THE METEORITE

The Crab Nebula

M-1, NGC-1952
Supernova Remnant

Composite: Hubble Space Telescope Image

Newsletter of the Mahoning Valley Astronomical Society, Inc.

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OCTOBER 2012

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THE METEORITE

Newsletter of the Mahoning Valley Astronomical Society, Inc.

OCTOBER 2012

MVAS CALENDAR

OCT 20	Business meeting at the MVCO 8:00 PM
OCT 27	Halloween Party at the MVCO. 7:00 PM
NOV 17	Leonid Meteors peak. 3:00 AM. No moon up.
NOV 17	Business meeting at the MVCO. 8:00 PM
NOV 24	Thanksgiving weekend. Observing at the MVCO? 7:00 PM. It's a Full Moon. Close-out session?

NATIONAL & REGIONAL EVENTS

NOV 12-18 **CSPG Fall Star Party**, at CSPG Observers Field, 5310 52ND CT, Chiefland, FL
20 acre dark sky site with ac power, food vendors.
Fall Star Party details at: http://fallstarparty.com/

FEB 2, '13 **Annual Dark Sky Festival,** held in the town of Harmony Square, Osceola County, FL 34773. Time: 5:00pm-10:00pm. Free event to the public. This year they are expecting 7,000 to 10,000 attendees, as each year the attendance has grown greatly! http://harmonyfestivals.com/

Ward Beecher Planetarium at YSU

OCT 13 8:00 PM. *Cosmic Castaways*. Based partially on research by YSU's astrophysicists Dr. John Feldmeier and Dr. Patrick Durrell, it explores inter-galactic stars.

OCT 20 1:00 PM, 2:30 PM. *Halloween Show*.

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

NEWS NOTES

Dawn's Watery Past. Based on observations from the low-altitude mapping orbit of the Dawn mission, NASA's Dawn spacecraft has revealed that the giant asteroid Vesta has had volatile, or easily evaporated materials on its surface in the past. They have colored Vesta's surface in a broad swath around its equator. Pothole-like features mark some of the asteroid's surface where the volatiles, most likely water, had boiled off from the hydrated minerals. While Dawn did not find actual water ice at Vesta, there are signs of hydrated minerals that were delivered by meteorites and dust. Dawn's gamma ray and neutron detector found signatures of hydrogen, likely in the form of hydroxyl or water bound to minerals in Vesta's surface.

"The source of the hydrogen within Vesta's surface appears to be hydrated minerals delivered by carbon-rich space rocks that collided with Vesta at speeds slow enough to preserve their volatile content," said Thomas Prettyman, the lead scientist for Dawn's gamma ray and neutron detector (GRaND) at the Planetary Science Institute in Tucson, Arizona. The pits look just like features seen on Mars, but while water was common on Mars, water was totally unexpected on Vesta at these high levels. These results are evidence that hydrated materials where once present, and that they played an important role in shaping the asteroid's geology and surface we see today.

Galaxy Clusters Get Old. The properties of galaxies strongly depend upon where they reside. Some galaxies occupy crowded, gravitationally bound regions called galaxy clusters or groups. Others galaxies reside in deserted areas called general fields. In the present-day Universe, galaxy clusters usually contain old, elliptical galaxies that are not actively forming stars, while general fields usually encompass young disk-type (spiral) galaxies that are actively forming stars. Discovering galaxy clusters in their "adolescence", when the surrounding environment influences their development, is likely to give the best basis for studying how galaxy clusters form.

Using the Multi-Object Infrared Camera and Spectrograph (MOIRCS) mounted on the Subaru Telescope, a team of astronomers led by Dr. Masao Hayashi (National Astronomical Observatory of Japan or NAOJ) and Dr. Tadayuki Kodama (Subaru Telescope, NAOJ) has discovered a proto-cluster of galaxies called USS1558-003. It is undergoing a vigorous process of star formation. It is the densest and most active proto-cluster ever identified at so great a distance; 11 billion light years away from Earth. The star formation rate in the protocluster is intense, sometimes reaching a rate over 100 times greater than that of Milky Way Galaxy. About 10,000 Suns per year. Although old, inactive elliptical galaxies dominate present-day galaxy clusters, the recently discovered protocluster is a site where the progenitors of current elliptical galaxies clusters were just forming and growing rapidly. USS1558-003 will serve as an ideal laboratory for investigating how a cluster develops and how a special, dense environment can influence the formation and evolution of galaxies.

The research team plans to examine the individual galaxies more closely in order to reveal what is actually happening as the cluster is forming.

MINUTES OF THE SEPTEMBER MEETING

SEPTEMBER 29, 2012 at the MVCO

With a pleasant fall-like day as a backdrop, the MVCO's 50th Anniversary celebration BBQ started things off around 6:30 PM. Due to the space taken by food tables in the 16" meeting room, the business meeting was moved to the 8" building. The meeting was called to order at 8:05 PM with President Sam DiRocco presiding. Roll Call was taken and the Password was given by 31 members. We had five guests in attendance. Virginia and Steven Bartos were the regular guests. Charles Cooper brought son Justin and daughter Tabitha. Micki (mom) had stayed home. They were at the Astro-Ham at Scenic Vista on September 8th and wished to join MVAS as a family. They hail from Rootstown, OH. Their nomination would be conducted during the Good of the Society segment. A call for the reading of the minutes was given. Greg Higgins moved to suspend the reading. Mike Heim seconded the motion. With no further questions or corrections noted, the minutes were accepted as published, by a unanimous voice vote.

TREASURER'S REPORT: The Report was read by Steve Bartos. Roy McCullough moved to accept the Report as read. Dennis Marko seconded this motion. With no further discussion, the Report was accepted by a unanimous voice vote.

General Fund	**8/1 thru 8/31 2012**
OPENING BALANCE:	$ 7,905.83
CLOSING BALANCE:	$ 8,442.60
AVAILABLE FUNDS (NON-RESERVED):	$ 4,278.48
ACCOUNT NET GAIN/LOSS FOR THIS PERIOD:	$ +536.77
INCOME:	
OTAA RAFFLE	$ 413.00
OTAA REGISTRATION	345.00
MVAS MERCHANDISE (CLOTHING)	175.00
ASTRONOMY CALENDARS	100.00
DUES (FOR 2012 - NEW MEMBERS)	45.00
DONATION (from- ACA MEMBER AT THE OTAA)	5.00
INTEREST	0.38
TOTAL INCOME	$ 1,083.38
EXPENSES:	
CK# 2778 ELECTRICAL OUTLET FOR 16" BLD.	$ 46.61
2779 MVCO RENT (2012)	500.00
TOTAL EXPENSES	$ 546.61
Reserved Funds	
KEY DEPOSITS (MVCO)	$ 250.00
CASH FROM ORIGINAL OAD FUND (FOR LAND)	3,914.12
TOTAL RESERVED FUNDS	**$ 4,164.12**

DUES PAID THIS REPORT: Don Cherry, Paul and Janet Baker

CORRESPONDENCE: No mail reported. One envelope from NASA was on the desk. Delivery date unknown.

COMMITTEE/OFFICER REPORTS: *IMAGING COMMITTEE: VISUAL COMMITTEE: LIBRARIAN:* No Committee reports.

OBSERVATORY DIRECTOR'S REPORT: Larry Plante reported that he has refilled the propane tanks and that they should good for tonight, the October meeting and Halloween Party. For both BBQ and heater units. The well will be shut down after the Halloween Party. We will only need bottled drinking water after that. A brief discussion followed concerning any possible 2012 events at the MVCO that might be scheduled. Other observing events might include the Leonid meteor shower Nov 17 (3AM peak), a full moon observing night on Thanksgiving weekend and the Geminid meteor shower Dec 13/14. Nothing was determined. We have mice. Larry will put down some traps or D-Con. All else seemed in good shape at the MVCO. Only Phil had some Homework to turn in.

OLD BUSINESS: All were reminded of the upcoming Halloween Party. Costumes are optional but add to the festivities. The signed MVCO Leas was given to Mike Sprague earlier this evening. He will have it Notarized. A copy will be given to the MVAS for our records. Sam noted that there have been no changes to the Lease. Phil pointed out that we need to have something in the By-Laws regarding private property and storage of the same on MVCO premises. He suggested that the next administration look into this. The Dec. 8th Christmas Party will be here before you know it. There was no objection to keeping the dinner price at $10 per person, the same fee as in previous years. Reservations will begin at the October meeting, pre-payment is desired.

NEW BUSINESS: Officer election will be held at the December meeting. Candidates will be announced at the November meeting. Positions of President, Vice President, Treasurer and Secretary are on the slate. Rosemary Chomos will serve as a one person nominating committee. Phil will get her an updated roster soon. Rosemary will canvas the membership via telephone in search of candidates. Please consider running. You may also contact her to announce your candidacy.

Jodi McCullough would like to continue the after meeting seminars at the MVCO in 2013. She hopes to issue a survey form to ask members what topic they would like to hear as well as asking members what topic they would liketo give a talk about. This idea had a very favorable response. Mike Heim will close out this year's talks at the next meeting. Denis mark asked when 2013 dues could be paid. These can start being paid at the October meeting. Sam noted we like to have current dues paid by March of any year. The rate is $40 per year, regular membership (17 years and older). It's $10 for each additional family member or $10 for a single junior membership (16 years or younger). Steve still has nine Astronomy Calendars for 2013 ($10 ea.) as well as a few RASC Handbooks (2012).

GOOD OF THE SOCIETY: President DiRocco thanked everyone for coming out for the Celebration and suggested everyone read Allen Heasley's email account of that day in 1962. This is posted on the website and will be in the October Meteorite- for the record. Phil nominated the Cooper family for membership in the MVAS. Don Cherry seconded the nomination. A unanimous voice vote accepted their request for membership. An enthusiastic welcome is extended to Charles, Micki, Justin and Tabitha. It will be a pleasure to have you join us in our various MVAS activities. Rosemary spoke about the lecture schedule at the Cleveland Museum of Natural History in 2012-13. Many good talks are coming. Phil will get the schedule in the November Meteorite. Car pooling worked in the past.

VISUAL REPORTS: Mike Heim spoke about his week long stay at Cherry Springs during new moon this month. He described the dark sky site, stating that the Milky Way was so bright it cast a shadow. Passing clouds were black, no illumination from below.

He mainly imaged during this time getting great shots of the Horsehead Nebula and the Helix Nebula- one he wouldn't even try locally due to its low celestial altitude and local light pollution. Mike notes there are two main star parties at Cherry Springs- spring and late summer. There were 600-700 telescopes set up

while he was there. Registration information (fees, camping, rules, et.) are on their website. He recommends giving it a try. Other dark sky sites were discussed including Spruce Knob in VA and Hearts Content in PA.

Paul Baker talked about his imaging experiences (M92) and hopes to bring his images to the next meeting to seek advice on improving his results. Larry noted the good time five members had at the Black River OTAA event. Good skies, food and friends. No main raffle this year. No fog this year.

ADJOURNMENT: Adjournment came at 8:40 PM. We thank everyone that hosted the event. After adjournment, round two of the feast began. The next meeting will be at the MVCO on October 20, 2012. Meeting begins at 8:00 PM. Scheduled hosts are Harry Harker and Sam DiRocco. PASSWORD: name a natural satellite of a planet. *-minutes by Phil Plante*

MVAS REMINDERS

Next Meetings. We are approaching that time of year when our meetings are moved up one week due the various holidays. Please note that the October meeting will be a week early on Saturday October 20th due to Halloween weekend. It is the last meeting at the MVCO this year. The November meeting is on November 17th at YSU, moved up due to Thanksgiving weekend. The December Christmas meeting is on December 8th at the Lariccia Family Center in Boardman Park, due to Christmas break.

Halloween Party. Since we don't have a meeting this last weekend in October (27th), The MVAS has been having a Halloween Party at the MVCO the last five years. We plan on another this year. Starts at 7:00 PM. Bring food and drink. Costumes are optional but they might involve worm clothing. We hope you will attend.

Last observing session? Saturday, November 24th is Thanksgiving weekend and it may be the last chance for a decent weather night at the MVCO. If it is clear we might try for a group observing session at the observatory to close out the season- finish off the sodas and snacks that are left over. We have two meetings to discuss this. It will be near full moon.

ELECTION YEAR! Will make nominations at the November meeting. Voting takes place at the December meeting. We will be voting for President, Vice President, Treasurer and Secretary. Please consider running for one of these positions. Send your intentions to one of the current officers to become a candidate or make a public announcement. We will also need two candidates to serve as Trustees. Please consider these positions as well.

MVAS ACTIVITIES

Astro-HAM. The last Scenic Vista public event on Sep. 8th was a success. Around noon the folks from the Western Reserve Amateur Radio Club had several antenna's set up at the park and were contacting other operators around the world. Steve Fabry, from the radio club, brought a grill, serving-up Hot Dogs, and Burgers They had tons of other snacks. Our own MVAS radio people included Alan, Dave, Greg and Sam. It had been cloudy and rainy all day with cooler temps. Just at sunset, the skies cleared up miraculously. Four telescopes were set up Sam (12" Dob) Rosemary (6" Dob), Phil (4.7" refractor) and Dave (3.5" MAK). Later Paul Baker arrived with an 8" Dob. (Not sure- it was dark). It turned out to be a great night with a pleasing Milky Way appearance. The M-objects were amazing. The morning and afternoon rain showers must have scared people away as we only had two families show up. One family of 4 hoped to join at the next meeting. Some of the HAM operators stayed to observe. By midnight all the MVAS folks were cold; scopes were dripping with dew. Everyone left shortly after 12 AM. As the season comes to a close, it seems we lucked out this year having clear skies for all three Scenic Vista nights. Hopefully we can have another Astro-Ham in the mix, next year.

Black River OTAA. Five MVAS members made it to the Black River OTAA on September 15. In all they had about 39 people attend, with a good showing from the OTAA clubs. ACA seemed to be absent tho- no show of hands. From MVAS: Tony, Larry, Rosemary, Greg, and Phil attended; enjoying the usual great food. Of course they all won a door prize. BRAS had no main prize this year (sanity ruled?). Skies were clear with a few passing cirrus. Larry had his 10" SCT set up. He gave a sky tour to a group of Oberlin University students (astronomy). The main telescope line had about a half dozen scopes set up. Surprisingly, no fog rolled in from the cemetery. Most of the moisture seemed to have condensed out as dew. It was an enjoyable evening in all respects. That 10:00 PM hot chocolate hit the spot- warming the chilled bones. About an hour later, the MVAS group took to the road for that long drive home. This event closed-out the OTAA meetings for the year. We can only hope that 2013 will bring a repeat performance to the OTAA.

MVO 50th Anniversary. Fair weather and food off the grill served as a grand celebration of the 50th Anniversary of the dedication of the MVO (as known back then). On September 29, 1962 then Ohio Governor Michael DiSalle stopped by to dedicate the completion of our Mahoning Valley Observatory. It was a packed house back then and it was standing room only for this night's meeting. Thirty-six people attended. They enjoyed the hot dogs, Pandian's chicken, burgers and even a few rib eye's hit the grill. Greg had some great pork-fried rice and Jodi and Roy's shredded BBQ ham was a treat unto itself. Rosemary broke plenty of dessert. A cake. Maryanne had one decorated to indicate the anniversary. Mike had two dozen donuts to go with the coffee. After the business meeting, round two of the feast began. Some Three Stooges videos came on the TV monitor. Plenty of good cheer through-out the night. Thinking back…someone had a good idea 50+ years ago.

Allen Heasley on September 29, 1962

By popular request and for posterity, Allen's email accounting of the 1962 dedication is reproduced below. Enjoy!

For those of you who were not in attendance at the dedication of the Mahoning Valley Observatory On Sept. 29, 1962, Let me tell you about it. I maybe the only first hand story teller left to do this. The year 1962 was not a national presidential election year, but there was a lot of election interest in Ohio. The seated governor Michael DiSalle was up for election and so were a large number of local Mayors and officials. The City of Windham and Portage County were heavy into these politics and Bernie was far from unknown there. Through him it was that we were able to make arrangements for Governor DiSalle to make a campaign stop and dedicate our observatory. This was not an easy task. The governor had a busy schedule. However, he did not short change us in the time he gave for his dedication remarks. I do not remember the exact time of day, but it was daylight and bright and sunny. We had recently completed our driveway, the construction of which all

agreed the quality ranked with the roads of the Romans.

So what did the Governor and his entourage do? They parked up at the top of the hill at the Hoynos house and walked down the Hoynos driveway to the MVO. That was a funny sight believe me, the governor being a short man flanked by his support group. Apparently no one had passed on to them the quality of the workmanship that went into "our" driveway. The entire 16" building was filled with a standing room only crowd which overflowed out the front door and into the driveway. I, as President of the MVAS, was to introduce a local official who would then introduce the Governor. There are two things that really standout in my mind as I look back on this event. The first is that although I was not unaccustomed to speaking before a group, this group was something different. There I was, the young man who was kicking things off standing before this group of very distinguished officials, including the Governor and his aides. I knew what I wanted to say and it was quite brief, so I had no notes and as I was a student of Dale Carnegie, I knew I only had to know my subject and I could handle it. But then it happened. For the only time in my life that I can remember it happening, I froze! I got stage struck! All those important people! It seemed like it lasted an eternity to me, but I don't think that was the case for the audience. I got my mind back and things proceeded.

The second outstanding reminder is of my watching and listening to the Governor giving his talk. In so doing he was standing on the stage directly under the declination axis of the 16" telescope mount and its several hundred pounds of counter weights. One of the last jobs to be done on the telescope was the installation of and the adjustment of the counter weights. We had just completed the work on that adjustment the day before the dedication. The thought kept going through my mind; did we tighten the set screws on the counter weights? Sufficiently? If not, the possibility existed that they could slip off and injure or kill the Governor. Wouldn't that have been a great ending to our construction project? Well, the screws were tight and all went well. If you are one of the members who attend the 50th anniversary this Saturday, look up at those counter weights please, and envision what I was thinking. Hope you all have a great time. - by Allen Heasley

Observer's Notes

Radio Astronomy: In The Beginning

By 1921, amateur radio operators had communicated across the Atlantic using short wave. In December 1921 an amateur station based in Connecticut was heard in Scotland by another American using state-of-the-art receiving equipment. On November 27, 1923, amateurs in the U.S. and France made the first transatlantic two-way contact on shortwave frequencies. It turned out that with ionospheric refraction of radio signals, world-wide communication by shortwave was possible. As a bonus, shortwave communications used transmitters of modest power. Commercial firms saw a new source for profit. One notable business was the telephone company. It took the lead with a plan to use shortwave to carry intercontinental telephone calls. This would save the vast expense of laying telephone cable along the ocean floor. But shortwave communication often suffers from noise and static. The telephone company was of course eager to identify and eliminate this noise.

A young radio engineer named Karl Jansky was working at AT&T Bell Labs in New Jersey. His job was to identify the sources of shortwave noise. He built a highly directional antenna designed to work at about 22 MHz. From his observations in 1932, Jansky found that most of the noise was due to terrestrial sources such as thunderstorms. However, he found one localized source of noise that appeared four minutes earlier every day. Just as the stars rise four minutes earlier every night, this apparent link to sidereal time (and Earth's rotation rate) indicated that something beyond Earth was the source of the noise. What Jansky had found was the radio noise that comes from the center of the Milky Way Galaxy. He announced the discovery in 1933 and it made the front page of the New York Times on May 5, 1933.

Professional astronomers considered this discovery as nothing more than a curiosity. Grote Reber, a radio engineer and accomplished ham operator in Wheaton, Illinois, heard of Jansky's work. Jansky's discovery gave him something new to work on. In 1937, Reber built his own 32-foot-diameter parabolic dish antenna in his backyard. It had a sheet metal surface with the receiver at the 20 ft. focus. Reber spent many hours at night scanning the sky with his telescope. He needed to work at night because automobile use was most heavy during the day and their electrical systems produced too much radio noise. He tried two receivers; first one designed for 3300 MHz and another at 900 MHz- but neither were successful. His third receiver worked at 160 MHz (1.9 meters wavelength) and in 1938 he detected radio emission from the Milky Way. This radio data was plotted as a contour map. It showed how the brightest areas corresponded to the Milky Way- with the brightest part toward the center of the Milky Way. Other bright radio sources, such as those in Cygnus and Cassiopeia, were spotted for the first time.

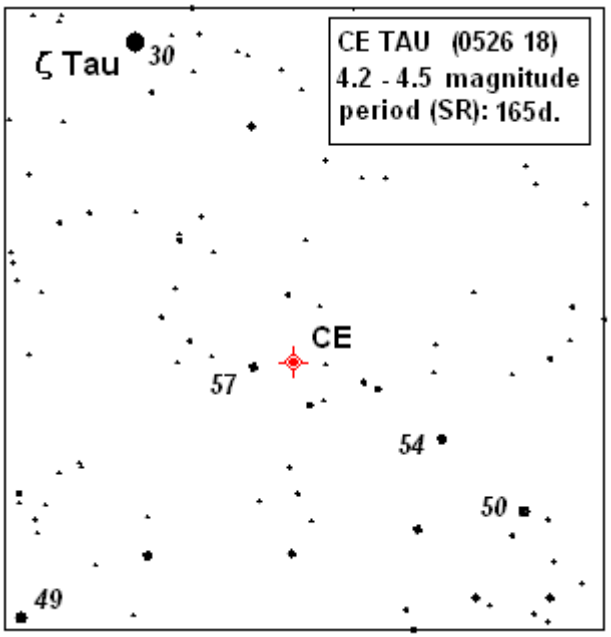
From 1938 to 1943 Reber made the first radio surveys of the sky. His results were published in the Proceedings of the Institute of Radio Engineers, the Astrophysical Journal, Nature, and the Journal of Geophysical research. Grote Reber and Karl Jansky had thus laid the groundwork for radio astronomy. After World War II, the microwave technology used in developing radar was made available to astronomers. With the steady improvement in equipment, radio observations quickly became an important research tool for astronomers.

MVAS Homework: The Crab Nebula

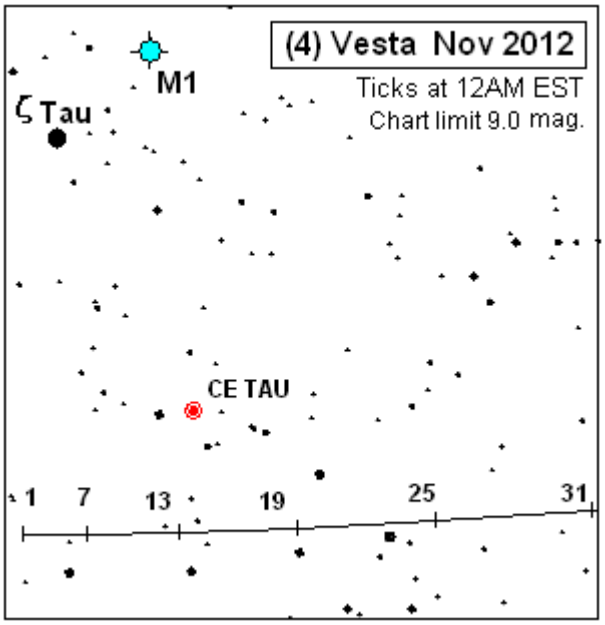
The supernova that produced the Crab Nebula (M-1) was observed by the Chinese in 1054 AD. It is positioned in the constellation Taurus and is about 6,000 light years away. The nebula has been a source of useful information. It contains the fastest known pulsar with a 0.033 second rotation period. The optical and radio signals from this nebula have allowed astronomers to probe of the number of free electrons in space between us and the pulsar. The dispersion, or slowing of the radio signal compared to the visible gives a figure of about 1 electron per 30 cm^3, based on the distance to the Crab Nebula as obtained by other methods. The pulsar emits electrons in the form of synchrotron radiation. It matches the energy level that's needed to keep the nebula luminous. It also causes the pulsar to slow down at the rate of about 10^{-8} sec. per day. Synchrotron radiation from the Milky Way was first detected by Grote Reber in his early radio astronomy efforts. The ghostly glow we see in M-1 is the supernova remnant forced into florescent luminance by the spiraling electrons coming from the pulsar. The same synchrotron radiation that radio telescopes can detect. Taurus is becoming better placed in the eastern sky now. Go out, try to spot the visible finger print of the electrons that are slowing down a pulsar.

MVAS OBSERVER CHARTS

Variable star of the month: **CE Tauri** (*abbrev:* CE Tau). About 3° SW of zeta Tau is the variable star CE Tau. Slightly yellowish in color, it is easy to pick out in binoculars while zeta is still in the field. It has a shallow magnitude range that is semi-regular. Keep track of it this fall and winter as you follow Vesta.



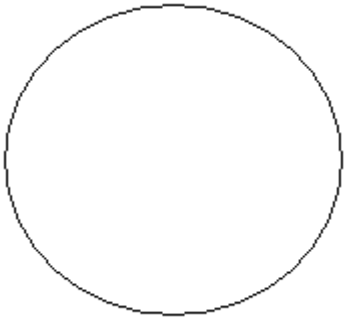
Asteroid of the month: (**4) Vesta.** This marks the second installment of our observations of Vesta that will take place over the next few months. Vesta's path is well placed south of our variable star CE Tau (see above). In about a 10 minute span you should be able to make an estimate of CE Tau, then hunt down and pin-point Vesta. This month Vesta brightens a bit from 7.2 magnitude to 6.6 magnitude by Thanksgiving. This is well within the range of binoculars. If using a scope, don't forget to check-out M-1, as plotted below. It is Homework time!



MVAS OBSERVATIONS - DUE NOVEMBER 2012

OBSERVER_____

Featured object: Crab Nebula. Please try a sketch. Remember that M-1 is seen as a rather faint smoky oval even in big scopes. Plot field stars as accurately as you can, then faintly outline the shape of M-1 in relation to the stars. Fill in the outline with a smudge of some pencil graphite to match the varying glow as best you can. No such thing as a perfect sketch so don't be afraid to try. It will make you a better observer.



Crab Nebula (M-1) Observation:

Date:_____ Time(EDT)_____ Scope_____

CE TAU magnitude estimates:

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

(4) Vesta Observations:

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

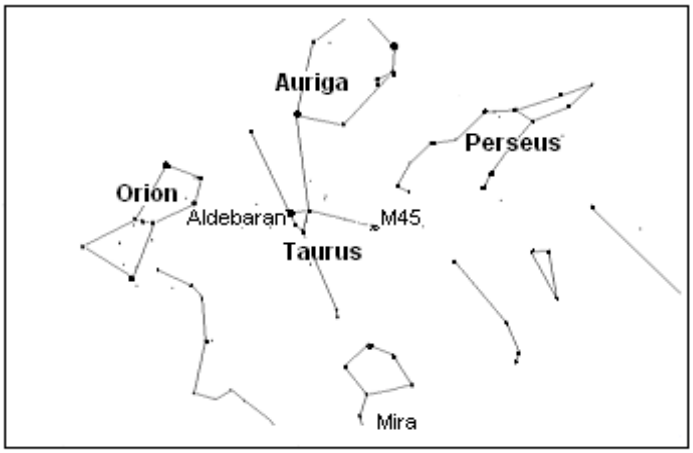
Other Objects in Taurus to observe

D. Sky	Date	Scope	**Dbl.**	Date	Scope	SEP	MAG	SPLIT?
M- 45	_____	_____	118 Tau	_____	_____	4.7"	5.8 - 6.7	Y / N
N- 1647	_____	_____	88 Tau	_____	_____	69.1"	4.3 - 7.8	Y / N
N- 1746	_____	_____	τ Tau	_____	_____	63.0"	4.2 - 7.0	Y / N

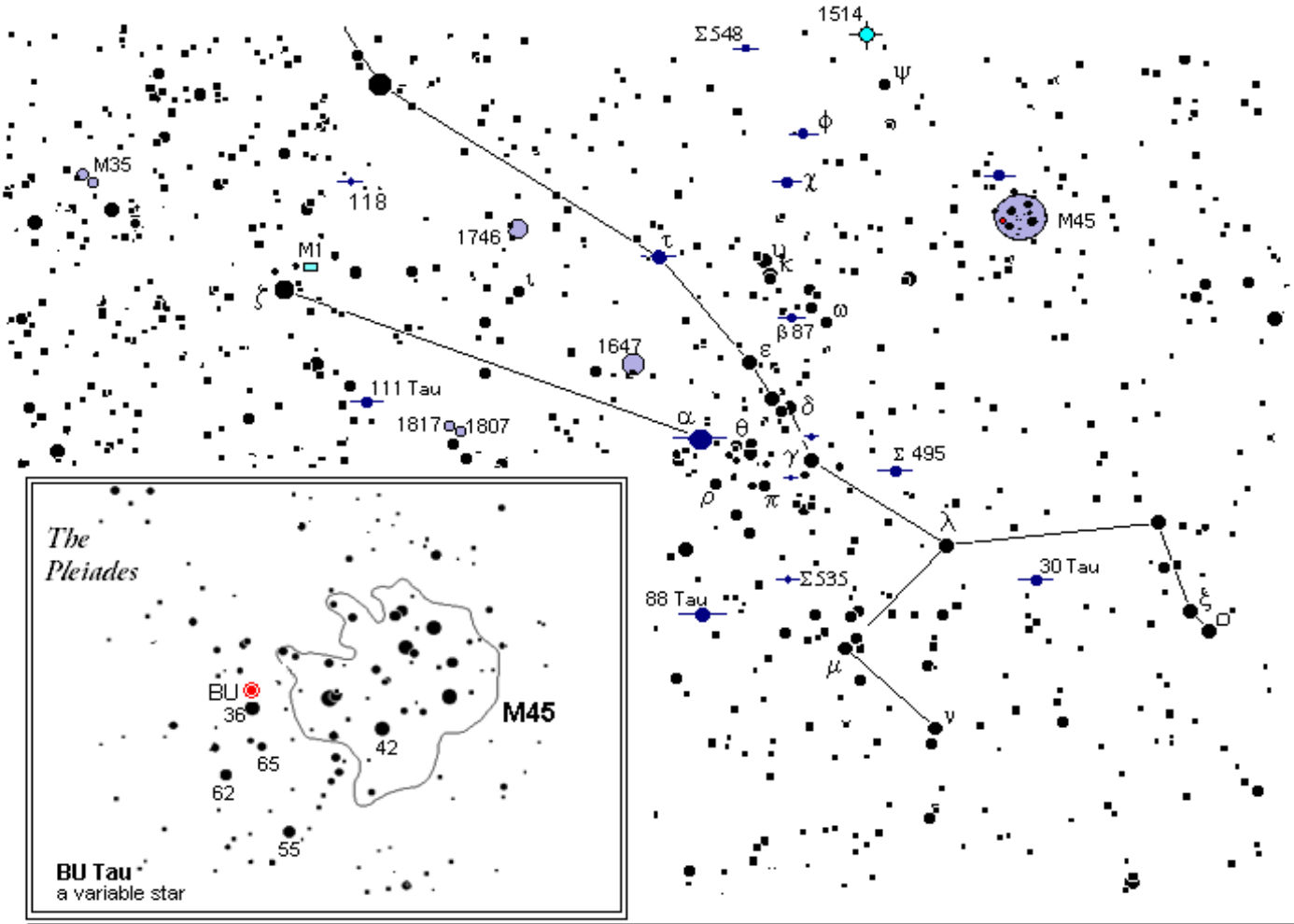
Lunar Occultations (see Sky Almanac):

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

Constellation of the Month — Taurus



By Mid-October Taurus is about 20° up in the east around midnite. A first chance to explore on nights with still moderate tempratures. With the naked eye you can see the Hyades. Bright red Aldebaran rides within the cluster. This is an illusion as the Hyades' stars are 150 light years away while Aldebaran is only 68. The small asterism to the NW of Aldebaran is the Pleiades cluster. Can you see the individual stars without optical aid? NGC 1647 and NGC 1746 are nice open clusters for the telescope. You'll need a scope to find the Crab Nebula, M1. It can be spotted as a tiny fuzzy spot with a 60mm scope. There are may fine double stars to choose from. Some have nice colors. Which ones are they? Look for yourself? Don't forget to keep a watch on variable star BU Tau during the comina months. Have fun.



DEEP SKY

	Mag.	Size	Type	notes
N 1514	10.0	1.9'	P.Neb.	
N 1746	6.1	41'	O.C.	20 strs.
N 1647	6.4	45'	O.C.	200 strs.
N 1817	7.7	15'	O.C.	60 strs.
N 1807	7.0	17'	O.C.	20 strs.
M 1	8.4	6'x 4'	SNR	"Crab Neb."
M 45	1.2	110'	O.C.	100 strs.

Variable star: BU Tau 5.0 - 5.7mag, Irr.

DOUBLES:

χ Tau	4.8, 8.5	19"	white, blue
30 Tau	5.1, 9.8	9"	blue, orange
88 Tau	4.3, 7.8	69"	yellow, pale lilac
111 Tau	5.0, 8.0	86"	yellow, lilac
118 Tau	5.8, 6.7	5"	orange, orange
β 87	6.2, 8.6	1.9"	red, blue
Σ 535	7.0, 8.3	1.1"	yellow, bluish
Σ 548	6.4, 8.0	15"	yellow, bluish
Σ495	6.1, 8.8	3.7"	yellow, yellow

Check list

___N 1514
___N 1746
___N 1647
___N 1817
___N 1807
___M 1
___M 45
___χ Tau
___ 30 Tau
___ 88 Tau
___111 Tau
___118 Tau
___ β 87
___ Σ 535
___ Σ 548
___ Σ 495
____ BU Tau ____mag. on ___/___/____

Instruments used:

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

Solar and Lunar (EST).

Date	Sunset		Moonrise		Moonset	
1	6 : 19		8 : 13p		10 : 29a	
5	5 : 14	EST	10 : 51	EST	12 : 19p	EST
9	5 : 10		2 : 00a		2 : 24	
13	5 : 06		6 : 47		4 : 58	
17	5 : 03		10 : 59		9 : 12	
21	5 : 00		1 : 18p		12 : 33a	
25	4 : 58		3 : 15		4 : 35	
29	4 : 56		5 : 58		8 : 14	

PLANET WATCH

	Uranus	Jupiter	Venus
	Transits	*Transits*	*Rises*
	10:57p	3:36a	4:58a
	9:41p	2:18a	4:06a
	9:25p	2:01a	4:15a
	9:09p	1:43a	4:24a
	8:53p	1:25a	4:33a
	8:37p	1:08a	4:43a
	8:21p	12:50a	4:52a
	8:05p	12:32a	5:02a

November 2012

S	M	T	W	T	F	S
				1	2	3
4 EST	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 November 2012 — (4) Vesta

Date	Rises	RA hr.	RA min	Dec. deg.	Alt.	Azm	Magnitude
		topocentric					
1	8 : 09 pm	5 : 40		+17.6	41º	104º	7.2
7	7 : 43 pm	5 : 36		+17.4	46	109	7.1
13	7 : 16 pm	5 : 33		+17.4	51	116	7.0
19	6 : 47 pm	5 : 29		+17.5	55	124	6.8
25	6 : 18 pm	5 : 24		+17.5	60	134	6.7
31	5 : 48 pm	5 : 17		+17.6	63	147	6.6
	all EST	*(at midnight)*			*(at midnight)*		

Variable Star of the Month: **CE TAU** 4.2 - 4.5mag 165 day period

Celestial Highlights

Date	UT hr	
2	1.1	Jupiter 0.9º N. of Moon
5	05	Taurid meteor shower
7	0.5	**LAST QUARTER MOON**
13	22	**NEW MOON**
18	05	Leonid meteor shower
20	14	**FIRST QUARTER MOON**
28	15	**FULL MOON**
28	00.5	Moon 4.2º S. of Pleiades
29	01	Jupiter 0.4º N. of Moon

LUNAR OCCULTATIONS FOR NOVEMBER 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.
0	22	39	17	***1***	02	39	17		**R**	95-	33º	092º	omega TAU	5.5	240º	NA
2	3	39	17	***2***	07	39	17		**R**	89-	69	176	106 TAU	5.3	226º	.005"
3	0	03	06	***3***	04	03	06		**d**	84-	27	086	chi 1 ORI	4.4	056º	NA
3	5	58	38	***3***	09	58	38		**d**	82-	63	226	chi 2 ORI	4.6	070º	0.02"
6	5	33	11	***6***	10	33	11	EST	**R**	56-	62	169	ZC 1281	6.3	298º	0.10"
8	1	52	58	***8***	06	52	58		**R**	36-	10	091	ZC 1482	6.2	285º	0.10"
9	5	35	00	***9***	10	35	00		**R**	25-	36	129	62 LEO	6.0	245º	NA
20	20	37	08	***21***	01	37	08		**D**	54+	36	217	44 AQR	5.8	024º	NA
25	1	59	51	***25***	06	59	51		**d**	90+	27	263	ZC 230	7.3	329º	15.4"
26	22	14	47	***27***	03	14	47		**D**	98+	64	151	ZC 455	6.1	057º	0.03"
29	19	49	16	***30***	00	49	16		**r**	98-	18	079	ZC 873	6.2	312º	NA

D= disappearance. Good occultation event.

d= disappearance, the star's magnitude approaches the observing limits of 200mm objective

R= reappearance. Good occultation event

r= reappearance, the star's magnitude approaches the observing limits of 200mm objective

All disappearances (D) occur on the eastern limb (left side in the sky). Reappearances (R) always occur on the western limb.

Position Angle (PA): tells where along the west limb to watch for a reappearance.

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

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

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

GALLERY…..

A BUSY SEPTEMBER.

The **September 8** Astro-Ham event at Scenic vista was a success. The Western Reserve Amateur Radio Club had several antennae set up in the observing field.

The scattered clouds would eventually give way to clear skies just as the sun set. We had a great night observing the Messier objects all along the bright Milky Way.

Several MVAS members had their Ham gear in action. Here above, we see Sam busy making contact. When not on the horn, most had their share of the food that was available. (We've all been there before) Thanks to the radio guys and a few MVAS that brought the chow.

Rosemary was the brave soul to try and chase the clouds away for some solar observing. Filter off- no clouds. Filter on- clouds appear. Repeat as needed for complete aggravation. (We've all been there before). Not much solar work today but the night sky made up for it very well.

One last flower was spotted. Perhaps to close-out the Scenic Vista observing season?

Perhaps one to remind and invite us- We'll be here again!

BLACK RIVER OTAA, September 15th.

Another good night for observing, but the picnic comes first! The chow line started fast. In a while, the round of second helpings began (seen below).

The MVAS contingency claimed a table near the food!

Everyone seemed to enjoy the picnic. Having it indoor is always nice. After dinner they had a door prize raffle. Everyone won some sort of prize. The good ones went first of as you would expect.

In all, they said 39 people attended. Plus one allien. The allien didn't seem to be too interested in human food. He did seem to be transfixed on a glowing red light bulb though.

BRAS had the usual swap table with all sorts of goodies, for those in search of new toys. Some good bargains to be had.

MVO 50th Annivesrary Celebration.

On September 29th, the MVAS celebrated the 50th anniversary of the MVO Dedication in 1962. Thirty-seven people were in attendance for the Celebration BBQ and usual MVAS food fest. All under a perfect fall afternoon.

Wouln't you know it? MVAS took a group photo! Virginia took this one.

Food table. Grills were blazing outside on the back porch. The business meeting had to be held in the 8" bulding. No more room in the meeting room. Too much food!

Marryanne brought the decorated cake. Thanks.

Many went out to 12" Building to eat or converse on the deck. A full Harvest Moon rose over the festivities.

All photos in Gallery by the editor except as noted.