



Roanoke Valley Astronomical Society



News About Amateur Astronomy
In Southwestern Virginia
<http://www.roavas.org>

Vol. 20 - No. 12

December 2003

Mass Coronal Ejections Can be Fun...

Fun in the Night Sun

Mark Hodges

Boy did I have a good time Wednesday (10/29) and Thursday (10/30) night!

Isaac and I had been following all the information

about the extremely powerful solar flare earlier in the week. I decided to go out to the Great Valley overlook at milepost 100 on the Parkway Wednesday night.

I got home from work and started

gathering together all the camera equipment that I wanted to take with me. About 7 p.m. **John Goss** called and informed me that there was a display going on at that time. I finished loading up all my gear and

headed for the overlook. As I was driving north I could see some of the aurora from the car.

After I got to the overlook there was a display of green

red band that stretched from the SE sky near the Pleiades all the way to the SW sky. Within a few minutes of my arrival I was starting to get company at the overlook, and by 8 or

9 p.m. I had about about 12 or 15 people there with me. **Lynn Slonaker and his wife** were there, also several people who remembered me from the Mars watch.



aurora going on, and not a cloud in the sky; but by the time I got out my gear it had dissipated. The horizon was a bright green stretching about 10 degrees up into the sky from the NE to the NW horizon, and a faint

I had started taking pictures shortly after I got to the overlook with film and digital cameras. Auroral activity was constant the whole

Continued on Page 4

The Sky Below Our Feet

By Clark M. Thomas

Who thinks of the Earth's core when we are gazing out into the firmament? I didn't – until I saw a NOVA show about the periodic reversal of Earth's magnetism.

Mystery Object

Can YOU identify the 9.5 mag. object below? Horse around, and air mail your best guess to Dave Thomas, our Mystery Object Columnist, at

thomasde-ka8inl
@worldnet.att.net



It seems that every few hundred thousand years our planet's poles flip, and the last time it happened was over 700,000 years ago.

This show presented evidence that our Earth's magnetism is now preparing to start flipping again in maybe three hundred years. Core samples in historic volcanic lava flows in Hawaii show how changes are rapid, but erratic, and how the Earth could lose most of its magnetic shield for up to three thousand years until the process stabilizes.

Recent auroral displays following our Sun's outbursts will be commonplace everywhere. We could have four, or eight, magnetic

poles for a while! Meanwhile, deep space energy will temporarily penetrate deeper into our biosphere, with deadly effects.

Whatever may have been alive on Mars four billion years ago was exposed to permanent doom when its core cooled and solidified, losing its electromagnetic dynamo, Solar and galactic winds eventually pushed away most of Mars' atmosphere and water vapors. Fortunately, Earth is much larger than Mars, and our core cools only 100 degrees every billion years.

If all this electromagnetic drama happens on little Earth, imagine what happens elsewhere!

Astro-Quiz

If we consider them from an "absolute magnitude" perspective, how many stars within 5 parsecs (about 16 light-years) of Earth actually qualify as "first magnitude"?

Answer to Last Month's Astro-Quiz: Roanoke's latitude is $37^{\circ} 16'$ North, which is also the celestial *declination* overhead. From overhead to the horizon is an angle of 90 degrees. Arcing southward from overhead, we reach the celestial equator (0°) after tracing an angle of $37^{\circ} 16'$. Continuing another $52^{\circ} 44'$, we reach our southern horizon, at declination $-52^{\circ} 44'$ ("-" meaning "south"). Objects farther south do not rise above our horizon. Of the 22 stars of first magnitude (i.e., of magnitude 1.50 or brighter), Canopus, at declination $-52^{\circ} 40'$, is the most southerly to break our horizon. Five other "first magnitude" stars – Achernar, Rigel Kentaurus, Hadar, Acrux, Mimosa – do not.

The Roanoke Valley Astronomical Society is a membership organization of amateur astronomers dedicated to pursuit of observational and photographic activities. Meetings are held at 7:30 p.m. the third Monday of each month at Center in the Square Roanoke. Meetings are open to the public. Observing sessions are held one or two weekends a month at a dark-sky site. Yearly individual dues are \$20.00. Family membership is \$25.00; student membership is \$10.00. For information, call the RVAS Message Line at 540-774-5651. Articles, quotes, etc. published in the newsletter do not necessarily reflect the views of the RVAS, its editor, officers, or individual members.

RVAS web page: <http://www.roavas.org>

Officers/Executive Committee: Paul Caffrey, President (345-2847); Katherine Hix, Vice President (334-2443); Carol Mesimer, Secretary (334-1177); Lynn Slonaker, Treasurer (774-5695); Dennis Stevens, Executive Committee Member-At-Large (989-8801); Dave Godman, Immediate Past President (774-3337); John Goss, Past President (966-4606); Clark M. Thomas, Newsletter Editor (427-1873, clarkt7@cox.net). Dave Thomas, Mystery Object Columnist (thomasde-ka8inl@worldnet.att.net).

VAAS 2003 Meets in Chesapeake, VA

By Star Man

What catastrophic events do the Moon, Mars, Mercury have in common; and what are the mechanics of those events? Where are we in the Milky Way Galaxy, and why can't we see the galactic center? How has the public felt about Mars? How can amateur astronomers

Last Month's Mystery Object

The Mystery Object for the month of Novober was the Pinwheel Galaxy. M33 in Triangulum is the ethereal November Mystery Object.

Also known as NGC 598, the Pinwheel is at 1h31m, +30 deg 24'. It is 700,000 ly from M31 in Andromeda, and spans 50,000 ly, compared to 100,000 ly for M31.

The Galaxy is visible in binoculars. The spiral structure is apparent in 6" scopes. In 12 to 20" scopes at low magnification the object shows great detail. Some exceptional eyes have seen M33 under ideally dark and transparent skies, making it the most distant naked eye object.



with modest sized telescopes help the professionals?

Those attending this year's Virginia Association of Astronomical Societies conference in Chesapeake found out the answers to these questions, and much more. There were about 25 people registered, representing 7 amateur astronomy clubs.

Paul Caffrey, Mike Good, and John Goss endured the 5-hour drive for the day long event.

The morning began with planetary expert Eric Douglass giving his talk: "Impact Features of the Solar System." Many of you may remember Eric speaking at VAAS 2001 in Roanoke, and know of his interesting and informative presentations. What are the primary factors affecting impact mechanics (i.e., crater formation)? The planet's atmosphere, surface structure, and gravity are the most crucial factors which determine the shape and extent of the resultant crater.

We all know it, but usually don't think about it. We live in the Milky Way Galaxy. Therefore, everything that is in the galaxy, from Vinton to New York City, from Jupiter to Alpha Centauri, from pretty open clusters

to small planetary nebulae, are in a specific direction and specific distance from Roanoke. In "Morphology of the Milky Way," John Goss emphasized how the structure of the galaxy directly affects our view of the night sky. So, where is Roanoke? It is located on the inside of a spiral arm segment which is located 3 or 4 arms from the center of the galaxy.

We have all seen grade "B" movies of Martians attacking earth in some form or another. Remember "War of the Worlds," "Mars Attacks," and, of course, the classic "Mars Wants Women"? But these images do not match the recent amazing discoveries of the Red Planet. Michael Unerring of NASA's Large Research Center presented an overview of the public's perception of Mars yesterday and today. Our view of Mars will probably change again in the next two months when the next wave of Mars bound spacecraft finally reach their destination.

Asteroids are generally considered to be lonely rocks far from earth with only a passing interest for amateur astronomers. However, Dr. David Durham challenged that notion in his talk:

Continued on Pg. 4

Continued from Pg. 3

VAAS 2003...

"Measuring the Shape of Asteroids and Lunar Mountains by Recording Occultations." The amateur, armed with a modest telescope and short wave radio, can make important observations which can be used to determine the shape and size of small asteroids many millions of miles away.

For more information about asteroid timing see:

<http://www.asteroidoccultation.com/>

<http://www.lunar-occultations.com/iota/iotandx.htm>

Next year's VAAS will be hosted by the Charlottesville Astronomical Society, making it a short 2 1/2 hr. drive from Roanoke!

Continued from Page One

"Sunny" night...

time without much change. About 10:30 most of the people had left. Isaac got there from class, and he set up his camera. Around 11 the aurora started to fade. Then all of a sudden we started seeing bright spikes rising up due north, and spreading out around the Big and Little Dipper. This display lasted until about midnight, and then everything just faded out.

The Local Group

By Genevieve Goss

Despite the absence of a formal communication plan, RVAS members frequently use the "smoke signal" approach to amateur astronomy. Employing email forwards of postings from astronomy users' groups, reminders from JPL and NASA, and phone calls when things really turn exciting, club members often notify each other of "must see" items and events.

Recent auroral displays prompted round-robin phone messages and resulted in some excellent observing and photographic opportunities. John Goss even received a phone call from a former astronomy student who couldn't believe his eyes at the intense auroral activity!

If you would like to send or receive notification of astro-events, please let one of the Executive Committee members know. Perhaps, we can extend our informal notification process to a calling tree, if there's enough interest. As our website becomes more viable, alerts or warnings could be posted there.

At the November meeting of the Blue Ridge Astronomy Club in Forest, President Jim Dishman unveiled the Beta public outreach packages provided in a joint effort by the Astronomical Society of the Pacific and the National Science Foundation. Once these learning packets become available, RVAS will be able to use them in school and public demonstrations. More will follow in early 2004.

Thursday night I almost didn't go out, but after talking to John I headed up again. I arrived about 8, and there was one couple already there from Wednesday. Clouds along the northern horizon were blocking a faint green glow. However, there was also a faint red band of aurora in the SE sky. Every now and then a spike would stretch up into the northern sky. Later that evening Isaac joined me again, but the clouds were closing in. Then around 11 p.m. we had a jump in auroral activity that lasted about 20 or 30 minutes. All the while cirrus clouds were blocking most of the sky. So we decided to pack it up.

It's amazing how much sleep you can lose over a couple of Solar flares! But I'd do it again.

Focus on Observing...

November Meeting of the RVAS

By John Goss

Observing is what amateur astronomers do best; and there was certainly a lot of it in October and November. Our sun has been active of late, and there was a large coronal mass ejection near the end of October. When the ionized particles reached earth and collided with the ionosphere, magnificent auroral displays occurred that made for splendid viewing over Roanoke. **Mark Hodges**, using his Canon digital camera, captured beautiful images showing red and green curtains and spikes from the aurora on October 28-30. You may have seen them on the local news.

Due to the efforts of Mark Hodges, the name of the late **Gary Close** has been honored in the sky. For those of you who are unfamiliar with Gary, he was a past president of the RVAS, and long time astronomy enthusiast. Gary was the Hopkin's Planetarium director at the time of his passing in February 1999. Minor Planet 54902 has been name **Asteroid Close** under the auspices of the International Astronomical Union. The IAU is the officially recognized governing

body responsible for, among other things, solar system nomenclature. Mark submitted Gary's name, along with the proper documentation, to the IAU back in July, and he was notified in October of its acceptance. Here are some facts about Asteroid Close: Currently it is 20.9 magnitude near Alpha Librae, and its distance is about 337 million miles. If you want its ephemeris or orbital elements go to the Harvard Minor Planet Center : <http://cfa-www.harvard.edu/iau/Ephemerides>

A great total lunar eclipse visible from Roanoke occurred on November 8. Clear skies greeted the nearly 200 people who joined RVAS members at Explore Park for a few hours of eclipse watching. For the next total lunar eclipse opportunity you will need to wait until May 2004. Thank you to all Society members who participated!

Effective Observing

As stated initially above, observing is what amateurs do. **Isaac Campbell** tackled this fine art in his talk "Visual Observing: An Introduction to the Science and Techniques of Observational

Astronomy." He covered a wide range of subtopics that were all connected to the common theme "The Biology of Vision." This sure makes sense, since the eye is the most important component in observing. Eye physiology explains why the trick of averted vision works, why red light is used at the telescope, and why pirate's eye patches are becoming common during observing sessions.

For those of you who want to see deeper, Isaac discussed a few important techniques for picking out the dimmest of the dim: letting the object's light image build for a few seconds, tapping the telescope thereby utilizing the eye's increased sensitivity to motion in low light, placing the eye correctly to get the most out of averted vision, breathing deeply (not hyperventilating) to saturate oxygen levels in the eyes, and avoiding bright light the day of the session.

What would be good targets on which to test these tips? Isaac listed a few of his favorites. Among them were 4 double deep sky objects visible on cold December nights. Binoculars will eas-

Continued on Pg. 6

Continued from Pg. 5

How to "Go Deep" Visually...

ily show Kemble's Cascade, a 2 degree string of over 20 stars ranging from 6th to 8th magnitude in the constellation Camelopardalis. At its southeastern tip lies the open cluster NGC 1502. This unusual stellar alignment is thought to be coincidental. Illustrating wide differences in open clusters, the next double features NGC 2158, a small dim open cluster in Gemini. It's easy to find, as it is right next to big, bright binocular object M35. Another 2-for-1 target is NGC 2438, which is a planetary nebula in the foreground of M46. Both 2158 and 2438 will be difficult for small telescopes, and they present a good opportunity to take your averted vision to the limit. The fourth double is the Christmas Tree Cluster/ Cone Nebula combination in Monoceros. The cluster part is not too difficult – it does look like an inverted Christmas tree with lights alit. However the Cone Nebula, at the top of the "tree," is more of a challenge. Try using a contrast enhancing deep sky filter and averted vision while tapping the scope. It just might pop into view!

There you have it — tips and targets for December!

A Road Trip to Pilot Mountain

By Mike Overacker

I love astronomy. I love to observe and photograph the skies. I really like meeting new people with similar interests. That's why I went south on Friday, October 24, to observe with some new Internet friends in the Winston Salem Astronomical League.

Robert Thompson emailed me to let me know they had made arrangements for the use of Pilot Mountain State Park. I had to get there before the park was closed. I had a bit of trouble finding my way to the park; but I managed to squeeze in there right after 7 p.m.

Bob Thompson spoke up and welcomed me to the site. I announced who I was and where I was from. The group welcomed me with open arms.

A Celestron C-8 belonging to Paul Jones was purring. Bob Thompson and his wife Barbara were there with their Orion XT10 10" Dob. V. Nestohr had his Orion 8" Newtonian. In the middle of the parking area was Steve Childers and his mammoth 17.5" Discovery truss Dobsonian.

The skies were clear, and the light spilling over

from Mt Airy was minimal. Overall, it was a good night for viewing on the mountain, but airborne moisture content made the atmosphere a bit less than completely transparent.

I set up my 8" and 10" Meade LX200 Classics, and commenced to shooting images with my Canon EOS 10D digital camera piggybacked onto my 8" Meade.



M31 - M. Overacker
(with Canon EOS camera)

Between images, I walked around and talked with everyone I could. I decided to join their group, and paid my dues to make it official. I was impressed with their group and their site, and I was happy that they let me join them for this evening. It was money well spent.

Paul Jones was doing some film astrophotography with his scope and a Nikon camera mounted for film

Continued on Pg. 7

Continued from Pg. 6

imaging. Mr. Nestohr was really enjoying himself with his scope, and when I jumped over to check his views, I was impressed with his scope. He had some really nice views in that 8" Orion. I was informed that he had a family, and his free nights to view with his scope are few and far between. He certainly made good use of his time that evening.

Steve was hunting some fainter game with his 17.5" Discovery, and Stephans Quintet was in the scope, as well as the Veil Nebula, and others. You cannot say that size doesn't matter. The light gathering power of that 17.5" mirror is incredible, and a big Dob is in my future, for sure.

After a while, everyone started to get a bit tired. At

around 11:00, we decided to pack it in. It was about 12:45 a.m. when I decided to swing by Cahas Mountain Overlook to see if any of my friends from RVAS were up there. Sure enough, **Mark Brown** and **Isaac Campbell** were still there; and as I stepped out of my truck, I looked up to an incredible sky. It was way better than what we had at Pilot Mountain.

I started to think I would have been better off staying at our site – but then I thought back and realized I would have missed meeting my new friends, viewing from a new place, and having a great new astronomy experience.

I think networking with regional clubs could be a good idea. It might work for you. It worked for me.

Saying "Hasta la Vista, Baby" to 2003

It's time once again for the annual RVAS holiday bash. This shameless excuse for fun and merriment will be tamed only by our setting, the Science Museum.

Don't forget to show up on the fifteenth at 7:30 p.m. Last year's party had no poopsters. Be there, or be square. Who knows?... maybe Bad Santa will show.

The club will be providing drinks (of the G-rated kind), and it is requested that the members bring their finest munchies for all to admire.

Best of all, you still have time to buy RVAS mugs for Christmas gifts! Come early; supply is limited.



Thanks for this very cool lunar mosaic goes to RVAS member, **Gary Hatfield**, from Thaxton. He took this progression from partial to total at the second and final lunar eclipse for 2003, on November 8th. Thanks also go to the many club members who came out to the Explore Park Overlook to assist the scopeless public. Not only did guests get to see a darkened moon, but the strange darkness during totality allowed us to impressively show visitors such gems as the Double Cluster and Andromeda's M31.

Society Calendar of Events and Activities for December 2003

DECEMBER MEETING: Monday, December 15th, 7:30 p.m. fifth floor meeting room, Center in the Square, Roanoke. Tonight's meeting will be our annual social. Bring a favorite munchie to share with the group – and enjoy an informal evening of conversation, short topics, and surprises!

“MEMBERS ONLY” WEEKEND OBSERVING SESSIONS: Unless otherwise noted, observing sessions are held at Cahas Mountain Overlook, milepost 139 on the Blue Ridge Parkway.

— **Friday and Saturday, 12th and 13th.** Sunset is at 5:03 p.m. Astronomical twilight ends at 6:36 p.m. The Moon rises at 8:21 and 9:24 p.m., respectively.

— **Friday and Saturday, 19th and 20th.** Sunset is at 5:05 p.m. Astronomical twilight ends at 6:39 p.m. The Moon sets at 2:07 and 2:42 p.m., respectively.

— **January Sessions:** 16th and 17th; 23rd and 24th.

FRANKLIN CO. PARKS DEPT./RVAS PUBLIC STARGAZE: The next session is March 13th, 7:15 p.m., Franklin Co. Rec. Pk.

ROANOKE CITY PARKS DEPT./RVAS PUBLIC STARGAZE: Saturday, December 13th 5:30 p.m., Cahas Overlook, milepost 139, Blue Ridge Parkway. Free. Call 540-853-2236 to register. (Next month: January 17th, 6:00 p.m., Cahas Overlook.)

RVAS EXECUTIVE COMMITTEE MEETING: Meetings are now held the first Tuesday of each month; contact one of the officers regarding specific location and time information.

Roanoke Valley Astronomical Society
740 Arbutus Avenue
Roanoke, VA 24014-2504