THE METEORITE

M-27
NGC 6853
The Dumbbell Nebula
In Vulpecula

Newsletter of the Mahoning Valley Astronomical Society, Inc.

IN THIS ISSUE:

AUGUST 2014

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THE METEORITE

Newsletter of the Mahoning Valley Astronomical Society, Inc.

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MVAS CALENDAR

AUG 16	OTAA work day, prep the MVCO. Noon start.
AUG 23	MVAS-OTAA meeting at the MVCO, Braceville. Registration opens at 5:00 PM.
AUG 30	Business meeting at the MVCO. 8:00 PM.
SEP 6	Public Night at Scenic Vista. Sunset 7:37 PM
SEP 19	WOW Stargaze at the Ward Beecher Planetarium.

NATIONAL & REGIONAL EVENTS

Aug 19-24 **Oregon Star Party.** Held at Indian Trail Spring, Ochoco National Forest, Prineville, OR. It's a gathering of 600+ amateur astronomers and their families. Indian Trail Spring is located in central Oregon at an elevation of 5000 feet. It has the darkest sky of any major star party in the continental United States. Activities for adults and Kids, speakers, vendors, swap meet, night sky tours, Telescope Walkabout. See website: http://oregonstarparty.org/oregonstarparty/default.aspx

Aug 22-24 **Northwoods Starfest.** Held at the Beaver Creek Reserve, Hobbs Observatory. The Chippewa Valley Astronomical Society in Fall Creek WI will hold their 26th annual Northwoods Starfest on August 22 -24th. Fees cover camping or cabin for two nights, three meals, plus midnight snacks. There will be paper sessions, swap meet, dealers, door prizes, star parties. http://www.cvastro.org/

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

MVAS Homepage- http://mvobservatory.com

NEWS NOTES

That's just ducky. New images reveal that the comet 67P/Churyumov-Gerasimenko is composed of two parts: one flat and long, the other bulbous- according to a blog on the ESA website. The European Space Agency (ESA) plans to land a probe on " 67P". The probe is traveling aboard the *Rosetta* spacecraft. They are due to arrive at 67P this August and enter orbit around it. The comet now seems to have an "extraordinarily irregular", duck-like shape. This is based on a recent photo of the comet that was taken from Rosetta. Mission manger Fred Jansen said much more analysis and modeling will have to be done to determine how best to fly around the weirdly-shaped comet, and then how to place the lander on it.

Rosetta took a highly pixilated image of the comet from a distance of 7,500 miles on July 14, which was then processed into a smoother image. Dual objects like this, known as "contact binaries", are fairly common. It is not clear how they are formed. One theory is two comets melded together in a low-velocity collision during the Solar System's formation. Another that a single comet was deformed into the strange shape by the gravitational pull of a large object (a planet or the Sun). A third theory is that "67P" may have once been round but became asymmetric due to ice evaporation as it entered the Solar System from deep space, or on subsequent orbits around the Sun. In November, Rosetta will send down the 220-pound refrigerator-sized lander, *Philae,* which will hook itself to the comet's surface and carry out scientific experiments.

Small Wonder. The universe was ionized immediately after the fiery Big Bang. The ionized hydrogen emitted light. This ordinary matter of protons and electrons eventually cooled enough to combine and form neutral hydrogen. But neutral hydrogen doesn't give off any optical or UV light. Without any light, astrophysicists aren't able to see traces of how the cosmos evolved during these Dark Ages, using conventional telescopes. But the light returned when reionization began, allowing astronomers to pinpoint the youngest galaxies and study their features. The epoch of reionization began about 200 million years after the Big Bang and astrophysicists agree that it took about 800 million more for the entire universe to become reionized. It marked the last major phase transition of gas in the universe. The intergalactic hydrogen remains ionized today.

Dwarf galaxies over 13 billion years ago played a larger role than previously thought in the reionization process. Reionization experts often ignored these dwarf galaxies because they didn't think they were actively forming stars They did- but only in one spurt. The assumption was that UV light from larger galaxies was strong enough to suppress star formation in their tiny neighbors. But UV light from stars in these dwarf galaxies did indeed help ionize hydrogen. Supercomputer models showed that it's very hard for UV light to escape from big galaxies. It's blocked by the dense gas filling them. In small galaxies, there's less gas between stars, making it easier for UV light to escape. Supernovas can also open up channels more easily in tiny galaxies, where UV light can escape. Simulations show that the fraction of ionizing photons escaping into intergalactic space was 50% in the small (10 million solar mass) galaxies. It was only 5% in larger (300 million solar masses) galaxies.

MINUTES OF THE JUNE MEETING

JULY 19, 2014 at the MVCO

The meeting was held in the 16" building due to rainy conditions. President Lou DiNardo called the meeting to order at 8:01 PM. Roll Call showed 16 members on hand. Two guests were: Virginia Bartos and Dominic Mattuissi. All officers were present. One Trustee was on vacation. A Call to read the Minutes was made by the President. Greg Higgins moved to suspend the reading and accept the Minutes as published. Bob Danko seconded the motion. The motion was accepted by a unanimous voice vote.

TREASURER'S REPORT: The Report was read by Steve Bartos. There was no further discussion. Greg Higgins moved to accept the Report. Bob Danko seconded. A unanimous voice vote adopted the motion. It was pointed out earlier by R. J. Pandian that the previous report for May 2014 had the liability insurance at $300 when it should have been $301. A typo; It did not reflect in the posted balance.

General Fund	**6/1 thru 6/30 2014**	
OPENING BALANCE:	$	9,737.66
CLOSING BALANCE:	$	9,599.87
AVAILABLE FUNDS (NON-RESERVED):	$	5,370.75
ACCOUNT NET LOSS FOR THIS PERIOD:	$	-137.79
INCOME:		
DUES	$	60.00
INTEREST		0.15
TOTAL INCOME	$	60.15
EXPENSES:		
CK# 2808 Six -6ft tables	$	197.94
TOTAL EXPENSES	$	275.00
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: G. Higgins, T. Terleski. Thank you!

CORRESPONDENCE: Bob Danko received the billing statement for the P.O. Box. He pointed out that it had been suggested (by Phil) at the previous meeting that we stop using the box since we haven't received any mail there in the last two years. After a short discussion, it was evident that continuation of the rental fee was wasted capital. Putting a regular mail box back at the gate seemed a more cost effective option. Larry Plante moved to cancel the Post Office Box. Paul Baker seconded it. A unanimous voice vote adopted the proposal. Greg Higgins then moved to install a new mail box as we had before. Bob Danko seconded. All voted in favor of the action.

COMMITTEE REPORTS: *IMAGING COMMITTEE:* Jodi McCullough has posted some of her recent images on the MVAS website. Lou noted that it has not been a good season for imaging. *VISUAL COMMITTEE:* No Reports asked for.

OFFICER REPORTS: *OBSERVATORY DIRECTOR:* Larry Plante reported that Phil has painted the 12" building exterior (and scope pier), the outhouse exterior, and the 8" building door frame. Larry has replaced the T-4 panel on the 12" building, next to the deck, that was water damaged. There is a corner board on the outhouse that needs replace next. Same thing- water damage. The outhouse will be pumped as usual, before the OTAA meeting. All else is in good shape. Bob recomends that we stay with A1 Septic as this seem the only viable vendor willing to do the job.
LIBRARIAN: Rosemary Chomos brought the new books to place in the Terry Biltz Library.

OLD BUSINESS: Jodi has spoken with Sam DiRooco about the status of the website. She is willing to manage it, making corrections and updates. She needs access codes to re-do the site. Harry Harker (very busy guy) needs to be in on the process. So far she has only been able to update the Google calendar. Newer Meteorites are still not available. This is a work in progress so have patience please. The OTAA work session on Aug. 16th will be mostly cleaning the place- outhouse interior, dusting shelves and scopes. Before the OTAA, Rosemary will update the paper and utensil inventory to see what we'll need to restock. Most of the event duties are filled. We could use a few more to help set-up that afternoon and/or night watch, morning clean-up. It seems likely that Mike Sprague will do some bbq meats for the OTAA meeting. MVAS will reimburse him of course.

[*the next report should hereupon be given under Committee Reports- Sec.*] Rosemary reported on the 75th Anniversary planning activity. She has been in contact with a food vendor/caterer discussion pricing. Moacha House will remain the back-up source for now. Rita's Italian Ice will be on site. We will need to decide on how many flavors and which ones. [lemon square flavor?] Mike Sprague has again offered to bbq/smoke briskets, etc for the event. He also has a tent that fits 50 people. This is a most generous offer. We have no further details on the proposed speaker, Jerry Ehman in Columbus. There will be a need for internet access as well as Skype so that out of state members can join in. Lastly, members were reminded of the CAA-OTAA the weekend after this meeting..

NEW BUSINESS: There will be an interstate science and engineering stargaze event called Wow! held on September 19th and 20th. Sharon Shanks has enlisted the MVAS to conduct a stargaze outside of the planetarium on Friday Sep. 19th. The next day is the Black River OTAA. There was discussion of what could actually be seen with the limited sky access at YSU. Several objects were stated as viable targets.

While at NEAF this year Jodi and Roy spoke with someone that is part of a program that has local libraries loan out telescopes, much like they do book. The local astronomy club maintains the equipment and there is likely no cost to the club. Jodi asked if the MVAS would like to be involved in something like this. There was a favorable response. Rosemary Chomos made the motion to have Jodi investigate if any area libraries would be interested. Jan Baker seconded the motion. By voice vote the motion carried. Greg Higgins suggested the Edmund Astroscan would be an ideal scope for the program.

Steve Bartos had the order form for Astronomy Magazine 2015 Calendars. They are $10 each. It was decided to get a few to sell at the OTAA. At least one member wanted one too. A standard order would be placed. We could order more later.

GOOD OF THE SOCIETY: Nothing reported, topic skipped due to the arrival of the bbq food. **[addendum:** It should be noted that several meeting talks are planned: R. Mattuissi- *17th Century Astronomers;* P Plante- *Making Telescope Mirrors;* L. DiNardo- *Trojan Asteroids*. Rich will speak at the August meeting. The other two meeting talks are not set yet. **]**

VISUAL REPORTS: Nothing reported, the bbq food arrived.

ADJOURNMENT: Adjournment came at 9:28 PM. We thank our hosts Paul & Jan Baker for the desserts and Lou & Karin DiNardo for the pop. A special thanks goes out to Mike Sprague for doing a superb job on the brisket and chickens. A sumptuous feast by all accounts. We also thank all that brought sides and hot dogs to grill. It was a really nice bbq event. The next meeting will be at the MVCO on August 30, 2014. Meeting begins at 8:00 PM. Scheduled hosts are Jodi McCullough-main snack, Roy McCullough dessert, Dave Ruck drinks. PASSWORD: Name a moon of Uranus. There are 27 of them. (Names are below to help you.) *-minutes by Phil Plante*

***AFTER THE MEETING**:* Bill Prewitt gave a talk on Testing Optics or Complete OTA's. He reviewed the geometry of Newtonian mirrors. Next he described various tests used to evaluate the optics. These included star tests, the Foucault, Ronchi, Ross Null Test, auto collimation and the Zygo laser interferometer test He concluded with a demonstration using various optical flats to display interference fringes, revealing deviations from flat. He had homemade Ronchi testers to hand out as well as written material on testing. Well done Bill!

MVAS ACTIVITIES

Festival of Arts on Saturday July 12 went great. It was a bit on the warm side. A stop or two at Rita's Italian Ice was a refreshing save. Pat Durrell bought a round of ice for the Sun crew: consisting of Jodi, Roy, Rosemary, and Phil. Jodi and Roy provided the three solar scopes that were used. One H-alpha and 2 white light. Thanks guys! Meanwhile Sharon faithfully ran the planetarium program all day.

There was always seemed to be a good crowd showing up just as the Sun popped behind clouds. The sun baked astronomers seemed to like this, but it was not so good for showing the nice big sunspot about to rotate out of view. Sunday's forecast called for rain. That session was called-off. Better luck next year. We'll refine the planning too!

Annual BBQ: Usually this happens at the meeting closest to Memorial Day. But we had a stargaze scheduled for big birthday party that weekend. That went fine. As a prelude to the menu for the upcoming OTAA meeting, Mike Sprague fired up his smoker. A pork brisket and two chickens were done to perfection. It took all of 7-8 hours. It was worth the wait. In fact, the food arrived during the meeting. A meeting never ended so quickly. The Smoker (below) is ready to take on the OTAA!

MVAS- OTAA MEETING AUGUST 23, 2014

AT THE MVCO IN BRACVEILLE, OH

1076 SR 534 NEWTON FALLS, OH 44444

The MVAS-OTAA Schedule:

5:00 PM **Registration** opens. $5 per person. Automatic entry into the Door Prize raffle with registration fee. A Main Raffle will be held at $1.00 per ticket.

6:15 PM **Pot luck picnic dinner**. Bring a covered dish or dessert. Coffee and soft drinks will be provided.

7:15 PM **Program:** Announcements, raffles. Sharon Shanks from YSU will present- *Is It Live or Memorex: How Astronomers and Planetariums Work Together.*

8:30 PM **Observing:** Astronomical twilight ends at 9:52 PM. Sunrise at 6:42 AM. A thin moon rises at 5:52 AM. MVAS scopes will be available for use.

12:00 AM **Midnight buffet.** Get them left-over's!

MAIN RAFFLE PRIZES

1- Baader 17mm Hyperion eyepiece with 28mm and 14mm Finetuning rings, to change the focal length.

1- Celestron 2" eyepiece kit: 3 eyepieces, (40, 32, 26mm), mirror diagonal, 2x Barlow, 2" filter set, barrel adaptor.

1- Zhumell 10 x 42mm Binocular (roof prism)

Registration- Door Prize list (partial list)

1 2015 Sky & Telescope Observing Wall Calendar
3 Deep Space Mysteries 2015 Calendar

1 Astronomy's 60 Greatest Mysteries	1 Star Trails
1 Seeing In The Dark	1 First Contact
1 The Intelligible Universe	1 The Heavens
1 Transits of Venus: 1631 to Present	1 Video Astronomy
1 The Planets	1 Orion Planisphere
1 Deep-Sky - Hidden Treasures	1 Messier Card
1 Dictionary Modern Star Names	1 Caldwell Card
2 Double Stars For Small Telescopes	2 Binocular Highlights
1 Pocket Sky Atlas	1 Night Sky Star Wheel
1 Skylight Mini Red and White	1 Mauna Kea Key Ring
1 Zhumell Laser Collimator	-- Mauna Kea Magnets
1- Moon Globe	1 Zhumell 30mm 2" eyepiece

-- Assorted caps, T-shirts, flashlights, etc.

Welcome to the MVAS-OTAA meeting. The $5.00 registration fee enters one into the Door Prize raffle. The Main Raffle tickets are sold separately at $1.00 each. No limit. Separate "ticket canisters" will be used, one for each prize. Observing begins after the talk. Your telescopes and binoculars are welcome.

For everyone's safety, vehicles should not 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. Normally parking is in the lower field with headlights facing away from the buildings. We all know about laser pointers. Don't point one at anyone and limit usage. Do stick around for the midnight buffet! Feel free to observe or image all night. Many have done this in years past. We hope this year is no exception.

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.

MVAS NOTES.

On the move. With the news that J. R. Pandian will be moving to Kuwait in September to begin a teaching job, a card was signed by all in attendance at the July meeting. It was presented to him after adjournment. A bit surprised, he seemed pleased and happy to receive it. He thanked everyone. He said that he will be back on occasion to visit us. Pandian will still receive the PDF Meteorite so he will know what we are up to. On leaving, he will generously donate some astronomy item to the MVAS for use as prizes or to complement the MVCO accessories. These include several books, an atlas, laser collimator, binocular and a gravity chair. We thank you Pandian. We will miss you!

Our Benefactor. We all owe Tony Mehle a debt of gratitude. Once again he has donated 50+ door prize items as well as a main prize- 17mm Hyperion eyepiece. He also split the costs of the 2" eyepiece kit and Zhumell binocular (with Phil). We thank him as an organization. But please thank him by tossing an extra item on the raffle table yourself. Much obliged.

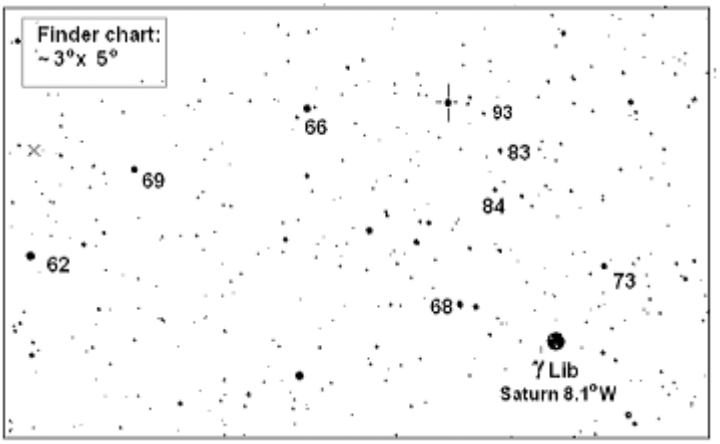
Elbow Grease. This August 16th is a work day at the MVCO. It's to prepare the place for the OTAA. We'll start at noon. Most of the work is inside: cleaning, dusting, arranging stuff and getting clutter out of the way. Cleaning the interior of outhouse and toilets There could be minor paint jobs (8" roof door, ladder/scaffolds). Chances are that Barbie-Q will be fired-up for late afternoon dinning. Check emails for last minute information on cleaning supplies needed. Please consider helping out.

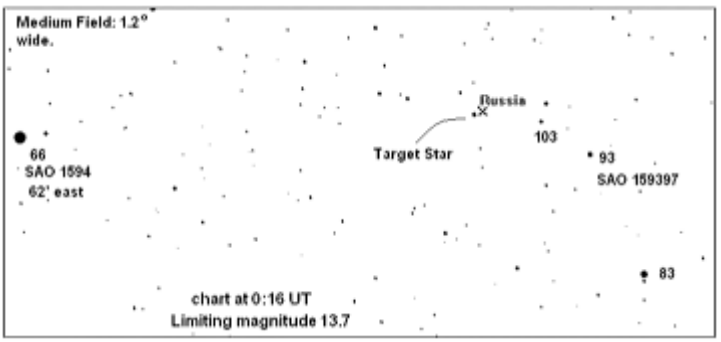
Password Helper. How many of them have you seen? The four brightest have been seen in the 25" In theory they should be visible in a 14" under clear, dark skies. Uranus is in prime time viewing this fall. Magnitudes are given after the seven brightest. All the rest are 20th magnitude or fainter. Not in the realm of visual detection, maybe a few with a 10m scope (Keck).

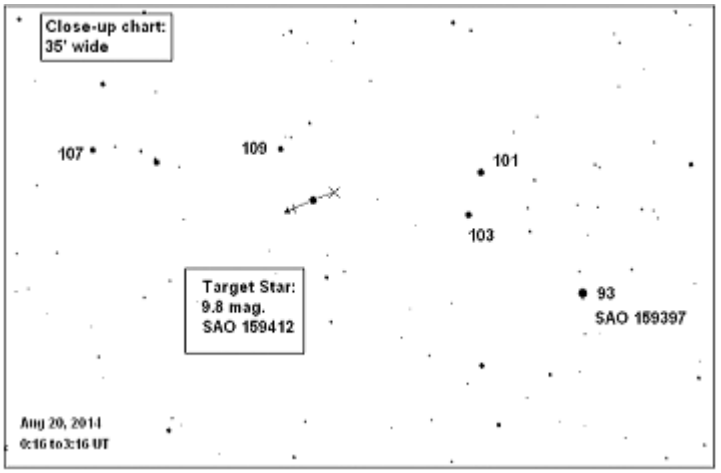
Titania *13.0*	Oberon *13.2*	Ariel *13.7*	Umbriel *14.5*	
Miranda *15.8*	Puck *19.2*	Portia *19.9*	Cordelia	Ophelia
Bianca	Cressida	Desdemona	Juliet	Rosalind
Cupid	Belinda	Mab	Caliban	Stephano
Sycorax	Margaret	Prospero	Setebos	Trinculo
S/1986-U10	S/2001-U1	S/2001-U2		

Asteroid Occultation. On Aug. 20 at 1:47 UT the 9.8 magnitude star SAO 159412 will be occulted by asteroid (232) Russia. This event happens on Tuesday evening Aug. 19th. at 9:47 PM EDT. Russia will be at 14.8 magnitude and essentially invisible in average scopes. But you only need to see the star and watch it blink-out for up to 2.5 seconds. The star will drop about 5 magnitudes. It will disappear. This is a tough one to do but it is feasible in 6 to 8" scopes. What is unique is that the path crosses our area. The center line passes over Akron and just south of the Youngstown/Warren area. Most OTAA observers can try from home. The top map shows the track. Observing from the central line will give the maximum duration. The closer you are to either of the two outside line, the shorter the occultation. The next three charts are for finding the star. Top is a finder chart; use g Librae as a starting spot. Middle chart zooms in to about a 1 deg field while the bottom is about half of a degree. Note that the 9.3 mag. star SAO 159397 is on all charts. This should give you a sense of scale when star hopping. Practice finding the star on a few night before the occultation. The short line on the bottom chart shows the movement of Russia over a 3 hr. span. Starting at 0:16 UT.

Above: Occultation path over NE Ohio. Try for the center line.







Observer's Notes. A Fall of NGC's

August has arrived. By many accounts, it heralds the beginning of a most pleasant observing season; that being autumn. Most of the summer's best constellations are still up, but sinking in the west. Meanwhile, autumn's finest are rising. Nightfall arrives earlier each evening. Pesky bugs have gone away. Nights are cooler with low humidity. Clear, high pressure cells move in to provide the best transparency since early spring. All this bodes well for deep sky exploration. We've just spent the summer looking at the best M-objects. After all, the Messier Catalogue is *the* prime list for most casual observers. With fall skies, there are fewer Messier objects for a target list. Luckily there are plenty of objects that are deserving of a Messier moniker. Somehow Messier and his colleagues missed them. You have probably heard of these and may have even observe red them. With that said, we'll try for an "exotic" target list of only NGC objects that are available for fall observing.

The NGC Catalog was published in1888 by J.L.E Dreyer. It expanded the work of John Herschel's catalog of 1864. Many of the prominent objects in this list are in other catalogs as well. We'll focus on those NGC's that have become favorites of deep sky aficionados. So much so they they have acquired well known proper names. Most of these objects span an arc that crosses a bit north or south of the zenith, as seen from mid-Ohio latitudes. The best viewing and darkest skies are typically overhead. An hour either side of their transit time will provide the best view. That's the time to search out the really faint ones. The list is do-able from August to November.

Be warned that the first ones (of summer) will be lost by November. Likewise the later NGC's in the list will be very late night objects in August. In four months time, you should be able to catch all of them. So get out your star atlases like *Pocket Sky Atlas* or *Sky Atlas 2000* to star hop. Of course a Go To mount makes thing much easier. Light pollution usually has its lowest effect overhead which means suburban observers have a shot. Try on those super clear, moon free nights. Below are a few personal notes on various objects. It should give an idea of what you can expect. Challenge yourself. Have some fun while trying.

Veil Nebula: I have seen the Filamentary in a 3" refractor at Findlay State Park (CAA-OTAA, mid 90's). In a 22" at a Mt. Pinos, CA star party- very colorful. In the 25" on occasion. Transparency is a critical factor. I swept up the Network Nebula by accident in a 6"F/5 both from Boardman and at the MVCO during an OTAA ('92). Use an OIII filter and wide field (~20x.)
North American: I have detected it naked eye from dark New Mexican skies. Saw it several times in the 6" and 4.7" refractor. It was visible in 11x70 binoculars at Letha House (CAA). Best from the MVCO and Scenic Vista. Never from home. Try 20x.
Helix: I have detected the Helix Nebula from light polluted Boardman, OH with a 6" f/4 Newtonian and a UHC filter. I've seen it in a 50mm finder scope and 4.7" refractor from Scenic Vista. Try a UHC or OIII filter. Another low power object.
The Silver Coin: It was fantastic in a 4.7" refractor from Scenic Vista. The only time I looked for it. It is low in the sky, usually blocked from view at home. Should be good in the 25"
The Silver Sliver: Dimly glimpsed in the 6" F/4 and an 8" SCT from Boardman. Better in the 25". Need 150x & transparent sky.
Mirach's Ghost: Seen it in the 6" F/5 and the 16" Cass at the MVCO. Fair game for 6" scopes with 150x. It's next to β And.
California: I suspected faint tendrils through the 16" one time, but this nebula needs a wide view and an H-β filter. Haze free and dark skies are needed. There are reports of visual observers detecting it. See *S&T Dec. 1982* for methods.
Pac-man: This was seen for the first time at Scenic Vista this past June with the 4.7". It hasn't been seen in Boardman (yet!).
The Fly: This was swept-up by accident with the 25". Very nice but small nebula. I found it a week later in the 6" from Boardman. Still nice but better in the 25" Needs at least 50x.
The Magic Wand Cluster: I have found no proper name for NGC6633, but it deserves one in my opinion. Looking at the cluster I can see a spiral of stars. Maybe two! The Greek legend of Ophiuchus includes his association with medicine and the use of Hermes Magic Wand. At that time, it was a wand used to remove a parasitic worm; A "Serpent" entwined around a staff. This is the basis of the medical Caduceas symbol used today. Since N6633 resides in Ophiuchus, I call it the Magic Wand. It is one of my favorite objects It's great in binoculars or an RFT.

These NGC's listed below are popular enough to have been given names. Check them out to see why. It may encourage you to tackle other NGC objects (and IC's) as listed the Caldwell and Herschel catalogues. Let us hear your results!

NGC	Type	Name	Mag.	Size	Equip.
6633	OC	*Magic Wand Cluster*	4.6	27'	RF Mx
6210	PN	Turtle Nebula	8.8	14"	OIII Hx
6543	PN	Cat's Eye Nebula	8.1	18"	OIII Hx
6826	PN	Blinking Planetary	8.8	25"	OIII Hx
6990	SNR	Network Nebula*	--	70' x 6'	UHC RF
6992-5	SNR	Filament Nebula*	--	72' x 8'	UHC RF
7000	EN	North American Neb.	--	2° x 1.6°	UHCRF
7331	G	Deer Lick Galaxy	9.5	10' x 4'	6 in. Mx
7662	PN	Blue Snowball	8.3	12"	OIII Hx
7009	PN	Saturn Nebula	8.3	25"	OIII Hx
7293	PN	Helix Nebula	7.3	12.8'	UHC RF
253	G	Silver Coin Galaxy	7.6	30' x 7'	4 in. Mx
891	G	Silver Sliver Galaxy	9.9	13' x 3'	6 in. Mx
752	OC	Golf Club and Ball	5.7	41'	Binoc.
404	G	Mirach's Ghost	10.3	6.1' x 6.1'	6 in. Mx
281	EN	Pac-Man Nebula	--	35' x 30'	UHC Lx
457	OC	The Owl Cluster	6.4	13'	4 in. Mx
869/84	OC	Double Cluster	5.0	30'/30'	Binoc.
1499	EN	California Nebula	--	2.4° x 0.7°	RF Hβ
1931	E/R	The Fly	--	4' x 4'	6 in. Mx

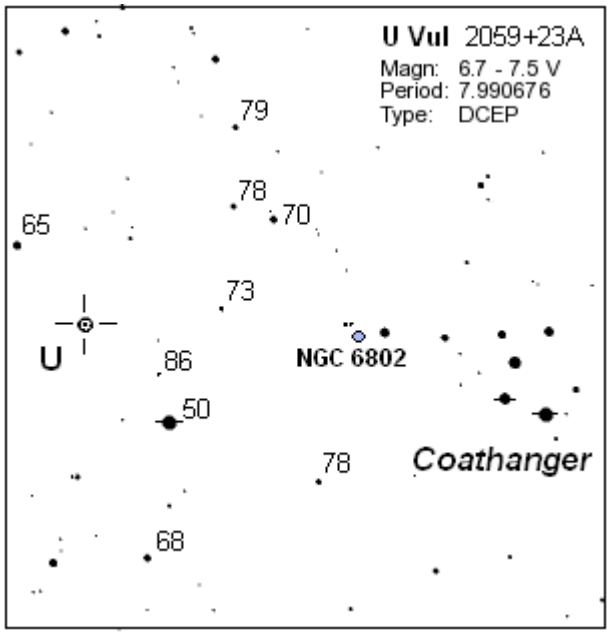
** Veil Nebula Complex. 6990 is western half, 6992 is eastern .*
Equipment: notes on what usually works. RF=Rich Field scope, binoculars may work as well; # in.= suggested min. aperture; H= high, M= medium, L= low, x= magnification. UHC, OIII, Hβ are the standard filter types suggested for specific nebulae.

MVAS Homework:

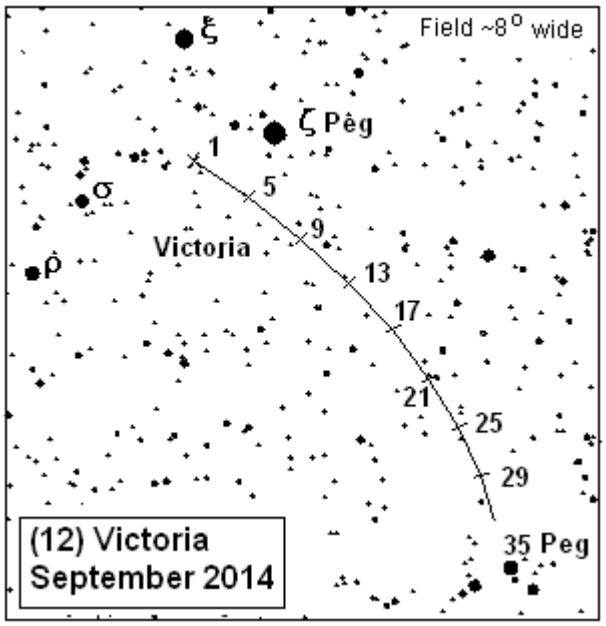
The Dumbbell Nebula (M27, NGC 6853) is one of the finest planetary nebula in the sky. It was the first planetary nebula ever discovered. On July 12, 1764, Charles Messier discovered this new class of objects. He described it as an oval nebula without stars. The name "Dumbbell" goes back to the description made by John Herschel around the year 1864, when he published his *General Catalogue of Nebulae and Clusters*. M-27 is also sometimes called the "Apple Core" nebula. The Dumbbell Nebula sits about 1,360 light years away from earth, and is about one light-year across. It's also notable because of the central star: it's the largest known white dwarf star and it shines at about 13.5 magnitude. Get that Homework turned in!

MVAS OBSERVER CHARTS

Variable star of the month: **U Vulpeculae** (abbrev: U Vul). This is a different type of variable than what we usually feature. It is a delta Cepheid. A type important to our knowledge of cosmic distances. But it can be useful in training the eye in detecting subtle changes. Its 1 magnitude swing can be followed in binoculars over an 8 day period. Easy to find, east of the Coathanger asterism. Numbers marked are comparison star magnitudes. Use these for your estimates.



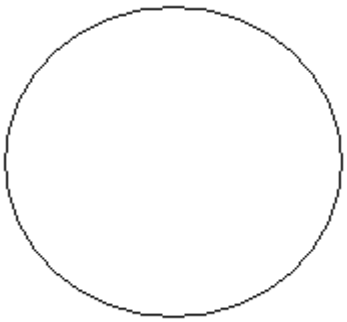
Asteroid of the month: (**12) Victoria.** This asteroid starts of south-east of zeta Pegasus. It shines at 9th magnitude for the first 17 days of September. It begins to fade, reaching magnitude 9.4 by months end. A small scope should suffice in tracking down this rock. The faintest stars shown on the chart are at 10th magnitude.



MVAS OBSERVATIONS - (Homework)

OBSERVER_____

Featured object: M-27 . Sketch the Dumbbell. As always, the circle is the eyepiece field of view. Use different magnifications and blend in the details you see using higher powers, with the overall image you see at low power. Also use views with and without a nebula filter. Usually an OIII filter is best but a UHC or broadband will work. Warning: Smaller scopes < 4", usually provide images too dark to be pleasing with the above filters.



M-27 Observation:

Date:_____ Time(EDT)_____ Scope_____

U Vul magnitude estimates:

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

(12) Victoria Observations:

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

Other Objects in Vulpecula to observe

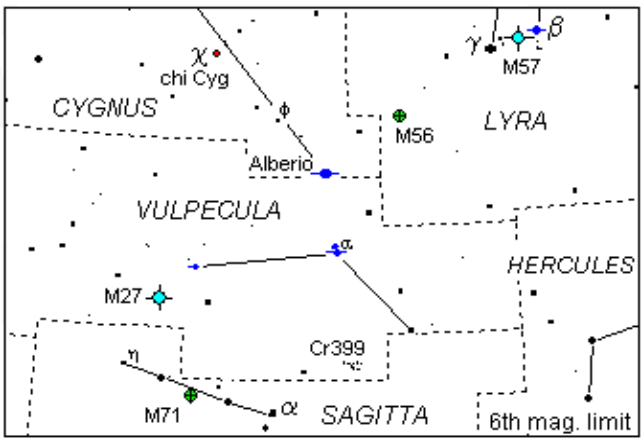
Object	Date	Scope	Object	Date	Scope	Split? SEP.
Cr- 399	_____	_____	6,8 Vul	_____	____	424" Y / N
N- 6802	_____	_____	Σ 2521	_____	____	27.9" Y / N
N- 6830	_____	_____	16 Vul*	_____	____	0.8" Y / N

* NEE DS AN 6" OR LARGER.

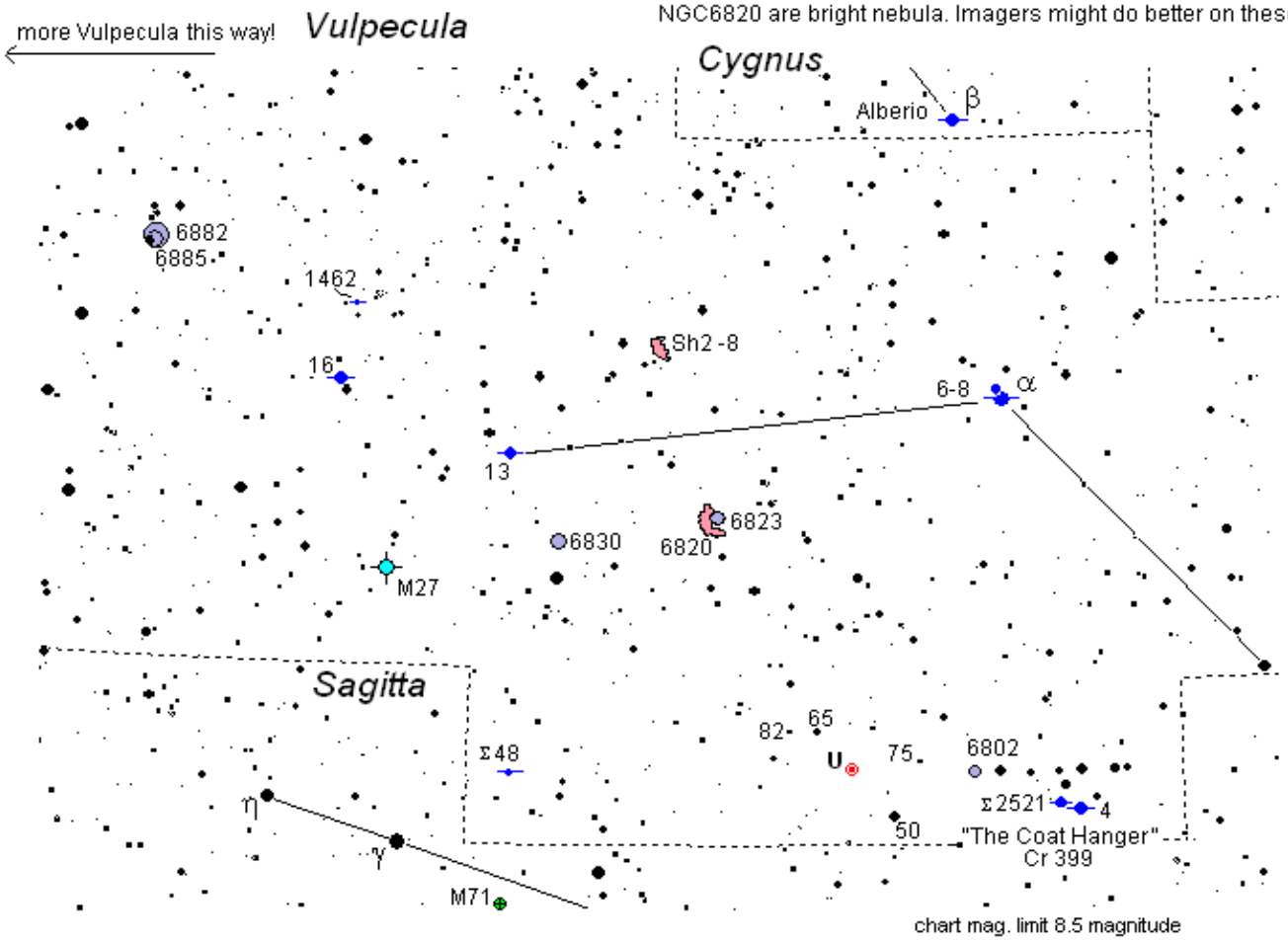
Lunar Occultations (see Sky Almanac):

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

Constellation of the Month — Vulpecula



Like its namesake, Vulpecula the Fox is elusive. No bright stars to guide you! From mid to late summer it lingers near the meridian for a few hours before and after midnight. Look south of the famous double star Alberio. Easiest thing to spot with binoculars is Brocchi's Cluster, often called the Coat Hanger- for obvious reasons. Close inspection with a scope should get you a few doubles in the group. Off the eastern end is open cluster NGC6802. A tough one in the the MVAS 8" but it is visible. Try some of the other doubles and clusters that are plotted. Alpha (6-8) should be nice in binoculars. We can't corner the Fox without checking out a standard stop on the Messier list. That would be M-27, the Dumb-bell Nebula. Mostly it looks like an hour-glass but in bigger scopes it turns more eliptical. What shape do you see? Can you see a central star? You can follow a delta Cephied by watching U Vul with binoculars. Several comparison star magnitudes are labeled near it on this chart. Sh2-8 and NGC6820 are bright nebula. Imagers might do better on these.



DEEP SKY

6882	8.1	18'	
6885	8.1	7'	OC, 30 stars
M27	7.6	6.7'	planetary neb
Sh2 -88	17.5' x 9'		bright nebula
6830	7.9	12'	OC, 20 stars
6820			
6823	7.1	12'	OC, 20 stars
6802	8.8	3.2'	OC 50 stars

DOUBLES

4 Vul	5.2, 10.0, 11.7	18.9"–51.6"	triple star
6-8 Vul	4.6, 5.9	424.5"	deep yellow, pale yellow
13 Vul	4.6, 9.6	0.8"	
16 Vul	5.8, 6.2	0.8"	both deep yellow
Σ48	7.1, 7.3	42.5"	both bluish white
Σ2521	5.8, 10.5	27.9"	topaz yellow, blue
h1462	7.6, 9.9	37.0"	tangerine-orange, white

VARIABLE: U VUL 6.7 -7.5mg. 7.99 days type: DCEP

Instruments used:

_____ on _____

_____ on _____

_____ on _____

U VUL

_____ mag. on ___/___/_____

_____ mag. on ___/___/_____

_____ mag. on ___/___/_____

2014 SEPTEMBER SKY ALMANAC

Solar and Lunar (EDT).

Date	Sunset	Moonrise	Moonset
1	7 : 57	— : —	11 : 52p
5	7 : 50	— : —	2 : 45a
9	7 : 43	— : —	7 : 35a
13	7 : 37	10 : 38p	— : —
17	7 : 30	1 : 03a	— : —
21	7 : 23	4 : 42a	— : —
25	7 : 16	— : —	7 : 58p
29	7 : 09	— : —	10 : 39p

PLANET WATCH

	Saturn	Neptune	Uranus
	Sets	Transits	Transits
	10:52 PM	1:15 AM	3:42 AM
	10:37	12:59	3:26
	10:22	12:43	3:09
	10:07	12:27	2:53
	9:53	12:11	2:37
	9:38	11:51 PM	2:21
	9:23	11:35	2:04
	9:08	11:19	1:48

September 2014

S	M	T	W	T	F	S
	1	2	3	4	5	6
	Labor	☽				
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 2014 (12) Victoria

Date	Transits	RA hr.	RA min	Dec. deg.	at 10:00PM EDT Alt.	Azm	Magnitude
1	1 : 29 AM	22 : 46	+10		35º	108º	9.0
5	1 : 10 AM	22 : 42	+10		38	113	9.0
9	12 : 51 AM	22 : 39	+09		41	118	9.0
13	12 : 33 AM	22 : 37	+09		43	123	9.0
17	12 : 14 AM	22 : 34	+08		45	128	9.1
21	11 : 57 PM	22 : 32	+07		47	134	9.2
25	11 : 39 PM	22 : 30	+07		49	140	9.3
29	11 : 22 PM	22 : 29	+06		50	146	9.4

Variable Star of the Month: **U VUL** 6.7 - 7.5 mag 7.990676 day period

Celestial Highlights

Date	UT hr	
2	11	**FIRST QUARTER**
8	09	Neptune 4.3º S. of Moon
9	01	**FULL MOON**
10	00	S CrB at maximum
16	05	**LAST QUARTER**
17	00	R Tri at maximum
21	17	Mercury 26º E. Elong.
23	03	Algol at minimum
24	06	**NEW MOON**

LUNAR OCCULTATIONS FOR SEPTEMBER 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.
1	20	48	21	2	00	48	21	D	45+	25º	211º	XZ 2463	6.2	131º	NA
2	22	39	13	3	02	39	13	D	57+	17	223	XZ 2463	6.9	122º	.100"
7	21	32	16	8	01	32	16	d	98+	27	130	36 Aqr	7.0	077º	.100"
11	5	41	01	11	09	41	01	R	93-	44	234	zeta Psc A	5.2	323º	23.7"
11	5	41	31	11	09	41	31	R	93-	44	234	zeta Psc B	6.3	323º	23.7"
17	1	42	28	17	05	42	28	r	38-	6	72	21 Gem	6.3	347º	20.2"
17	1	44	21	17	05	44	21	r	38-	6	72	20 Gem	6.9	343º	20.2"
17	6	42	13	17	10	42	13	d	37-	58	130	26 Gem	5.2	070º	.009"

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.)

GALLERY…

Remembering past OTAA meetings.

1964 OTAA: The new 8” is installed at left; no 8” building yet!

1975 OTAA: Allen Heasley (L) and Bernie Cortese stop for a chat. Looks like important business.

1979 OTAA: 40th Anniversary cake.

1979 OTAA: Allen cuts the cake. Bob Andress stands to the left (in photo), Chris Stephan to the right. You know it had to be a tasty celebration. 35 years later we plan to do the same in 2014.

1990 OTAA: Above, Bob Clyde receives an MVAS Award for outstanding service. Warren Young was the presenter. At right, the 25” mirror and cell makes its 1st appearance at the MVO.

1995 OTAA: Grilling hot dogs became a standard practice starting at this meeting. There was a good run of midnight hot dogs for the next four years. Then it became a picnic time item up thru the mid 2000’s. Cheesecakes soon became the hit of the party. Now we are looking forward to smoked brisket and other goodies, done-up right- on a smoker.

1996 OTAA: At right, Bob Clyde poses with the George Deidrich Award he received from the OTAA Council. Dawn Jenkins of the OTAA made the presentation. It is now on display in the 16" building. At left is a test mount for the 25" mirror. Constructed by Greg Klocek and Jim Svasta. It was used at two OTAA meetings. It should be noted that Bob Clyde spent countless hours working on the mirror in his living room. It was fitting he received an award at the debut of the 25" scope. It would be 9 years before a final version would appear.

2005 OTAA: After a 34 year journey, the 25" mirror was completed as a Dobsonian style telescope. It was originally meant to be a Cassegrain. Bernie Cortese had a dream for this big scope, but it was fulfilled in this form. It was dedicated at this OTAA and was named Titan. Chief builders (called The Fab Four) were: Mike Boyer & Sam DiRocco (wood work), Greg Higgins (mirror cell and hardware supplies), Phil Plante (overall design and truss assembly). Helping were Harry Harker and Fred Boyer. Members gathered during the OTAA for the photo.

1999 OTAA: Rick Pirko gives an impromptu talk on MVAS history. It was the 60th Anniversary.

2007 OTAA: Rick Pirko took this classic image of the MVCO from his plane on the day of the OTAA. It has been a banner photo on the MVAS web-site ever since.

2002 OTAA: Left- the first time tents were used for the meeting. Nice for sunny days and rainy days. At right, Rob Landis from the JPL was our featured speaker. He spoke about Cassini and the Mars Rovers. Then the ISS, just as it passed overhead.

2007 OTAA Rosemary Chomos receives an award for her dedication to the MVAS.

2009 OTAA: A 60 year long member, Bette Heasley enjoys her last OTAA meet before moving to Colorado with husband Allen.

Summer Festival of Arts 2014

It was a warm and partly cloudy day. Perhaps 120 people stopped for a look at the sun. A few missed-out due to passing clouds. Several folks returned later to get a view, but a few still missed every time. It was about half and half with adults and children stepping up to the eyepiece. Several people expressed an interested in the MVAS. The Sunday forecast was calling for cloudy skies and rain so it was decided not set up for that day. Better weather luck and planning for next year

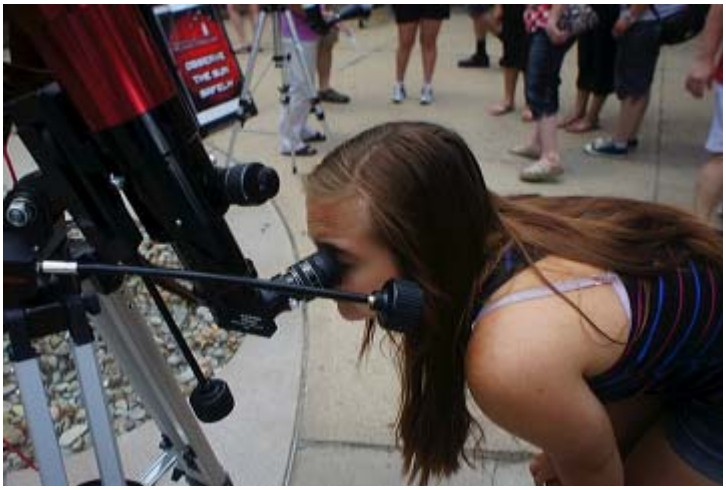
Above: The Starfleet organization had a table set-up across from the planetarium. They had an assortment of Star Trek paraphernalia, information sheets about their group, and a kid's game called *Toss the Tribble*.

Jodi handles an early group heading in for a planetarium show. She had a white light image, projected nicely on a cone-screen. Fortunately there were several large sunspots near the limb. A nice "wow factor for the first-time solar observers. Roy had his H-alpha scope set up for faint but visible views of prominences. Phil used a white light scope for eyepiece viewing. All three scope were provided by Jodi and Roy. Many thanks!

Later in the day, Starfleet came out to get a picture by the 3 scopes. They meet every second Tuesday of the month at Denny's off of I-80 and Belmont Ave. in Liberty. 7:00 PM. Check them out at: www.ussrenegade.wordpress.com

With a little help from Cheryl, even Teddy Bears got a view through the H-alpha scope. Hey, the Sun is for everyone!
Photo by Tom Kear. Cheryl and Tom were SFA attendees and were kind enough to share this with the MVAS.

SFA continued....



CAA - OTAA Meeting July 26 at Letha House.

A rainy day didn't stop the festivities. A nice gathering of about 40 OTAA folks made it. Three MVAS'ers made the trip; Tony, Larry and Phil. Thanks is given to Tony driving. The air conditioned room was mighty nice. The food was good and plenty. Raffle went well with many humorous moments. Afterward, chats with others and touring the observatory filled the time. After a rest the three trekkers headed back home. Lightnin' bolts a-flashin'. We'll try again next year.

Chow line. Tony brought the pizza!

Here's to ya. The 1st round ready to disappear.

Raffle time. MVAS tradition, we one an LED flashlight.

CAA continued...

The Sun popped out a few times but not enough for any observing. It was something to hear the thunder coming from Lake Erie, with an occasional lightning flash. The landscape there has wonderful photo-ops. There was a parting shot of that tree (left) just before the *Three Amigo's* finished their lounging and packed up for the ride home. A very pleasant evening despite the lack of stars. It was frustrating though, knowing just how good the night sky is at Letha House.

Next OTAA is the MVAS event at the observatory - MVCO. It's on August 23rd. 5PM. See you there!

-all photos of SFA and CAA by Phil Plante unless noted otherwise. Old OTAA photos by Bob Abdress, Allen Heasley, Phil Plante (Plante after 1990). Rick Pirko took aerial shot of MVCO. Larry Plante took the "smoker image".