and on the mailing list, and referenced that in the last meeting we made a call out to the club to find/donate small items such as red flash lights, etc. Harry noted that new membership is going well this year and that he's actively e-mailing with two other individuals who will be coming soon to check us out. It's believed that one is definitely going to join at the August meeting. Harry read an e-mail correspondence he had with an individual seeking information about "glowing orange objects" spotted in the sky. It was mostly a light hearted moment.

New member Tim Klesch asked why we didn't have membership forms on the web site. We discussed the standard

method of joining the club, (attend 2 meetings and be sponsored) and that we've honestly been playing a little loose over the past few years with this. But, this led to discussions of at least having membership information on the site to help with the process. Tim stated that he would have joined two months earlier if there had been some type of online process. Everybody agreed that there are probably some things we could do to bridge this gap, and that the trustees will try to come up with something. At this point, Bob made note of his disappointment in the fact that it seems that those who have joined during our winter meetings at YSU don't seem to turn into 'active' members.

Tim also mentioned that he thought it was great that the club had people down at the YSU Festival of the Arts and that the folks there did a great job! Thanks again to Roy & Jodi McCullough, Bill Pearce, Phil and Larry Plante and Mike Boyer. Apologies to any that I have not been mentioned! Eric Klesch donated some magazines and books for use in the library or as OTAA door prizes, thanks Eric! Dick Klesch, donated some antenna equipment to the club for the Radio Astronomy SIG, thanks Dick!

**VISUAL REPORTS:** None.

**ADJOURNMENT:** Adjournment time unrecorded. We thank our hosts Greg Higgins and Rosemary Chomos. The next meeting will be at the MCVO on August 20, 2011. Meeting begins at 8:00 PM. Scheduled hosts are Jodi and Roy McCullough. **PASSWORD:** name a solar feature. *-minutes respectfully submitted by Harry Harker (VP).*

## MVAS ACTIVITIES

Several members helped out at the YSU Summer Festival of Arts on July 9 and 10. This annual event is held on campus with numerous vendors selling artwork and refreshments. Various musical groups entertained during the day. The Planetarium had a full schedule of shows inside (with AC). Outside they had an H-alpha scope set up so that passing attendees and those leaving the show could spy on the Sun. One scope was enough to accommodate the observers, and the double-stacked Lunt solar scope provided exquisite details. Both days had mostly clear blue sky. It was also very hot with temps reaching the low 90's. Perhaps a hundred or more each day took a look. Most were impressed with the view. Nearly every one was able to see the prominences and all the kids called the sun "a dot". On Sunday, Dr. Pat Durrell (aka Durello) was interviewed by the Youngstown Vindicator. They also reported that prominences extend for millions of miles. Oh well, maybe it was the heat.

On July 16, Sharon Shanks and daughter Jessie demonstrated non-Newtonian fluid before the Monster vs. Alien movie shown that evening in Boardman Park. Its "fluid" behavior stumped the kids. These same youngsters had a chance to look through Phil Plante's 120mm Orion refractor. (The short tube model). Saturn was the choice object but magnification was held to 60x. Almost 50 people stopped for a look- most were kids. As usual they thought the eyepiece was part of gym set. Their two-fisted, eyeball on eyepiece glass grip had the scope moving all over the sky. The pay off was when their eyes lit up when they saw Saturn for the first time.

## MVAS REMINDERS

### MVAS OTAA MEETING, AUGUST 27, 2011

AT THE MVCO IN BRACEVILLE, OH  
1074 SR 534, Newton Falls, OH 44444

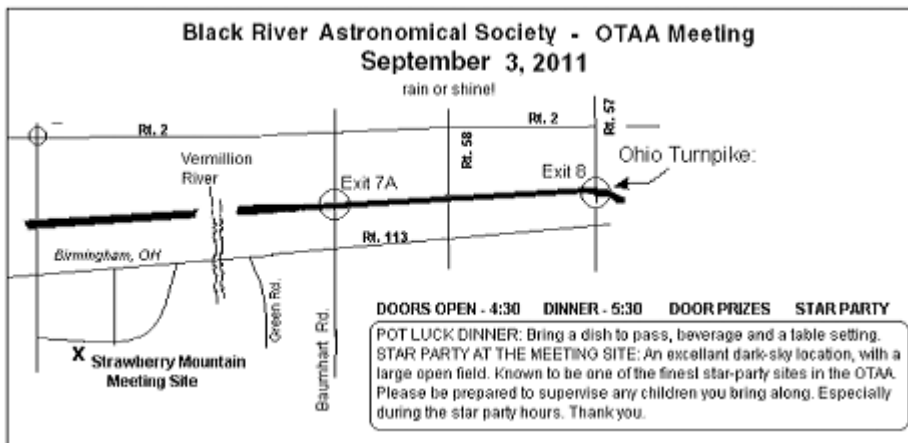
Come one, come all to the MVAS OTAA meeting. It's a time to meet with old friends and to make new ones. Time to talk shop and then break bread. The registration fee of \$5.00 per person enters you in the Door Prize drawings. We'll also have a Main Raffle. Tickets are purchased separately at \$1.00 each, for this Main Raffle. No limit on how many tickets you may buy. A single "ticket canister" will hold all Main Raffle tickets. Winners will then select their prize from what is left of the main prizes. One prize per winner this year. A speaker is planned for after dinner. Observing afterwards. Your scopes and binoculars are heartily invited.

We would insist that no vehicles enter or remain in the upper observing field after dark. Please try to arrive before sunset if you need to unload heavy or big scopes. Everyone needs to park in the lower level with headlights facing away from the buildings and observing field. For packing-up the big stuff left up top, coordinate this with someone from MVAS before driving your vehicle back into the observing area. This is designed to provide room for all scopes and to minimize headlights interfering with observations. It also provides safety for all. Of course we all know about green lasers. Don't point one at anyone or anything on the ground- if you really need to use one. You might also want to stick around for the midnight buffet (dinner leftovers). It's still a tasty snack. Feel free to spend the night if we get good skies. It's okay to take a nap before heading home.... We'll leave the lights out for you.

**Getting there:** The MVCO is on Rt. 534 about 0.8 miles north of the Rt. 82 and Rt. 534 intersection. It is on the east side of Rt. 534. Look for a white MVCO sign at the driveway entrance. If possible use parking lights only, when arriving in the dark.

### BRAS-OTAA MEETING, SEP 3, 2011

All are encouraged to attend the Black River Astronomical Society's OTAA convention, held in Birmingham, OH. This will take place the weekend after the MVAS OTAA. This is the last OTAA meeting for 2011. It is one not to be missed. They traditionally have a good swap table and good chow. Good skies too, so bring a scope and a covered dish! Check the website for any updates: <http://www.blackriverastro.org/>



### The MVAS OTAA Schedule:

- 4:30 PM** We will have a swap table set up. Bring your stuff to sell. This table will close around dinner time.
- 5:00 PM** Registration opens. \$5 per person. Buy Main Raffle Tickets at \$1.00 per ticket-no limit. 1 prize/person
- 6:00 PM** Pot luck picnic dinner. Bring a covered dish or dessert. Coffee and soft drinks will be provided.
- 6:45 PM** OTAA announcements, raffle drawings.
- 7:05 PM** Sunset. End of nautical twilight at 8:08PM.
- 7:30 PM** Dr. Pat Durrell (YSU) will present "2012: Fact or Fiction". NASA's Jay Reynolds will also speak.
- 9:00 PM** It's dark. Observing time!

### MAIN RAFFLE PRIZES

- 1- iOptron GOTO mount with 90mm Mak telescope
- 1-Vixen Ascot 10X50 Wide Field Astronomy Binoculars,
- 1- Televue 19mm Panoptic.

### Door Prize list (as of July 15)

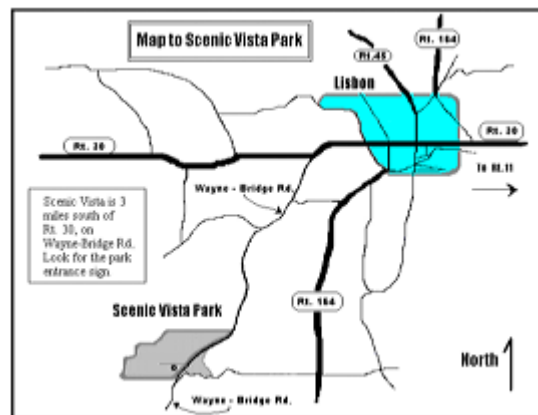
- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>1- Orion Mars filter</li> <li>1- Orion Starshot USB eyepiece</li> <li>1- Orion Eyepiece case</li> <li>2- Orion 8 x 42 monocular</li> <li>1- Celestron X-cel 25mm eyepiece</li> <li>1- 10 disc set of "Our Planet" (DVDs)</li> <li>1- S&amp;T <i>Celestial Sampler</i> (book)</li> <li>2- S&amp;T <i>Video Astronomy</i> (books)</li> <li>2 "Mystery in the Sky" (DVDs)</li> </ul> | <ul style="list-style-type: none"> <li>1- The Observer's Sky Atlas</li> <li>1- Red Mini Flashlight</li> <li>1- Desk Top stapler kit</li> <li>2- travel coffee mugs</li> <li>1- clip-on led flashlight</li> <li>1- clipboard and calculator</li> <li>1- Energizer Trim Flex led light</li> <li>10 - VLA refrigerator magnets</li> <li>2-Trim Multipurpose 10-1 tools</li> </ul> |
|--|--|

### Swap Table (as of July 15)

- |                                    |                      |
|------------------------------------|----------------------|
| 1- set of 1" pillow block bearings | 1- homemade EQ mount |
|------------------------------------|----------------------|

### SCENIC VISTA PUBLIC NIGHT, SEP 3, 2011.

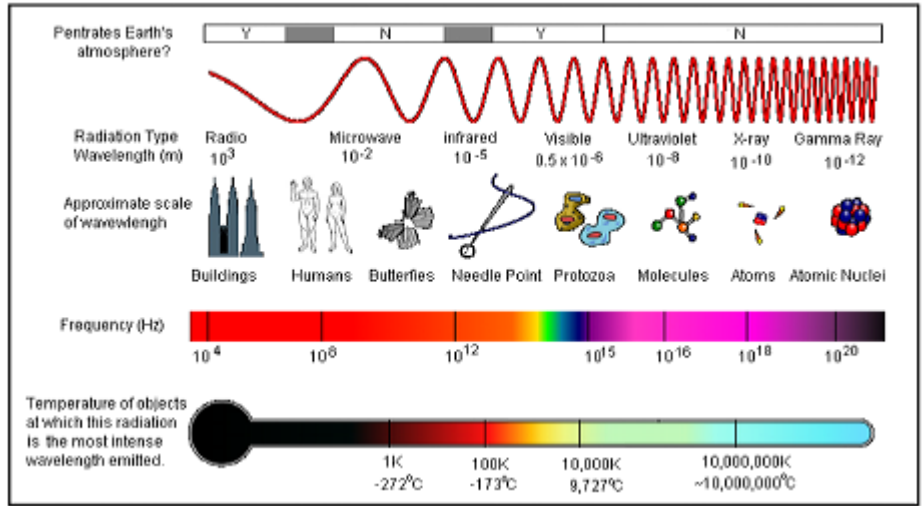
Please remember that we have a normal public night at Scenic Vista Park, outside Lisbon, OH. It's on the same night as the Black River OTAA. Those that don't plan on going to Black River should consider helping out at Scenic Vista. Arrive in time to set up before sunset. If it's clear we hope to see you there. If Scenic Vista is clouded out, consider going to Black River instead. With luck, both events will enjoy a clear and pleasant evening.



**Radio Astronomy returns to the MVAS!**

A small, but growing number of members have decided to form a radio astronomy Special Interest Group or SIG. This, with the purchase and implementation of some new hardware, launched the MVAS in to radio astronomy. I'm sure most of you are familiar with the idea of radio astronomy and some of its basic principles; rather than viewing the visible portion of the electromagnetic spectrum, radio equipment is used to listen to different portions of the electromagnetic spectrum. At right is a graphical description of the electromagnetic spectrum (thanks Wikipedia!).

The MVAS SIG has purchased a SuperSID (Solar Sudden Ionospheric Disturbance) receiver, as mentioned earlier in this issue of the *Meteorite*, to start our radio astronomy observations. Below are example pictures of the equipment.



This device is used to detect solar-induced ionospheric disturbances by monitoring VLF (very low frequencies), the same frequencies our US Navy uses to communicate with our submarine fleet! One can not listen in on these communications, they are encrypted, but these frequencies can be monitored for disturbances, such as those created by solar flares or CME (Coronal Mass Ejections). These frequencies are so low that they travel through water and even land! This SuperSID receiver, along with its antenna and software, is designed to monitor and record these disturbances on a specific range within the VLF which react to solar phenomena. This process is recorded on a computer and submitted once a day for analysis by groups such as SARA (Society of Amateur Radio Astronomers) and Stanford University. An example is shown at right, taken while Sam DiRocco and Greg Higgins were doing initial test runs of the equipment. The top image is the data recorded by the MVAS SuperSID. Since ionospheric disturbances can occur due to solar activity or lightning, we have no idea what caused the disturbance, we just know that it happened. But, by using data collected (bottom chart) by the GOES (Geostationary Satellite) network, we can confirm that our recordings match theirs.

Our setup is still in testing phase, but it is up and running, and can be seen the next time you are out at the MVCO. Soon, the club will be submitting it's very own recordings and contributing to radio astronomy science! Considering the high number of cloudy days we have in NE Ohio and the rare moments we have to use our optical equipment, this is a great

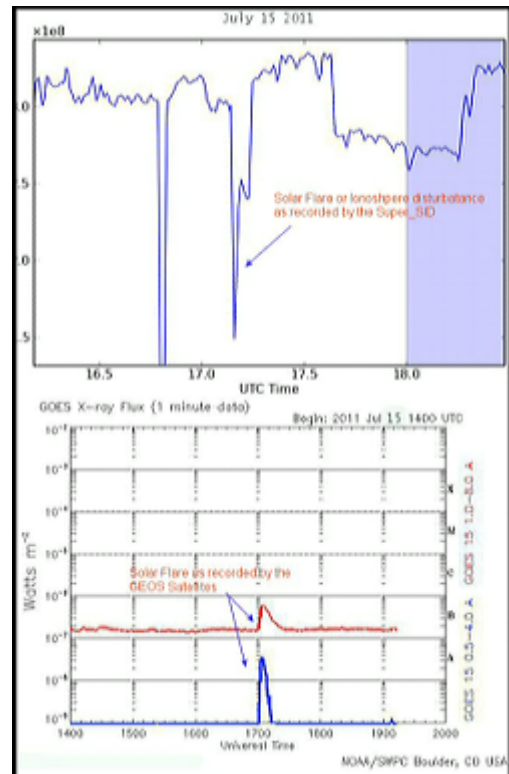
way to still stay active in astronomy! If you want to know more about the SuperSID project, here is a link to a 2 page brochure from SARA <http://www.radio-astronomy.org/pdf/sid-brochure.pdf>

Or you can visit <http://www.radio-astronomy.org> to learn about radio astronomy in general. Here is a link to Stanford's SID site as well <http://sid.stanford.edu/>.

We have started an e-mail discussion group for the MVAS Radio Astronomy SIG. If you are interested in what's going on, email me (Harry) at [harry@mobservatory.com](mailto:harry@mobservatory.com) or Sam at [samd@mobservatory.com](mailto:samd@mobservatory.com), and we'll get you on the list.

--- By Harry Harker

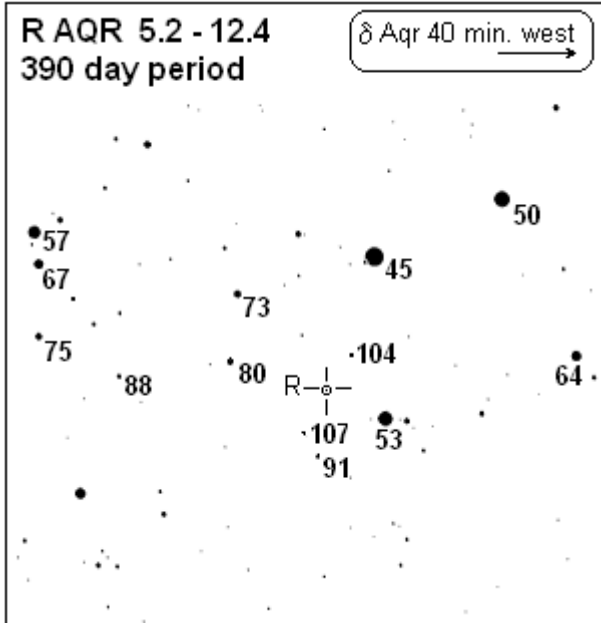
July 2011



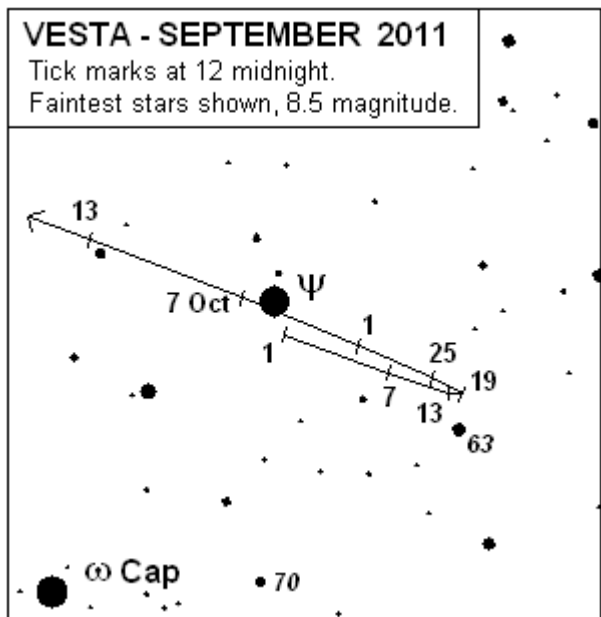
26th,

**OBSERVER CHARTS**

Variable star of the month: **R Aquarii** (abbrev: R Aqr). A telescope will be needed for R Aqr the next few months. It was at minimum light mid-July and is currently on the rise to maximum light mid-February, 2012. By November it should become a binocular object. But Aquarius is setting by 9pm on New Year's Eve. Get your looks when you can!



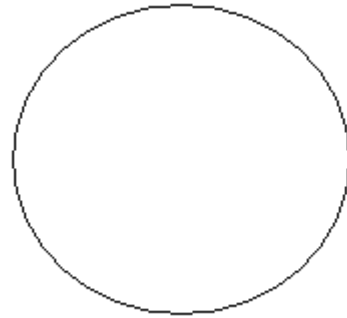
Asteroid of the month: **(4) Vesta**. This is the second month we follow Vesta. It starts off just south of psi Cap. Both psi and omega are the two bottom stars of Capricornus, about 2.5 degrees apart. By September 19, Vesta stops retrograde motion and heads back towards psi. You can follow it into October with the chart below. Vesta drops from magnitude 6.2 to 7.4 by the end of October. Easy binocular stuff. Give it a try! Follow the Dawn mission via the internet as well. Good times for asteroids.



**MVAS OBSERVATIONS - DUE OCTOBER 2011**

OBSERVER \_\_\_\_\_

**Featured object: Helix Nebula**. Please try a sketch. Use the circle to represent the eyepiece field. The Helix has been seen in a 50mm finder at Scenic Vista. It is best seen at low power (from 8x to 40x). You'll need an eyepiece/scope combo giving a real field of view slightly larger than 1 degree- for best results. Dark skies are a must. Large binoculars or any small RFT scope are your best bet. The Helix is about 12 arc minutes in diameter. This is about 1/4 the size of the Moon.



**Helix Nebula Observation:**

Date: \_\_\_\_\_ Time(EDT) \_\_\_\_\_ Scope \_\_\_\_\_

**R Aqr magnitude estimates:**

Date: \_\_\_\_\_ Time: \_\_\_\_\_ estimate: \_\_\_\_\_ Instrument: \_\_\_\_\_

_____	_____	_____	_____
_____	_____	_____	_____

**(4) Vesta Observations:**

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Instrument: \_\_\_\_\_ magnification: \_\_\_\_\_

_____	_____	_____	_____
_____	_____	_____	_____

**Other Objects in Aquarius to observe**

**D. Sky** Date Scope Dbl. Date Scope

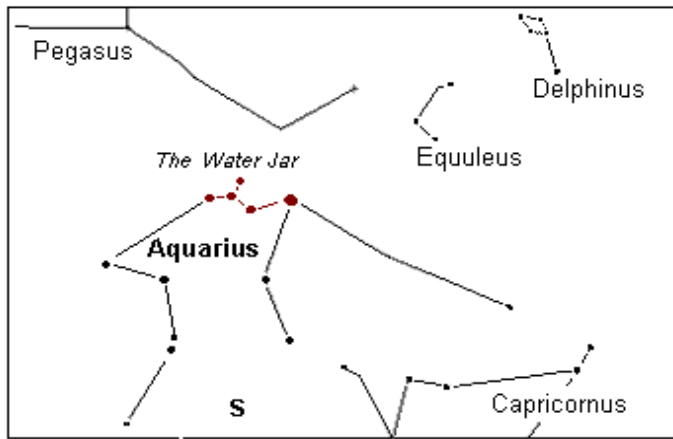
				SEP	MAG	SPLIT?
M- 2	_____	_____	41 Aqr	_____	5.1"	5.6 - 6.7 Y / N
M- 72	_____	_____	94 Aqr	_____	12.3"	5.3 - 7.0 Y / N
N- 7009	_____	_____	12 Aqr	_____	2.5"	5.8 - 7.5 Y / N

**Lunar Occultations (see Sky Almanac):**

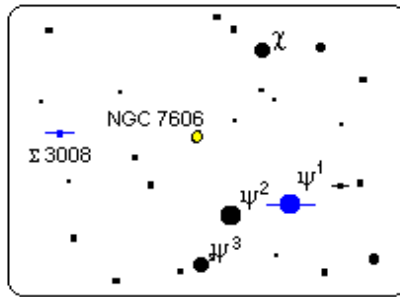
Star (UT) Date Time Scope magx. Event(circle)

_____	_____	_____	_____	_____x	R	D
_____	_____	_____	_____	_____x	R	D
_____	_____	_____	_____	_____x	R	D

# Constellation of the Month — Aquarius



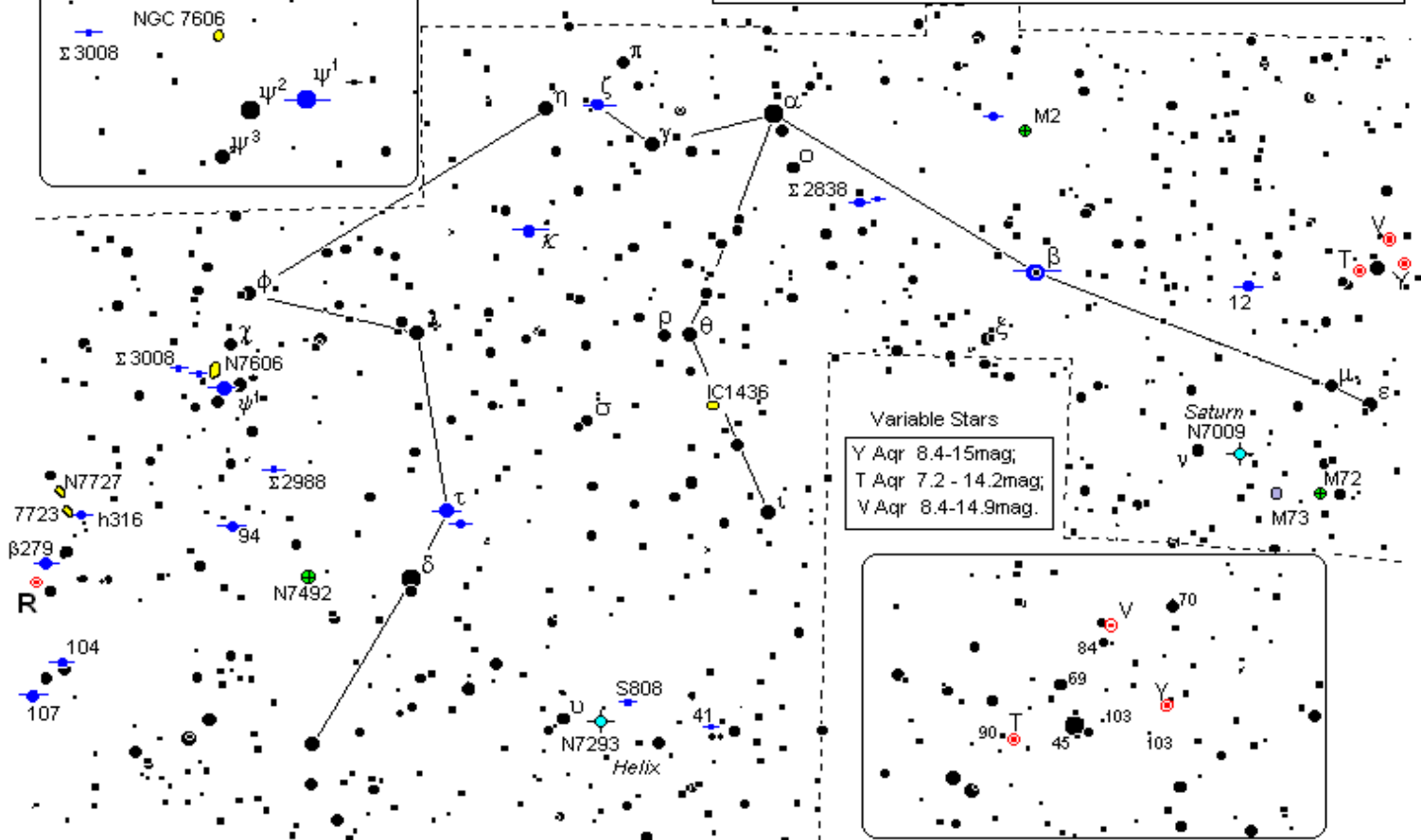
Late summer and fall nights are a cool mix of constellations and temps. There are constellations still visible from summer in the western sky, the fall sky near the zenith and winter sky in the east. Below Pegasus and all the seasonal fanfare is the quiet constellation of Aquarius. All of its brightest stars are difficult to see from the city but a trip to a dark sky site lets you use them to star hop to many wonderful objects. With the naked eye you can find the "Water Jar" asterism. Binoculars reveal many close pairings of stars, giving a "double star appearance". The most famous nebula in Aquarius could well be the Helix Nebula. It is the closest planetary nebula by most accounts. But it is also very faint and large. A 6" RFT can capture its ghost-like disk but larger binoculars may sweep it up with even greater ease. What do you find? The Saturn Nebula is another planetary nebula. Usually a larger scope of 8" or more will be needed to pick out the "ring ansae". Nearby is M72, a globular cluster. M2 is a fine globular to hunt down. Of course there are real double stars to enjoy with a telescope and moderate power. We feature three variables that lie near each other. Which one is brightest tonight? Or try out R. Agr.



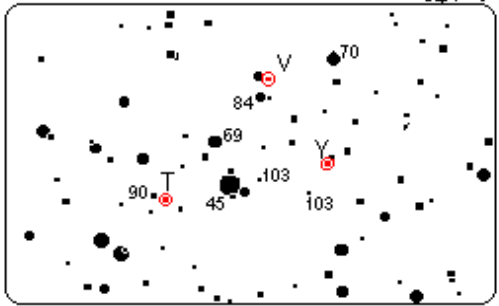
Faintest chart magnitude is about 7.5.

<b>Aquarius Transit Times:</b>	Jul 15, 3:30 AM	Aug 15, 1:30 AM
	Sep 15, 11:30 PM	Oct 15, 9:30 PM
	Nov 15, 8:30 PM*	

\* on Standard Time



**Variable Stars**  
 Y Aqr 8.4-15mag;  
 T Aqr 7.2 - 14.2mag;  
 V Aqr 8.4-14.9mag.



DOUBLE STARS:			DEEP SKY			Check list		Instruments used:	
magnitudes	sep.	"colors"	type	mag	size	notes			
12 Aqr	5.5 - 7.3	2.4"					<input type="checkbox"/> 12 Aqr	<input type="checkbox"/> 107 Aqr	<input type="checkbox"/> on _____
Σ2838	6.2 - 9.1	16.0"					<input type="checkbox"/> Σ2838	<input type="checkbox"/> M72	<input type="checkbox"/> on _____
41 Aqr	5.7 - 7.2	50.0"					<input type="checkbox"/> 41 Aqr	<input type="checkbox"/> M73	<input type="checkbox"/> on _____
ζ	4.4 - 4.6	2.0"					<input type="checkbox"/> ζ	<input type="checkbox"/> N7009	<input type="checkbox"/> on _____
τ <sup>1</sup>	5.7 - 9.6	26.0"					<input type="checkbox"/> τ <sup>1</sup>	<input type="checkbox"/> M2	<input type="checkbox"/> on _____
Σ2988	7.8 - 7.8	3.5"					<input type="checkbox"/> Σ2988	<input type="checkbox"/> N7293	<input type="checkbox"/> on _____
ψ <sup>1</sup>	4.2 - 9.2	49.0"					<input type="checkbox"/> ψ <sup>1</sup>	<input type="checkbox"/> N7727	<input type="checkbox"/> on _____
94 Aqr	5.2 - 7.5	13.3"					<input type="checkbox"/> 94 Aqr	W AQR was _____ mag. on ____/____/____	
Σ 3008	7.1 - 7.9	5.0"					<input type="checkbox"/> Σ 3008	T AQR was _____ mag. on ____/____/____	
107 Aqr	5.7 - 6.5	6.8"							
M72	GC	9.2	6.0'						
M73	OC	8.9	2.8'			4 stars			
N7009	PN	8.3	28"			"Saturn Neb."			
M2	GC	6.6	16'						
N7293	PN	7.5	16.3'			"Helix Neb."			
N7727	Gal	11.5	4' x 3'						



**Solar and Lunar (EDT).**

Date	Sunset	Moonrise	Moonset
1	7 : 57	x : xx	9 : 43p
5	7 : 51	x : xx	12 : 07a
9	7 : 44	x : xx	4 : 16a
13	7 : 37	7 : 50p	x : xx
17	7 : 30	9 : 55p	x : xx
21	7 : 23	12 : 25a	x : xx
25	7 : 16	4 : 59a	x : xx
29	7 : 10	x : xx	8 : 19p

**PLANET WATCH**

Jupiter Rises	Neptune Transits	Mars Rises
10:22 PM	12:50 AM	2:36 AM
10:06 PM	12:34 AM	2:32 AM
9:50 PM	12:18 AM	2:29 AM
9:34 PM	12:02 AM	2:26 AM
9:17 PM	11:42 PM	2:22 AM
9:01 PM	11:26 PM	2:19 AM
8:45 PM	11:10 PM	2:15 AM
8:28 PM	10:54 PM	2:12 AM

**September 2011**

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

**Asteroid for September 2011 (4) Vesta**

Date	SETS	RA		Alt.	Azm	Magnitude
		hr.	min			
		Dec. deg.				
		topocentric				
1	3 : 55 AM	20	46.6	23°	187°	6.2
7	3 : 28 AM	20	43.9	22	194	6.4
13	3 : 02 AM	20	42.4	20	199	6.5
19	2 : 38 AM	20	42.0	19	205	6.7
25	2 : 16 AM	20	42.8	17	210	6.8
1	1 : 55 AM	20	44.7	15	215	6.9

Variable Star of the Month: **R Aqr** 6.5 - 10.3 mag 387 day period

Date UT hr **Celestial Highlights**

3	06	Mercury greatest 18° W.
4	17	<b>FIRST QUARTER MOON</b>
12	9	<b>FULL MOON</b>
13	00	Mira max. 3.4 mag.
16	17	Ceres at opposition
16	00	W And max. 7.4 mag.
17	00	S CrB max. 7.3 mag.
20	13	<b>LAST QUARTER MOON</b>
25	00	Uranus at opposition
27	11	<b>NEW MOON</b>

**LUNAR OCCULTATIONS FOR: SEPTEMBER 2011**

Civil (24hr)			UT			Moon			Moon			Star		event		dbl./
date	hr	min	sec	date	hr	min	sec	Ph	% illum.	alt	azimuth	name	Mag.	PA	PA	sep.
15	3	56	50	15	07	56	50	R	92-	60°	203°	ZC 197	7.0	245°		0.10"
18	1	09	51	18	05	09	51	R	72-	34	091	ZC 534	6.1	256°		0.05"
20	1	12	39	20	05	12	39	R	53-	17	75	ZC 325	6.3	325°		NA
22	3	32	01	22	07	32	01	R	32-	21	82	ZC 312	7.5	312°		NA
23	5	08	01	23	09	08	01	R	21-	26	92	ZC 291	8.1	342°		0.20"
23	6	18	32	23	10	18	32	R	21-	39	105	SAO 97804	8.5	294°		NA
24	5	27	42	24	09	27	42	R	13-	17	91	SAO 98487	8.4	295°		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°

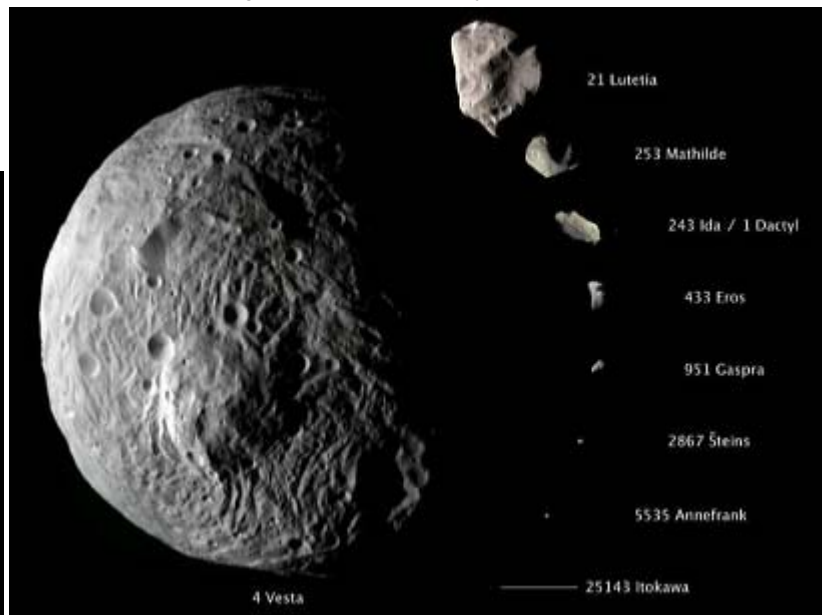
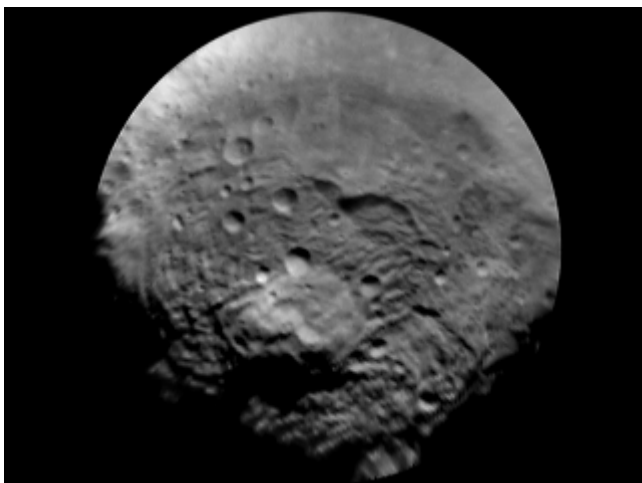
Occultations computed using Occult v3.6 (I.O.T.A.)

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

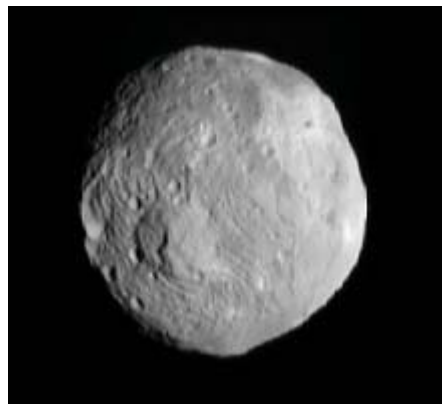
## GALLERY.....

### DAWN AT VESTA . . .

The image below was taken through the clear filter on July 9, 2011, as part of a rotation characterization sequence, and it has a scale of about 2.2 miles per pixel.



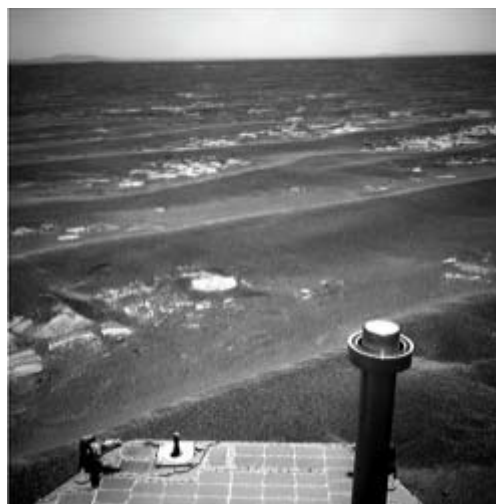
Dawn took the image below while it was orbiting around Vesta, traveling from the day side to the night side. The large structure near the south pole that showed up so prominently in previous images is visible in the center of the illuminated surface. Compared to other images, more of the surface beneath the spacecraft is in the shadow of night. Vesta turns on its axis once every five hours and 20 minutes.



(left) NASA's Dawn spacecraft obtained this image of giant asteroid Vesta with its framing camera on July 9, 2011. It was taken from a distance of about 26,000 miles (41,000 kilometers) away.

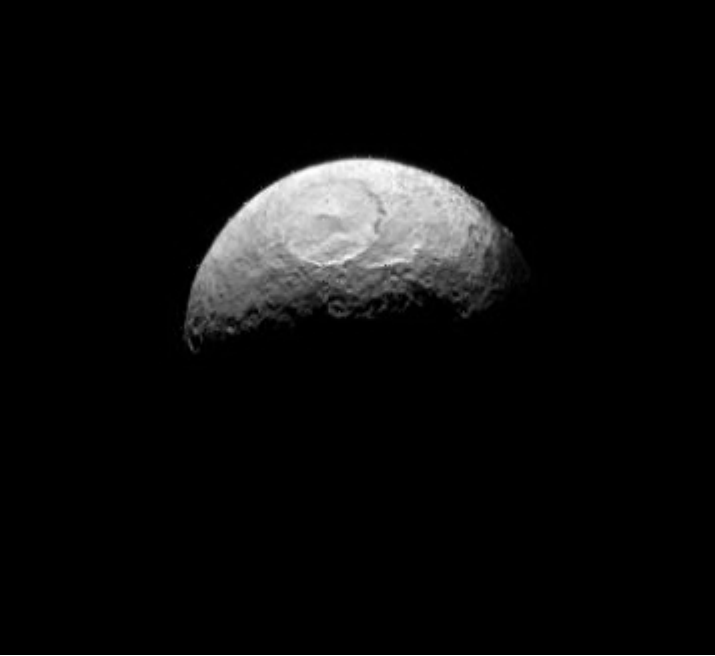
### MARTIAN TREK . . .

(right) A drive of 407 feet (124 meters) completed on July 17 took Opportunity past the 20-mile mark (32.2 kilometers). It brought the rover to within a few drives of reaching the rim of Endeavour crater, the rover's team's long-term destination since mid-2008. Endeavour is about 14 miles (22 kilometers) in diameter, and its western rim exposes outcrops that record information older than any Opportunity has examined so far. The rover is now about eight-tenths of a mile (about 1.3 kilometers) from the site chosen for arriving at the rim.

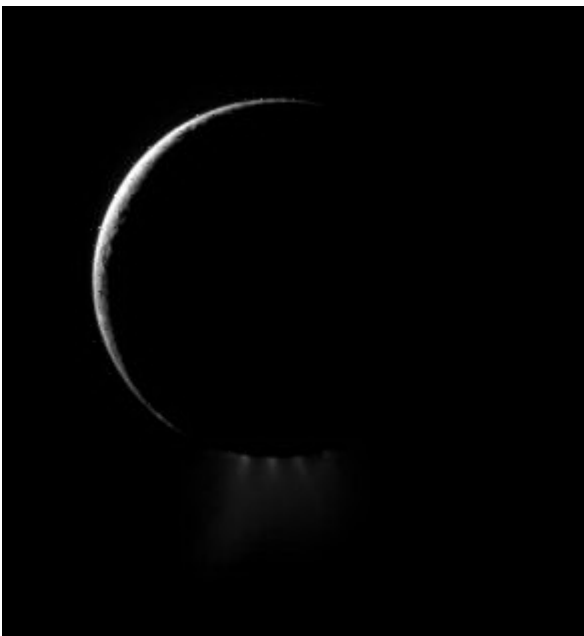


## SATURN SIGHTS . . .

The Cassini spacecraft takes one of its last good looks at Iapetus, a Saturnian moon known for its bright-and-dark sided halves. This view looks toward the south pole of Iapetus 914 miles across, and the lit terrain seen here is in the southern latitudes of the trailing hemisphere. There is only one other planned viewing opportunity of Iapetus left in Cassini's Solstice Mission, in March 2015.



April 18, 2011, a crescent Enceladus (below) was imaged from the night side. It shows the spectacular water ice plumes emanating from the south polar region of this moon of Saturn. This image was captured at a Sun-Enceladus-spacecraft, phase angle of 157 degrees so that sunlight would reveal the backlit plumes.

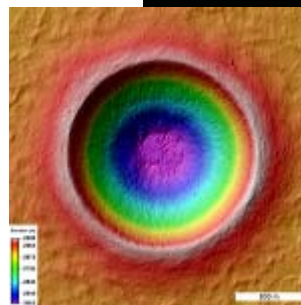


## MERCURY MARVELS . . .

The Messenger spacecraft sends this image of the terminator. It's the division between night and day, and is not as obvious in this image as in some others. It can be seen on the bottom left portion of the planet in this image. This bottom left edge of Mercury appears to fade away, in contrast to the sunlit limb of the bottom right edge. The terrain near the terminator is heavily shadowed, and some of the neighboring surface is in the darkness of Mercury's night.



Below is a nearly face-on view of Mercury's terminator seen at the bottom of the image (also shown in color). Image taken on June 7, 2011. Note the ray systems- just like the Moon's.



## MOON MOVIE . . .

This color coded shaded relief map of Linné crater (2.2 km diameter) was created from an LROC NAC stereo topographic model. The map has an elevation scale bar. The colors represent elevations; cool colors are the lowest and hot colors are highest. Watch the 49 second movie constructed from the map data. Click on the link below.

[http://www.youtube.com/watch?v=s3w4TgQHbJM&feature=player\\_embedded](http://www.youtube.com/watch?v=s3w4TgQHbJM&feature=player_embedded) (eh...you need to be online) All images NASA/JPL.