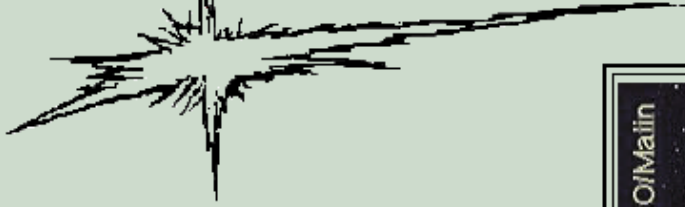


THE METEORITE



NGC 891
classic edge-on galaxy
in Andromeda



Newsletter of the Mahoning Valley Astronomical Society, Inc.

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OCTOBER 2010

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



NEWS NOTES

Newsletter of the Mahoning Valley Astronomical Society, Inc.

MVAS CALENDAR

- OCT 23** MVAS meeting at MVCO. 8:00 PM.
OCT 30 Halloween Party at MVCO. 7:00 PM.
NOV 6 New Moon Observing at MVCO? Sunset 6:14 EDT
NOV 20 MVAS meeting at YSU. Show starts at 8:00 PM

NATIONAL & REGIONAL EVENTS

- NOV 1 - 7** **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/>
- NOV 4 - 7** **Nightfall 2010**, held at the Palm Canyon Resort. 221 Palm Canyon Drive, Borrego Springs, CA
Lectures, Star Parties, Workshops (fee for workshops, free for others). Special rates for hotel rooms and RV spaces. Located 3hrs. east of San Diego or L.A. Hotel "goes red light only" for the event. Details at: <http://www.nightfall2010.com>
- NOV 5 - 7** **Colorado River Astronomy Club 5th "Star Stare"**. South-West Desert, CA. Camps and star parties. The area is a modern day ghost town. It is located 20 miles out of Blythe with a small light dome. The area is paved and level with chemical toilets. Good access for all vehicles. <http://www.cracblythe.org/>

OTAA MEETINGS 2011

- MAY 7** OTAA Scenic Vista Stargaze
AUG 27 MVAS-OTAA at the MVCO

MVAS BOARD OF TRUSTEES

President	Sam DiRocco
Vice President	Harry Harker
Treasurer	Steve Bartos
Secretary	Phil Plante
Trustee (Appointed)	Bill Pearce
Trustee (Appointed)	Roy McCullough
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Librarian	Rosemary Chomos

PUBLICATIONS STAFF

Meteorite Editor	Phil Plante
Assistant Editor	Steve Bartos
MVAS Webmaster	Harry Harker

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>

Shields up. Solar system bodies interact with the solar wind quite differently than the Earth. Their surfaces are not shielded by a dense atmosphere or magnetosphere. For the Moon, this causes it to be heavily weathered by meteoroids and the solar wind. This forms the very rough and chaotic surface called the regolith. It had been thought that the solar wind was completely absorbed by the regolith. However, recent explorations of the Moon by the Chang'E-1, Kaguya and Chandrayaan-1 spacecrafts have shown that things are not that simple. A significant flux of high energy particles was found to originate from the lunar surface; most probably due to the solar wind directly reflecting off the Moon's regolith.

Observations were carried out with the *Sub-keV Atom Reflecting Analyzer* instrument-- developed in collaboration between Sweden, India, Switzerland and Japan and was flown onboard the Indian Chandrayaan-1 spacecraft. For the first time researchers have mapped the energetic protons coming from the Moon, and found that up to one fifth of the solar wind protons reaching the lunar surface are reflected back to space. In fact, this may be a general feature of atmosphere-less bodies, such as Mercury, meteorites, and a few other moons. For instance, during its 2008 close encounter with Phobos, the European Mars Express spacecraft detected the signature of reflected solar wind protons from the surface of Phobos.

Magnetized regions on the Moon are called magnetic anomalies; most are on the far side. But it was found that they strongly deflected the solar wind, thus shielding the Moon's surface from solar wind radiation. The solar wind is also a potential source of natural water formation on the Moon. A better model of the lunar hydrogen circulation in the regolith is needed in order to understand how water molecules form in its upper layers. All of this would seem to be new considerations when planning for future lunar outposts and settlements.

O₂ Profiles. The Herschel Space Observatory (HSO) is the orbiting far-infrared observatory of the European Space Agency. It was launched May 14, 2009. With its "Water and related chemistry in the Solar System" project, the sole aim is to determine the origin, evolution, and distribution of water in Mars, the outer planets, Titan, Enceladus and comets. Water vapor plays a key role in Martian atmospheric chemistry and physics. HSO has observed Mars with its three instruments: the Heterodyne Instrument for the Far Infrared (HIFI), the Photodetector Array Camera and Spectrometer and the Spectral and Photometric Imaging Receiver (SPIRE). SPIRE has provided the first continuous spectrum of the Martian atmosphere in the far-IR to sub-mm spectral range, as well as the first complete set of water vapor and carbon monoxide content data in this range.

HIFI observations of 11-16 April 2010 are providing some interesting preliminary results. A global average temperature profile has been retrieved from the first simultaneous observations of two carbon monoxide isotopes. Between 40 and 80 km from the ground, the atmosphere appears to be more than 10° Celsius colder than predicted. Scientists also report the first sub-mm detection of molecular oxygen (O₂) on Mars, with an observational accuracy 10 times better than was done before. Also, the Martian atmosphere is richer in oxygen near the ground. The O₂ decreases rapidly with altitude.

MINUTES OF THE SEPTEMBER MEETING

SEPTEMBER 25, 2010 at the MVCO

The meeting was held inside the 16" building. President Sam DiRocco called the meeting to order at 8:08 PM. Roll call was taken. The password was answered by 18 MVAS members and the seven guests from Cardinal Mooney High School. They included: Darlene, students Emily, Erin, John, Mark, Ross, and Jeff. (all guests of Rich Mattuissi). Virginia and Steven Bartos were present, as usual. A call for the reading of the minutes was made. Greg Higgins moved to suspend the reading, Lou DiNardo seconded it. With no discussion called for, the minutes, were accepted as published by a unanimous voice vote.

TREASURER'S REPORT: The Report was given by Treasurer Steve Bartos. Roy McCullough moved to accept the Report as read. Rosemary Chomos seconded this motion. With no questions or discussion brought forth, the Report was accepted by a unanimous voice vote.

General Fund 8/1 thru 8/31 2010

OPENING BALANCE:	\$ 6,650.55
CLOSING BALANCE:	\$ 7,192.01
AVAILABLE FUNDS:	\$ 6,942.01

INCOME:

OTAA RAFFLE	\$ 604.00
OTAA REGISTRATION	270.00
DEPOSIT FOR 50" MIRROR	500.00
MVAS CLOTHING MERCHANDISE SALES	20.00
ASTRONOMY CALENDAR SALES	50.00
INTEREST	0.56
TOTAL INCOME	\$ 1,444.56

EXPENSES:

CK# 2734 MVCO RENT (PERIOD 2010-2011)	\$ 500.00
2735 25 - 2011 ASTRONOMY CALENDARS	161.88
2736 OTAA CHAIR/CANOPY RENTAL	241.22
TOTAL EXPENSES	\$ 903.10

Reserved Funds

KEY DEPOSITS	\$ 250.00
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CORRESPONDENCE: Chris Stephan sent a book for the MVAS Terry Biltz Library entitled "Analyzing Light Curves" by Grant Foster of the AAVSO. We thank Chris for this autographed addition to the library. A few envelopes arrived for Harry from JPL's "Night Sky" program. No other items were received.

COMMITTEE/OFFICER REPORTS: No active committees.

OBSERVATORY DIRECTOR'S REPORT: Larry Plante was unable to locate any wire diagram for the old 16" stage motor. It does appear to be wired for 220 volts. He believes that to install the new motor, the stage wiring needs to be traced out and probably modified because the new motor has a different wiring. The old motor is still working and we'll let it go until it fails, which shouldn't be too soon. This will give us time to for stage electrical upgrades. When asked, Greg said he usually closed down the well after the October meeting- and so it shall be this year. Larry would like to have the outside lights on the 16" building controlled by separate switches. This way one can have the back porch (west) light on for various activities (grilling), without having the front porch light (east & north) on. All lights now work from the same switch. All are either on or off. This was thought to be a good idea. Sam noted it would be a good

idea to finally ground the 12" building with its own grounding rod. It is currently grounded through the wiring of the 16" building- which it is connected to.

OLD BUSINESS: Phil Plante reminded all to do their best in selling the Christmas Raffle tickets. He had found more leftover tickets. We now have 212 extras instead of only 95. Sam would see if Lisa Boyer could set up another ticket sale at Wal-mart again, maybe not in such cold weather as last time. Rich Mattuissi suggested we try a different fund raiser next year if we want to get land. He also suggested we look at land in Amish country (Mesopotamia area) since they don't use electricity; implying no outdoor lighting. It was pointed out that we investigated this before and also that we want to have a site farther south, away from lake effect clouds and haze. A second site farther north also takes it farther away from the "central" area where most members reside. Phil noted that former MVAS president Jerry Jackson built his house in Amish country for these same reasons. A few years later, a neighbor built a house across the street who promptly aimed security lighting at his house. There are no guarantees.

Sam reported on the status of the pending 50" sale. The gentleman from Columbus has been having a difficult time getting the cash needed to complete this deal. The deal was for a cash payment. The sale offer was to expire at the end of August, 2010. No refund of his \$500 deposit. We had extended a month after he explained his situation. Now he wouldn't have the balance payment of \$4,500.00 until sometime in November (a tax refund). In lieu of part of the cash payment, he has offered a Meade GPS mount with a 12" SCT. This is valued at around \$3,000. The membership has voted for the cash deal, with income going to the OAD Fund for a second site (land purchase). The trustees had decided that the 12" scope was nice, but it would not serve the MVAS for our purposes. It would be more of a nuisance taking up too much space. Besides we already have enough telescopes; and we hardly use these.

The Trustees presented two options to vote on. (1) Let the original deal expire, as of August. But return the deposit, as being the polite thing to do. (2) Wait until the end of November. If he can't make the cash payment, the deal is off and he gets the deposit back. The 50" goes back on Astromart. A vote by hand count was taken. For option (1) there were zero votes to cancel the deal right now. Option (2) had 12 votes to extend the deal until the end of November- for a cash payment only. There would be a deposit refund if the deal falls through. Option 2 will be our course of action. Pandian asked about the offer from Canada. Sam noted that we'd have to crate and ship the mirror which would be both difficult and expensive to do. This was deal was not an option unless this buyer crated and picked up the mirror on their own, and at their own expense.

NEW BUSINESS: Phil Plante reviewed the MVAS 2011 schedule, as was presented to the Trustees prior to this meeting. Nearly everything centers on New Moon weekends being reserved for Scenic Vista and OTAA observing events. The first half of 2011 will be alright with meetings on the last Saturday of the month. Things get complicated after that and moving the meeting date up one week for the last half (June-December) seems to work best. This was not official yet, but the Trustees are leaning towards this option. They have however, selected May 7th for the Scenic Vista OTAA Stargaze and August 27th for our regular OTAA convention at the MVCO.

Members present seemed to agree that the 2011 Christmas Party should be on December 10th. Rosemary asked about the

Messier Marathon. The best date for this was March 5th. The weather is usually too nasty that time of year for an all nighter. No official Messier Marathon is planned, however a spur-of-the-moment star party is noted for that weekend should weather conditions permit and there is safe access to the MVCO.

A Galaxy Quest is tentatively set for April 2nd (New Moon). The Chili Cook-off will be April 16th (Full Moon). For reference, Easter is April 24th. Scenic Vista dates are the above May 7th, June 25th, and September 3rd. The only MVAS event slated for July will be helping at the YSU Festival of Arts- which is a daytime thing and only a few telescopes are needed for solar viewing. Steve Bartos was given the ok to order the same number of 2011 RASC Handbooks as for 2010.

GOOD OF THE SOCIETY: Rosemary has spoken with Agnes Bufwack who wanted to attend tonight's meeting. Poor weather prevented this from happening. Rosemary suggested to her that she try for the Christmas Party. It would be great to have Agnes meet the current membership. Rosemary told of a Star Wars convention to be held in Kinsman, OH on October 16th. Called the Edmond Hamilton and Leigh Bracket Day, it celebrates Hamilton who has written many science fiction books and Bracket who wrote "the Empire Strikes Back". Both natives of Kinsman. George Lucas has been invited. Benefit's the Kinsman Historical Society. Contact: edandleigh@rocketmail.com.

Roy and Jodi told of their road trips to Spruce Knob and Cherry Springs. Spruce Knob had the best skies but it got very cold. Cherry Springs was good too. It had domes for rent \$20/night. Bring your own scope. They suggested we look into a trip to Spruce Knob next year. It's a 5 hour drive. The Virginia Astronomy club goes there every month.

VISUAL REPORTS: Jodi and Roy continued with their descriptions of the two dark sky parks with observing reports. The Ring Nebula through their 25" scope was a much better sight without any filter, than they have had at home under any circumstances. Lou DiNardo has been imaging objects and has been following Comet Hartley 2. He has it passing 1/2 degree south of the Double Cluster in Perseus at 6:20 AM on October 8th. A good time to catch it with binoculars or camera. Phil Plante reported on a night using Titan and experiments with various filters. (See Observer's Notes). He also got 65 variable estimates in September, a Jupiter sketch and a sighting of Titania and Oberon (Uranus). Chris Stephan sent a report of getting at least 60 variable in September.

ADJOURNMENT: Adjournment came at 8:52 PM. We thank Rosemary Chomos for the pizza, wings and pies; and to Larry for supplying the pop. The next meeting will be at the MVCO on October 23, 2010. Meeting begins at 8:00 PM. Scheduled hosts are Harry Harker and Sam DiRocco. PASSWORD: name a crater or other feature with a proper name, as seen on a planet besides Earth. -minutes by Phil Plante

MVAS REMINDERS

Everyone should have their Christmas Raffle tickets by now and are reminded to do your best with them. Your support is much appreciated. We have the 4th MVAS Halloween Party on October 30 at the MVCO. Costumes are optional but always fun. Try for a get-up that will keep you warm *and* scary! Food is always part of our events, so bring something to share if you like (mini-OTAA). Stay tuned to the email list to see who will bring what. It will be a last quarter moon that night. If clear, there

might be observing done later on; but the DVD player will be going too.

The night of November 6 is a Saturday *and* a New Moon. No MVAS event has been officially planned, but this seems like a good night to spend at the MVCO; observing while the temperatures are still "civilized". It won't be long before the snow piles up and 32° F is a normal daytime high. Check emails to see who is going to the observatory and to make plans. We change back to Standard Time this same weekend so we have an extra hour to observe and to sleep-in on Sunday morning.

MVAS ACTIVITIES

Several MVAS members have been helping Chris Stephan with two projects via the internet. One program was called *Limeades for Learning*. It's a national program of SONIC®, in partnership with donorsChoose.org. Supporting U.S. public school teachers in local communities, SONIC provides the funds needed to obtain learning materials. People were to vote as often as they could (only once per day) via email for any particular project(s) they supported. Projects with the most votes would be funded. Chris had submitted four projects: 1) need 5 "Human Body Question" games, 2) need 30 calculators, 3) need 4 Moon globes, 4) 1 human skeleton model. Voting ends October 7th. By Oct. 1st, the Moon Globe had 125 votes, the skeleton had 91, calculators had 17 and games had 16.

The other project was to raise funds of \$1,600.00 by Oct. 1st to get the DVD "Mystery in the Sky" into production. Kickstarter is the firm that helps such fledgling projects get published. A few MVAS members became project backers- which helped meet the goal. By pledging various levels of funding, they will receive one or more DVDs in return, depending on the level they chose. As of September 27, there were 35 backers nationally that pledged \$2,195. The DVD project is now funded and it should be sent to backers sometime in November. One of the MVAS donors already has a DVD set aside for the MVCO library.

Observer's Notes.....

A SEPTEMBER SURPRISE

It was a Sunday night in September 2010. It was to be another clear night during a spell of super clear days and nights. I decided to go to the MVCO, arriving a little after 7:00PM. The Sun was about to set. Judging by the unusually deep blue sky overhead, I had a feeling this would be a night of very transparent skies. I opened up the 8" building, moved the 8" tube out of the way then rolled Titan into place. The covers came off to cool it down. In a still bright sky around 8:00 PM, I used Arcturus to give the collimation a quick tweak. It looked centered and good- the diffraction spikes were proof! This was the best collimation I've yet had on Titan. By 8:30 PM the landscape had turned dark and the sky was quickly catching up. I zeroed in on the close double star Izar (ϵ Boo). At 219x (with a 12mm Nagler), I was able to easily split it only in moments of steady air, with nice colors of lemon yellow and sky blue. The seeing was still a bit turbulent, but it was getting better.

I went to the variable star R CrB. This was the first time I was able to observe it with significant aperture in over a year. Using AAVSO charts (really deep "e" charts) I confirmed that R CrB was still dim. My estimate put it at 14.6 magnitude. I used 14.2 and a 14.9 magnitude comparison stars on the chart. They were fairly easy to see but the 15.2 comp star on the chart eluded detection. All this meant was that I would be seeing very faint

stars tonight. The faintest limit so far for Titan had been about 14.5 magnitude. Indeed, I would have excellent transparency and steady seeing all night. A rare and surprising combo. Midway through my estimate, master observer Bob Danko arrived and opened up the 12.5" scope. We both noted the prominence of the Milky Way. We chat for a spell; later he showed me Neptune in the 12". It was a nice view. But I had my observing plan to get back to.

Back on Titan, Cygnus was approaching the dark zenith. With hardly a second thought, I was quickly on the Veil Nebula (NGC6960). It was just visible without a filter. I next tried an assortment of nebula filters. The Meade OIII made the snake-like nebula really stand out. Almost like a photo. The Lumicon UHC had a more balanced view with more stars and a little less distinct nebula, but still very easy to see. The Burgess nebula filter made the nebula disappear. Next I tried an Orion Mars filter out of curiosity. Its spectral transmission graph shows that this Mars filter blocks out most of green wavelengths where light pollution emission lines hang out. This is also in the same range of peak sensitivity of dark adapted eyes (scotopic vision). I was stunned that this Mars filter gave the most pleasing view. True, it turned stars with a reddish tint a deep pink color. But I liked it. My main goal tonight was to get some faint variables done. Guess a little sight-seeing would be unavoidable.

Next stop was M29 and it reminded me of the Pleiades as seen in an 80mm short-tube. Lot's of faint specks of light hiding there. Then it was variables P Cyg and WX Cyg on my way to RS Cyg. RS is near the Crescent Nebula and after 75 estimates over the years, I've never seen the Crescent. Tonight I detected a glow was there- without a filter. The UHC showed a faint crescent shaped glow. The Mars filter also showed a glowing crescent but it turned RS Cyg into a crimson-electric star!

That was "way too cool". I wanted to try the North American- but I had to leave Cygnus for other variables. Next I went to the Ring Nebula because RX Lyr is nearby. I explored the Ring at 219x. A bright glowing donut with a blue-green tint. No central star, but the interior was very bright. Several 15th mag. stars were seen nearby. Moving to RX Lyr, I could not see it. A 15.0 magnitude comp star was the faintest thing I could see.

After Lyra, I went to Delphinus and got four variables (S, T, V, and U). γ Del was a fine golden double in the 25". Checking out Sagitta was worth the effort. M71 was spectacular. It reminded me of what M11 looks like in a 10". At 219x it filled almost half the field. Easily resolved with tons of faint stars fading off into the background. Vulpecula was next and I did some MVAS homework; splitting the homework doubles. The Coathanger has a few nice pairs. The small open cluster off the Coathanger, NGC6802, was a tough one. I am surprised I once spotted it with the MVCO 8". My last stop in Vulpecula was the Dumbbell (M27). WOW! The hour glass shape was obvious with a 17mm Nagler (151x). It was a solid fluorescent glow with no sense of transparency. Its bluish-grey color looked solid. Amazingly, the central star and one near the edge of the nebula were spotted. The UHC and Mars filters only made a modest improvement. The extensions at either end were seen much better without them. These complete the football shape of the nebula. I have never experience M27 like this before, outdoing views in the MVCO 16" Cass which had been the best till now. A sketch was made. Getting to be after 12:00 AM, I took a break and had a snack. Climbing up and down a ladder takes a toll.

By 12:30 AM I was scouting out a half dozen or so variables in Cassiopeia and Perseus. M103, WZ Cas and the Owl Cluster were special treats. Homework doubles got done. The Double

Cluster was sparkling as you might guess. The red variable between them is AD Per and was shining at 7.5 magnitude. Fatigue was setting in making my work go a little slower. Another quick break was followed by a sketch of Jupiter. On the north edge of the NEBn, there was a notch or bay crossing the Central Meridian. A dark condensation was within it. The SEB was not seen, nor was the GRS in view. Moving north to Uranus, I detected one hemisphere (N.) had a slightly deeper shade of green-grey. Limb darkening was suspected. At closer inspection at 370x (7mm Nagler) I spotted two faint points of light which turned out to be Titania and Oberon. Checking my sketch with a planetarium program the next day, confirmed the identities. It was my first sighting of these moons (13.5 and 13.7 magnitudes respectively)

Winter constellations were coming up! More goodies! Now past 2:30 AM, I checked out M33. An obvious white glow but no spiral shape seen. I did notice the HII star forming region located within M33, it being NGC604. M31 was next on the list but clouds moved in fast from the NW. Drat! I still had hours to go! But like all watchful mom's, Mother Nature told me to call it a day. Play time was over. By 3:00 AM everything was stowed and closed up. I touched up my sketches before crawling in the car to sleep. I thought of what just transpired as I dozed-off. It was a night one lives for. Both the sky and the 25" were terrific. I was really surprised at how well things went. Others routinely do these things, I'm sure. For me, it was one of my best nights of observing, ever. I'm thinking that Titan is the best kept secret in the MVAS. It performed just like you'd expect. Anyway, like they say; "That's my story and I'm sticking' to it!" -Phil Plante

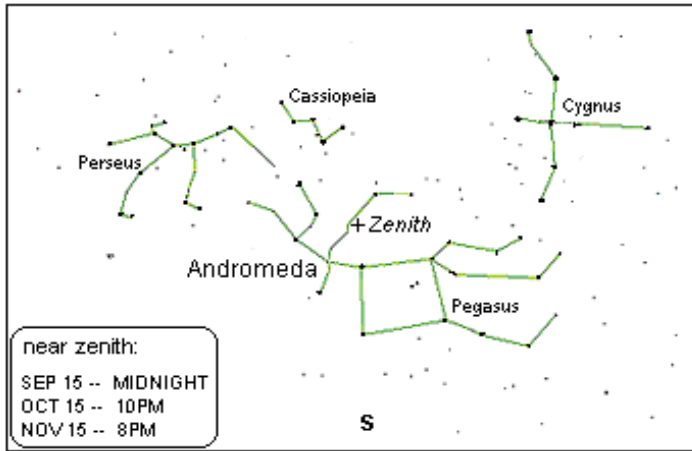
MVAS Homework:

NGC 891: It's an edge-on spiral galaxy about 30 million light-years away in the constellation Andromeda. It was discovered by William Herschel on October 6, 1784. For decades the discovery was credited to his sister Carolyn Herschel. Apparently he recorded it as her observation. It seems she was recording the observations he made that night, using his 20ft scope. All while making her own scans of the sky. When compiling his fifth catalog, he confused her independent discovery of M110 as being a discovery of NGC891. Later it was Carolyn that noted the mistake. This mistake was duplicated in the catalogues of others; including Admiral William Henry Smyth, who was known for keeping careful observing records. The mistake was included in his catalog *Cycle of Celestial Objects*.

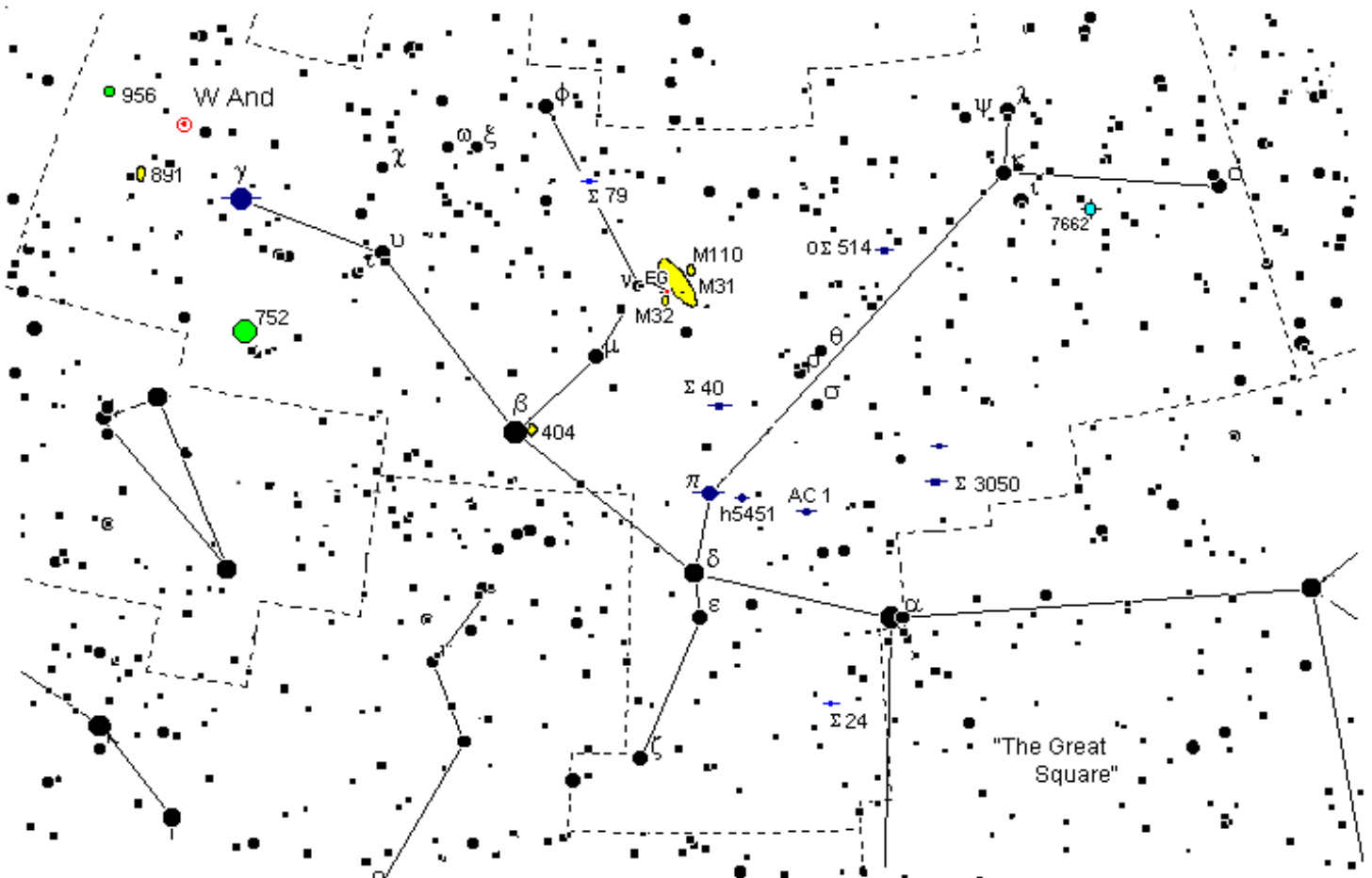
The dust content and gas/dust ratio of NGC 891 is very similar to that of the Milky Way. The patchy reddish color (in images) of the galaxy's disk is as much due to late-type red supergiant stars as it is to dust clouds. In images made with huge telescopes, faint gas dust filaments or sprays are aligned perpendicular to the galactic plane of NGC891. The process behind these are not well understood. Stellar winds and supernovae are thought to play a role. There is also a huge cold gaseous halo around the core.

Tenth magnitude NGC891 a member of the NGC 1023 Local Supercluster. Visually, it can be seen in small to moderate size telescopes as a fairly faint, spear of light. The dust lane is visible in larger scopes under dark skies. It is located about 4 degrees due east of Almach- the nice double star γ Andromeda. Put Almach in your eyepiece and let the sky drift through for about 14 minutes. NGC891 should be in the field of view. It is often considered to be one of the finest deep sky objects -- but surprisingly Messier never cataloged it.

Constellation of the Month — Andromeda



Andromeda can be found attached to the "Great Square" of Pegasus. In dark skies you can see the faint smudge of light that is M31 - the Andromeda Galaxy. It's 2.5 million light years away. Pretty far to see with the naked eye! In binoculars you can trace out its fainter extremities and its oval shape becomes more apparent. Thru a scope you'll pick out M32 and M110. With a scope 18" or bigger, you might have a chance to spot a few of M31's own globular clusters. NGC891 is a good example of an edge-on galaxy while NGC404 is an easy find for such a faint galaxy. The planetary nebula NGC7662 is known as "The Blue Snowball"-- what color do you see? Gamma And (Almach) is thought by some to be the finest double star. It certainly rivals Alberio, over in Cygnus. What would be your choice? If you're not too cold yet, do try to find the other double stars shown on the chart. Last but not least, check up on the variable star W Andromedae. Even if you don't make a magnitude estimate, check it every observing session. Watch it either brighten into view or slowly fade away. This a good way to develop the habit of checking on variable stars. One day you may even try to estimate its magnitude! Remember- have fun!



Faintest stars shown are 7th mag.

DEEP SKY				STARS				Check list		Instruments used: _____ on _____ _____ on _____ _____ on _____ _____ on _____
M 31	4.4mag	125'x 40'	galaxy	DOUBLES:				_____ Σ 24	_____ M 32	
M 32	9.0	6'x 4'	galaxy	mag.	sep.	"colors"		_____ Σ 3050	_____ M 110	
M 110	8.9	14'x 7'	galaxy	Σ 24	7.6, 8.4	5.2"	yellow, bluish	_____ Σ 3048	_____ N 404	
N 404	11.2	2'x 2'	galaxy	Σ 3050	6.5, 6.7	2.0"	both yellow	_____ π	_____ N 752	
N 752	5.7	49'	open cl.	AC 1	7.3, 8.3	1.8"	yellow, orange	_____ Σ 40	_____ N 891	
N 891	10.8	9'x 2'	galaxy	π	4.4, 8.6	36"	yellow, blue	_____ pair	_____ N 956	
N 956	8.9	7'	open cl.	Σ 40	6.8, 9.2	12"	yellow, ash	_____ Σ 79	_____ N 7662	
N 7662	9.2	17 sec.	pl.neb.	0Σ 514	6.2, 9.7	5.2"	yellow, red	_____ Σ 79	_____ N 7666	
N 7666	5.9	14'	open Cl.	Σ 79	7.6, 9.8	5.4"	white, green	_____ γ	_____ W And	
W And	6.7 to 14.6mag.	396 days		γ	5.1, 6.3	10"	gold, blue	_____ M 31	_____ mag. on ___/___/___	

Solar and Lunar (ET).

Date	Sunset	Moonrise	Moonset
1	6 : 19	2 : 27A	x : xx
5	5 : 15	x : xx	5 : 37P
9	5 : 10	x : xx	EST 8 : 06P
13	5 : 07	x : xx	14th 12 : 14A
17	5 : 03	x : xx	3 : 10P
21	5 : 00	4 : 49P	x : xx
25	4 : 58	8 : 54P	x : xx
29	4 : 56	12 : 29A	x : xx

PLANET WATCH

MERCURY	JUPITER	SATURN
Sets	Sets	Rises
6:41P	4:12A	5:33A
6:42P	3:55A	5:20A
5:44P	2:39A	4:06A
5:47P	2:23A	3:53A
5:51P	2:07A	3:39A
5:56P	1:51A	3:25A
6:02P	1:36A	3:12A
6:07P	1:21A	2:58A

November 2010

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

Asteroid for November 2010 (16) Psyche

Date	Rises	RA		Dec.	Alt.	Azm	Magnitude
		hr.	min				
		<i>topocentric</i>					
1	8 : 58 PM	EDT	05 : 31.6	+18.9	32°	92°	10.1
7	7 : 32 PM	EST	05 : 29.4	+18.7	48	109	10.0
13	7 : 06 PM		05 : 26.2	+18.6	52	116	9.9
19	6 : 39 PM		05 : 22.2	+18.5	57	125	9.8
25	6 : 11 PM		05 : 17.4	+18.3	61	135	9.6
1	5 : 42 PM		05 : 12.2	+18.2	64	148	9.5
			<i>(midnight ET)</i>		<i>(at midnight ET)</i>		

Date UT hr Celestial Highlights

5	16	S. Taurid meteors peak
6	4.9	NEW MOON
12	16	N. Taurid meteors peak
13	16.7	FIRST QUARTER MOON
14	4.0	M31 at zenith
15	5.0	Algol at minimum
17	5.0	Jupiter 6.9° E. of Moon
17	22.0	Leonid meteors
21	17.5	FULL MOON
24	4.0	Moon 1.1° S. of M35
28	20.6	LAST QUARTER MOON

Variable Star of the Month: EG AND 2.9 - 3.8mag IRREGULAR

LUNAR OCCULTATIONS FOR NOVEMBER 2010

Civil (24hr) EST			UT			Moon			Star			event		dbl./sep.
date	hr	min sec	date	hr	min sec	Ph	% illum.	alt	azimuth	name	Mag.	PA		
8	17	: 37 : 45	8	22	: 37 : 45	D	9+	11°	222°	thetαOPH	3.3	88°		0.20"
8	18	: 18 : 41	8	23	: 18 : 41	D	9+	6	229	SAO 185346	7.3	122°		NA
12	20	: 19 : 58	13	01	: 19 : 58	D	43+	25	219	ZC 3066	6.0	128°		0.100"
13	22	: 13 : 43	14	03	: 13 : 43	D	54+	19	238	ZC 3187	6.0	002°		NA
16	20	: 28 : 43	17	01	: 28 : 43	D	80+	54	176	ZC 3524	6.9	68°		0.36"
17	19	: 51 : 30	18	00	: 51 : 30	D	87+	53	143	ZC 89	6.5	71°		0.100"
19	1	: 26 : 32	19	06	: 26 : 32	D	93+	40	253	ZC 233	6.2	89°		0.100"
20	22	: 28 : 14	21	03	: 28 : 14	D	100+	65	138	zeta ARI	4.9	113°		NA
23	21	: 23 : 09	24	02	: 23 : 09	R	93-	27	82	1 Gem	4.3	296°		0.106"
24	0	: 17 : 37	24	05	: 17 : 37	R	93-	58	115	3 GEM	5.8	263°		0.60"
26	23	: 35 : 18	27	04	: 35 : 18	R	68-	15	86	ZC 1344	6.5	264°		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=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.....

MVAS Astroimagers were busy during that stretch of clear skies in early September 2010. Photographer and object given below each image.



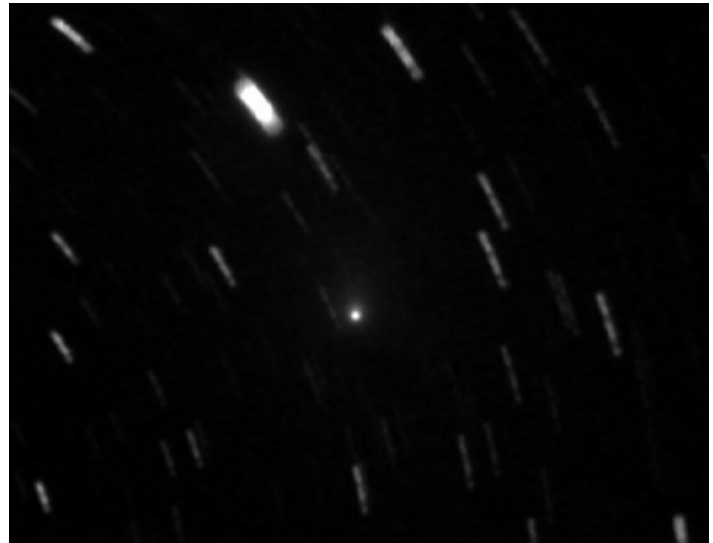
Lou DiNardo: M2 with 10" Meade SCT



Lou DiNardo: M57 with 10" Meade SCT



Bill Pearce: east side of Double Cluster with Orion 110 ED refractor.



Lou DiNardo: Comet Hartley 2 with 10" Meade SCT



Bill Pearce: M27 with Orion 110 ED refractor.



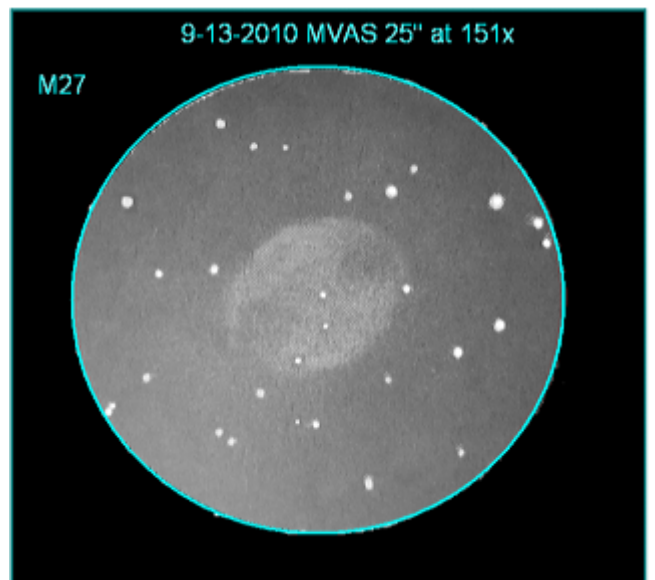
Bill Pearce: M103 with Orion 110 ED refractor.



Friend of the MVAS Isaac Kikawada sent this great shot of Aurora Borealis as seen from California.



Don Durbin sent photos from the Fanklin Institute in Philadelphia. They have this 36" SCT that is not in use, due to light pollution.



Phil Plante made this sketch of the Dumbbell (M27) using Titan. It was a highlight object noted in the October Observer's Notes.