Roanoke Valley Astronomical Society

Amateur Astronomy News and Views In Southwestern Virginia

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November RVAS Meeting Notes

Youth Shines Brightly

By Dan Chrisman, RVAS Secretary

[The highlight of the meeting was seeing one of our youth rewarded for outstanding work. Jumping to the **AWARDS** section for those details will not hurt my feelings. But don't forget to jump back. DC]

President **Michael Good** began our November 17 RVAS monthly meeting only five days after the European Space Agency's Philae spacecraft thrice landed and twice bounced to a landing on comet 67P/**Churyumov-Gerasimenko**. With his feet firmly planted, **Michael** launched into introductions of new members and guests. Front and center were new members **Joel Ray** and his son **Carson**. The new members comfortably ensconced to our President's right were the four **Bradleys** (**Ray**, **Rene'**, **Alexander** and **Darien**). Guest **John Pero** attended his second consecutive meeting and **Lynn Slonaker** attended his second meeting after a long absence. It was nice to see **Randy Walker** back after several months. Similarly, **Gary Hatfield** was accompanied by his wife **Elizabeth** and his two stepdaughters **Brooke** and **Madison**.

Vice President **Rand Bowden**, poised to assume ultimate power if necessary, reminded us of the club discounts for purchasing a 2015 "Astronomy Magazine's Deep Space Mysteries" Calendar and a 2015 Guy Ottewell Astronomical Calendar. Under his watchful eye, transactions transacted. Some great deals remain.

Madison Denham displays her 2014 Horkheimer/O'Meara Journalism Award, Second Place in the national writing competition juried by the Astronomical League.

Photo by Elizabeth Hatfield

(*Meeting Continued on page 2*)

(Meeting Continued from page 1)

OBSERVER REPORTS:

Opening the floor to members' observing reports, **Mark Hodges** described his attempt to view the launch of Orbital Sciences Corporation's Antares rocket from Wallops Island. His saga began with a Monday trip to Cahas Knob Overlook where the flight's postponement (a boat down range) thwarted his attempt. For the second attempted launch, local inclement weather cancelled his second Cahas Knob Overlook visit; however, he viewed a live video stream of the Antares' failed launch and multiple explosions.

Randy Walker shared his recent trip to McCormick Observatory on the University of Virginia campus in Charlottesville. He and Deborah particularly enjoyed the 1880's telescope (a 26 inch **Alvan Clark** refractor), driven not by electric motors but by weights (similar to the clock in Monticello). He encouraged others to visit during the free semimonthly Friday public sessions. (See http://www.astro.virginia.edu/public_outreach/schedule.ph)

Our membership is entranced by Vice President **Rand Bowden** hawking Astronomy Calendars.

Photo by Carolyn Baratta

FEATURED SPEAKERS:

Watson/Crick/Franklin, **Larry/Curly/Moe**, and "**Tinker-to-Evers-to-Chance**": RVAS members enjoyed a subtly choreographed trilogy courtesy of **Baratta-to-Goss-to-Good** that aroused our amateur astronomy aspirations.

Frank Baratta's "What's Up" presentation provided a potpourri of potential, pristine targets during November and December skies: the Great Square of Pegasus, the Summer Triangle, the Milky Way, Mars, Uranus, Neptune, the Owl Cluster, the Double Cluster, the Andromeda Galaxy, Messier 13, the star Algol (the Demon Star), our Moon and the Leonid Meteors. Always a good sign, his presentation inspired an audience discussion, this time concerning astrophotography.

John Goss implored us to "go outside and enjoy our great hobby", a pastime that uniquely searches for answers to the "Big Questions of Existence". He challenged us to consider the immense distances involved with Amateur Astronomy compared to other hobbies. I thought about coin collecting (inches), gardening (feet) or photographing all of the native birds of Texas within a year (miles).

(Meeting Continued on page 5)

The Roanoke Valley Astronomical Society is a membership organization of amateur astronomers dedicated to the pursuit of observational and photographic astronomical activities. **Meetings are held at 7:30 p.m. on the third Monday of each month. See calendar on last page of newsletter for location. Meetings are open to the public.** Observing sessions are held one or two weekends a month at a dark-sky site. Yearly dues are: Individual, $20.00; Senior Individual, $18.00; Family, $25.00; Senior Family, $22.00; Student, $10.00. Articles, quotes, etc. published in the newsletter do not necessarily reflect the views of the RVAS or its editor.

RVAS Member Takes 2nd in AL Competition

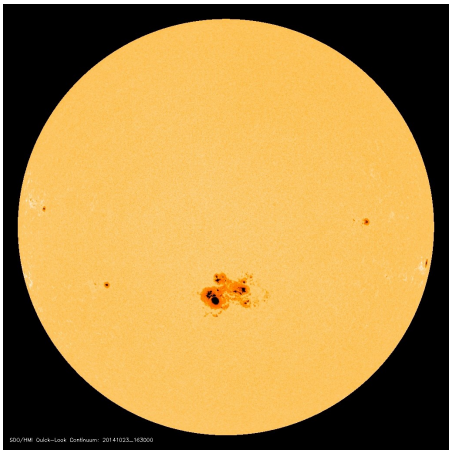
Our Sun

By: **Madison Denham**

Our star has many names: Sol, Helios, and the Sun. Most people call it the Sun.

Our Sun was born in a cloud of gas and dust around 5 billion years ago. Over a long period of time this gas and dust began to fall into a center of gravity. At the center a growing body of mass started to form. During this it created an immense amount of heat. Once it reached around 1 million degrees, it ignited and caused nuclear fusion. Soon the Sun began creating its own heat, light, and energy.

Sun spots are areas on the Sun's surface that are relatively cooler. But these areas are still hot! An astronaut could never visit the sun but we can still see it. You can tell a sun spot by its color on the surface. Its color is usually darker. The gravitational forces are also stronger in these areas. To look at the Sun you need special telescopes or glasses.



Sunspot AR2192

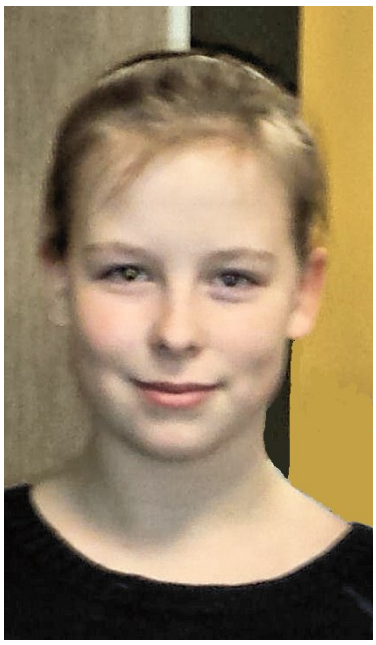
By NASA/SOHO

Sun spots come and go on a regular basis. Sometimes there are very few or a lot more than usual. They generally decrease and increase in a period of eleven years. This cycle is known as the solar cycle.

Solar flares happen during high solar activity. It is when the sun releases massive amounts of gas and plasma into the atmosphere. Sometimes these solar flares can get so big they can cause earth's satellites to malfunction. They also cause the aurora lights at Earth's north and south poles.

Solar winds happen when the Sun burns hydrogen at its core; it will release large amounts of atomic particles, or pieces of atoms into outer space. These atomic particles will create some sort of wind, known as the solar winds.

The Sun's family is another story. The Sun is obviously the largest object in our Solar System. 98% of all matter in the solar system is from the Sun. The Sun is so large that earth would fit into it 1 million times. So because the Sun is so large compared to everything else it makes things easier for it to hold on to matter. That is why everything else orbits around the Sun.



Madison Denham

Our sun is amazing. Whatever name we use, Helios, Sol, or the Sun, it is our star, our life source. Without its warmth and power life could not exist on our home, the Earth.

Madison**, now 12 years old, was 11 when the RVAS sponsored her essay's entry in the Astronomical League's annual Horkheimer/O'Meara Youth Journalism Award competition this past March. Open to 8 to 14 year olds, essays were limited to 300 to 500 words on astronomy or other science topics. President **Michael Good** presented **Madison** with her award certificate at the November 17th RVAS meeting, in the presence of her parents, **Gary** and **Elizabeth** Hatfield, and her twin sister, **Brooke**. (See also the November Meeting Notes in this issue.) **Congratulations, Madison!

The Astronomical League Horkheimer/ O'Meara Journalism Award

Only open to writers 8 to 14 years of age,

Essay length should be 300 to 500 words,

Essay topic can be from any science related field,

Judged on accuracy, creativity, conciseness, and clarity.

Deadline for 2015 competition: March 31, 2015

Nomination form: http://www.astroleague.org/files/awards/2015JournalismForm.pdf

First place prize: $1000!

(Meeting Continued from page 2)

My attention snapped back as he presented not the Big Dipper asterism, but "The Great Big Dipper". This "Gossterism" includes the aforementioned Great Square of Pegasus (forming the bowl) and a chain of three stars (forming the handle). The three stars comprise two stars in the constellation Andromeda and the aforementioned star Algol. Although these seven stars of the bowl and handle are tens of light years from Earth, **John** introduced two "much Deeper" Sky Objects: the open cluster Messier 34 in the constellation Perseus (1.5 thousand light years) and the spiral galaxy NGC 7331 (40 million light years).

Michael Good presented a sequence of black and white NGC 7331 images that he captured from his observatory with a Celestron 14" Schmidt Cassegrain telescope and an SBIG ST10xme camera enhanced with an AO8 adaptive optics (refractive) device, long-traveled photons converted to pixels. Mathematically manipulating the pixels in different ways, he improved upon each subsequent image. To begin, he took eight photographs, each collected over ten minutes. Then he sought to separate the pixels that represented the photons as they had emanated from NGC 7331 from the pixels that the Earth's atmosphere had distorted. With the relish of his self-described "addiction", **Michael** employed image stacking, sigma clipping, gamma log compression and deconvolution with a point-spread function. He displayed his final black and white image, most superior in the sequence.

In closing, **Michael** pondered the quandary of his sickness when superior color images are available on the Internet. That is right. Other astrophotography addicts are sculpting their collected pixels with prettier results. And yet, **Michael** continues…

The sickness is communicable. The gestation period can be hours or years. I think that I recognize a few symptoms in **Gary** and **Clem** and **Dave**. I feel symptomatic…

AWARDS:

Madison Denham earned a Second Place in the 2014 Horkheimer/O'Meara Journalism Award, a national writing competition for 8 to 14 year olds juried by the Astronomical League. Submitted when she was eleven years old, her winning entry was an essay entitled "Our Sun". [Her essay appears elsewhere in this newsletter]. In the company of her family, **Michael Good** presented the award to her amid the audience's enthusiastic applause.

Dave Thomas, editor of the RVAS newsletter for the last three years, earned an Honorable Mention in the Astronomical League's 2014 Mabel Sterns Newsletter Award competition for the "Exceptional Club Newsletter" category.

Dan Chrisman earned the Astronomical League Constellation Hunter Club Award, sketching and documenting thirty-eight constellations in the Northern Skies.

The spiral galaxy NGC 7331

Photo by Michael Good

President **Michael Good** congratulates **Dan Chrisman** for earning the Astronomical League Constellation Hunter Club Award

Photo by Frank Baratta

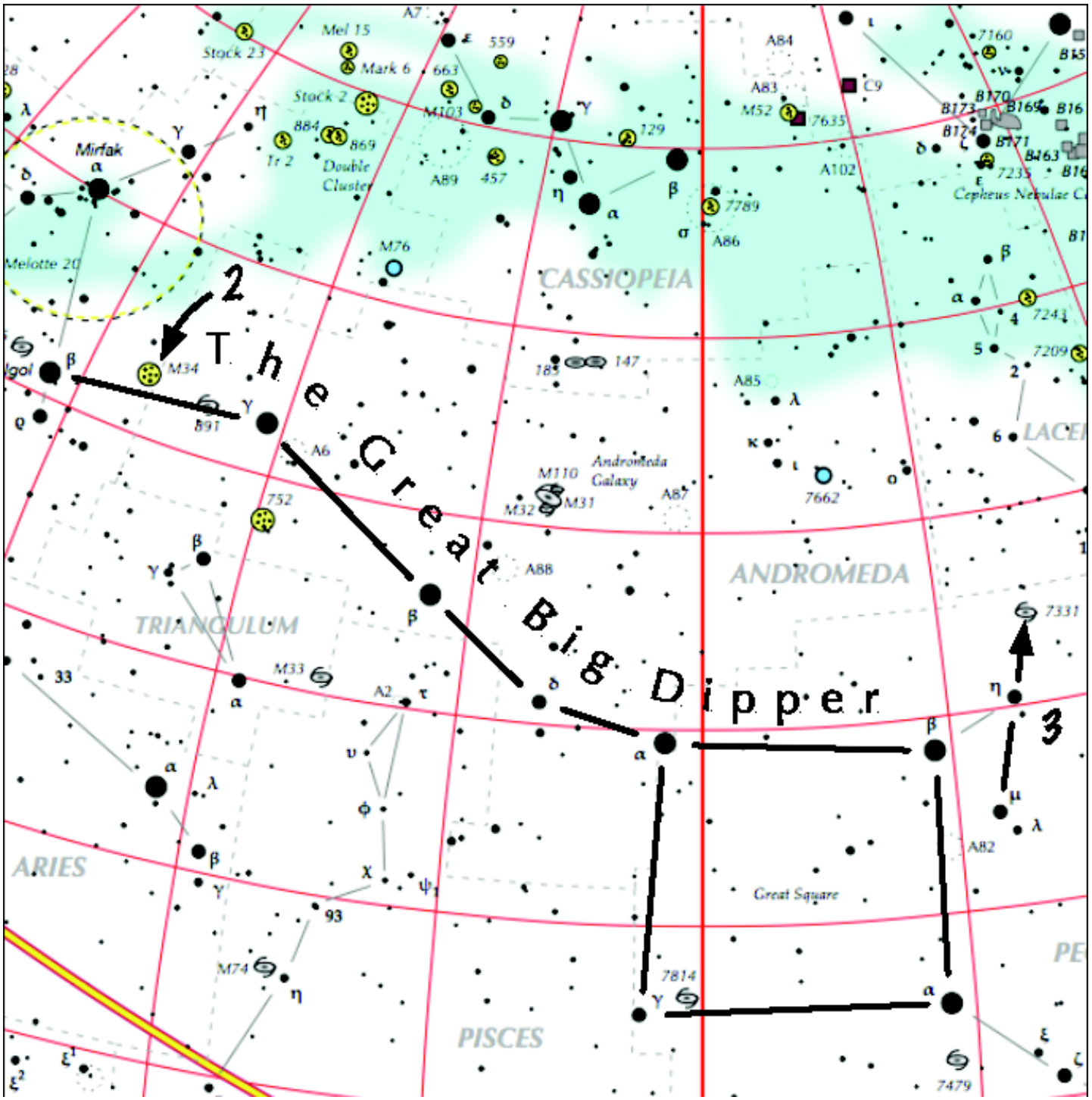
(Meeting Continued on page 7)

Deep Sky Objects: November & December –Open Cluster M34, Galaxy NGC 7331

1 At 8 p.m. in late November and early December, the **Great Square of Pegasus** lies directly south and nearly overhead. To its upper left, twinkle three stars in Andromeda and one in Perseus, forming an extended handle for the Great Square's bowl – "The Great Big Dipper."

2 **To find the open cluster M34:** Level 1
1. Draw a line to form the last segment of the handle, from Gamma And to Beta Per.
2. About 1/2 way lies M34.
3. Seen as a round grainy smudge in binoculars, this cluster contains upwards of 400 stars 1500 light-years away.

3 **To find the galaxy NGC 7331:** Level 3
1. Find the upper right star of the Great Square, Beta Peg.
2. To its upper right is a slightly dimmer star, Eta Peg, and it its lower right is Upsilon Peg.
3. Draw a line through Upsilon and Eta and continue it for that same distance.
4. The line ends on NGC 7331.
5. Through an 8 inch telescope, it appears as a dim elongated smudge.
6. NGC 7331 is 40 million ly away.



(*Meeting Continued from page 5)*

Concluding the evening's presentations, **Mark Hodges** provided the viral YouTube video starring a bowling ball and a feather: "**Brian Cox** Visits the World's Biggest Vacuum Chamber-**Human Universe**: Episode 4 Preview", BBC Tw.

For our next meeting on Monday, December 15, we will be holding the annual RVAS "Winter Solstice Social." in our standard meeting location (3rd Floor, Center on Church, Downtown Roanoke). It is a fun time when we ask members to bring their favorite munchies to share with everyone. The club will furnish festive fluids including unfermented "Martian Grog" and unpasteurized H_2O.

Among various activities on tap for the evening, we will be showing the third annual slideshow of images from various RVAS activities over the course of the year (photos of members by members). We will also be distributing the 2015 Ottewell Astronomical Calendar to all who reserved a copy. The majority of the Social is reserved for socializing; however, we encourage members to provide a brief talk or a Show-and-Tell during the "Open Mic" segment. **If you have not been to a meeting lately, add this to your holiday engagement calendar, then plan to attend and reacquaint yourself with your friends and fellow astrophiles!**

*(Thanks to **Rick Rader** and **Frank Baratta** for their contributions to this article. D.C.).*

Wanted

Astro photos by members for display on the RVAS web site. Send to editor@rvasclub.org

Observing reports or articles from members about astronomy activities in which they may be involved

E-mail any material you would like to submit for publication to: editor@rvasclub.org

Welcome Mat

The Society bids a warm and cordial welcome to the Bradleys, of Hardy, who became family members at the October meeting. Ray and Rene' have a daughter, Sierra, and two sons, Alexander and Darien. Alexander is in college, while Sierra and Darien are secondary school students. Born in Roanoke and raised in Bedford, Ray's a veteran of 28 years in the U.S. Army, where he most recently was a medical service corps officer. He's now training as a warehouse manager for Wurth-Revcar, here in Roanoke. Rene' is originally from Indiana and received her B.A. from the University of Missouri. She's since completed her Nursing degree and is a registered nurse at Franklin County Memorial Hospital. The Bradleys looked on the web for a local astronomy club and found the RVAS. Though he's had some exposure to astronomy in the past, Ray feels that he and the family are just getting started as observers. This includes getting used to a Celestron Ultima 2000 8" SCT purchased not long ago at an estate sale. Ray is also looking to get involved in astrophotography with the scope and a DSLR he's also picked up.

We're glad to have Ray, Rene', Alexander, Sierra and Darien with us! And we hope their membership will provide opportunities to learn more about astronomy and further exposure to science. Thanks, again for joining!

Welcome Mat

The Society bids a warm and cordial welcome to Joel and Lindsey Ray, of Roanoke, who joined in November with a Family membership. The Rays have three sons, Carson, Parker and Colin, ages 9, 6 and 3, respectively. Joel, who grew up in New York and Pennsylvania, is a Virginia Tech graduate working in the textile industry. Lindsey's from northern Virginia and is a JMU graduate, a part-time pediatric nurse and a full-time homemaker. Carson's interest in space and astronomy led the Rays to search on-line for a local club that might add to his enjoyment and learning. Joel shares his own remembrance of being at about Carson's age and also connected with an astronomy club. He and Carson attended the November meeting, and have already been out observing with our own Clark Thomas at Cahas Knob Overlook on the Parkway. Joel notes that Carson has been saving for a telescope; they appreciated the advice received from club members on this subject and have even approached the South Roanoke County Library about borrowing its loaner scope.

Joel and Lindsey, we're glad to have you and the family with us! And we're pleased that you've so quickly become engaged in our meetings and activities. We look forward to enjoying your company and sharing our common interest in the months and, hopefully, years to come.

Monthly Calendar

MONTHLY MEETING: Annual Winter Solstice Social, December 15th, 7:30 p.m., Center on Church, Downtown Roanoke. Bring a finger food item to share and gather with your RVAS friends for the fun and food at our annual winter social. We'll have the punch waiting. Along with a game or two, our What's Up sky summary, and our third annual slideshow, we'll have "open mic" time for anyone with an astronomical or other show-and-tell to offer, and plenty of time just to socialize with each other. Don't miss it!

RVAS WEEKEND OBSERVING OPPORTUNITIES: Unless otherwise indicated, observing is held at Cahas Knob Overlook, milepost 139 on the Blue Ridge Parkway.

-- **Friday and Saturday, December 12th and 13th.** Sunset is at 5:03 p.m. Astronomical twilight ends at 6:36 p.m. The Moon rises at 11:01 and 11:56 p.m., respectively.

-- **Friday and Saturday, December 19th and 20th.** Sunset is at 5:05 p.m. Astronomical twilight ends at 6:39 p.m. The Moon sets at 3:24 and 4:13 p.m., respectively.

-- **Future Sessions:** January 9th and 10th; January 16th and 17th.

ROANOKE CITY PARKS and RECREATION PUBLIC STARGAZE: Saturday, December 13th, 5:45 p.m., Cahas Knob Overlook, milepost 139 Blue Ridge Parkway. Nonmembers must register with Parks & Rec. at 540-853-2236. Members can call 540-774-5651 for information. (Next session: January 10th, 6:00 p.m., Cahas Knob Overlook.)

Astro-Quiz

What is the maximum separation between the edge of the Moon and the edge of the Sun at New Moon?

Answer to Last Month's Astro-Quiz: Since the middle of the Fourth Century B.C., when the star Thuban was relinquishing the honor, the star we know today as Polaris has served as the North Star, the guide to seafarers and other travelers to our world's north celestial pole. We know its name through the Latin, *Stella Polaris*, meaning "pole star." But Polaris has had many other names and descriptive terms applied to it. One coming down to us from Old English that bears this same sense of leading or guiding is *lodestar* (akin to the Old Norse *leiðarstjarna*), first appearing in the language around the late Thirteenth Century A.D. Interestingly, one of the early astronomy software companies, Zephyr Services, of Pittsburgh, PA, gave its late 1980s PC planetarium software program the name *LodeStar*. (Have an answer to this month's quiz [or a question and answer to suggest]? E-mail it to astroquiz@rvasclub.org).