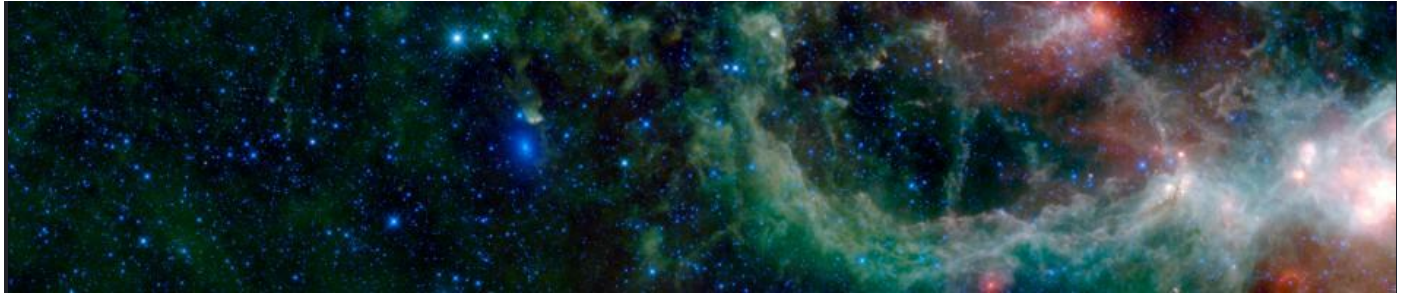


Charlottesville Astronomical Society

"Promoting the Enjoyment of Observing and Learning for All"

Astro-OP Educator-NEWS

2013:11:27



CAS Astro-OP *E-News* ...created especially for *Educators*!

Dear Educator,

It has been a busy three months with Astro-OP activities, presentations and events occurring or upcoming at schools in Fluvanna, Greene, Madison, and Orange counties. In November, Astro-OP awarded a 6" Newtonian F4.5 Reflector telescope, designed and fabricated from common materials by CAS Member John G. Avellone, to two Science Educators in Orange and Fluvanna county schools. Both educators, through their personal initiative, started an after-school Astronomy Clubs for students (see details in this issue). If you are interested in learning how CAS Astro-OP can benefit your students, school, or community contact us: <http://cvilleastro.com/> or email: fred.repich@gmail.com

While Astro-OP efforts are directed at public and private schools in Abermarle and the counties surrounding the greater Charlottesville area, CAS Outreach efforts extend to many other organizations, such as Sen-

ior Citizen and Elderly groups, Boy Scouts, Girl Scouts, Cub Scouts, and Brownie Troops, Church groups, and scholars of all ages from Kindergarten to Undergraduate and Graduate students. CAS Outreach efforts also include Public Star Parties (at the Ivy Creek Nature Center, McCormick Observatory, Fan Mountain, and many other central Virginia dark-sky locations through-out the year), public, group, and school field trip indoor presentations and lectures, after-dark outdoor guided tours of the constellations, and star gazing through the 26" McCormick Observatory telescope, "5th-Friday" Heidi's Nights (Friday, November 29th, see details in this issue), Heidi Winter Lectures (Wednesday, December 4th at NRAO Headquarters, details in this issue), and support at UVA's Fan Mountain Public Night with CAS Member telescope available for public viewing twice a year in May and October. CAS members are active throughout the community supporting and promoting astrono-

my education, enjoyment, and observing for the general public, organizations, and schools throughout the year...

This coming Friday, November 29th, the day after Thanksgiving marks the first "5th Friday" Heidi's Night at McCormick Observatory from 7 to 9 PM. If you are in the area, plan on visiting with us – admission is free, dress warm, and if you bring youngsters it's even more rewarding (see Calendar page 2 for details).

Lastly, may we be ever mindful of those less fortunate than us and on the Eve of our Thanksgiving celebration, the Members of the Charlottesville Astronomical Society would like to extend their best wishes to you and your loved ones for a Blessed, Happy, Healthy, and Safe Holiday!

Bon Appétit,

Fritz (Fred) Repich,
CAS Astro-OP Coordinator,
E-News Editor

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Contents

In This Issue	2
Calendar	2
Monthly Meetings	2
Astro-OP Activities	3
BSA Merit Badge	4
Astronomy Links	5
Astronomy Resources	8

In This Issue

We present CAS Astro-OP activities for the past month, including: Support at the Science Fair of the Greene County Schools, Presentations to the Fluvanna Middle School and Locust Grove Middle School (Orange) Astronomy Clubs, Presentation of a CAS Telescope to Science Educators in Orange and Fluvanna County Middle Schools, and the CAS Calendar – listing astronomy activities, events, and functions for the next several months. We also present the upcoming Guest Speakers and their Topics for the CAS Monthly Meetings, the “5th Friday Heidi’s Night” activities on November 29th, the Inaugural Heidi Winter Memorial Lecture given by Dr. Ed Murphy on December 4th at NRAO Headquarters in Charlottesville, Parent-Child Build-A-Telescope status, and Astronomy Links, Resources, and Holiday Ideas (Books, Magazine Subscriptions, Binoculars, Telescope, Equipment).

Calendar

• **Fri, Nov 29, 2013, 7:00 – 9:00 PM Heidi’s Night** – Educational Activities and Observing. CAS will hold its first Heidi’s Night Activity for students in grades 4-12 and parents interested in Astronomy on Friday, November

29th from 7-9 PM at the McCormick Observatory at the University of Virginia. The event honors the memory of CAS member Heidi Winter, former executive secretary to the Director of the National Radio Astronomy Observatory. Attendees will be assigned to one of four groups that will rotate amongst four activity stations every 20 to 25-minutes:

- Station 1. Rich Drumm will be located at the 26” Clarke Refractor in the dome to present its history and to observe objects in the night sky.

- Station 2. John Avellone will be located outside the dome, near the Doghouse (small rectangular building) to showing objects in the night sky with a small telescope.

- Station 3. Steve Layman will be in the Observatory classroom showing free Astronomy Software Applications.

- Station 4. Larry Saunders will be in the circle outside the Observatory’s front door presenting Tours of the Night Sky.

• **Fri, Dec 6, 2013, 7:00 – 9:00 PM – CAS Ivy Creek, Star Party 7:00 – 9:00 pm**

• **February/March TBD, 2014 PVCC Public Night** – Details being coordinated by CAS PVCC Astro-OP Coordinator Armand Mottaghi. (Details to be provided in the December/January E-News.

Monthly Meetings

Each month, on the first Wednesday evening from 6:45 PM to approximately 8:30 PM, CAS conducts its monthly meeting for members and guests at

the McCormick Observatory on the UVA campus.

Wed, Dec. 4, 2013 - Inaugural Heidi Winter Lecture



At our next meeting, Wednesday, December 4th, Dr. Ed Murphy, Associate Professor, UVA Department of Astronomy will present the first Annual Heidi Winter Memorial Lecture. Due to the large number of expected attendees, the December 4th meeting will be held at NRAO Headquarters, 520 Edgemont Road, Charlottesville. Plan to visit with us to enjoy Dr. Murphy’s lecture.

Wed, Jan 8, 2014

Join MESSENGER team member Mark ‘Indy’ Kochte as he takes you on a journey to one of the most elusive bodies in our Solar System, where not even the vaunted Hubble Space Telescope can peer.



For the World has Hollows, and I have Touched the Ice – The Greatest, Latest MESSENGER Findings on Mercury

On March 18, 2011, space exploration history was made when the MESSENGER spacecraft became the first probe from Earth to go into orbit around Mercury. Since that time, it has taken more than 170,000 images and made millions of spectra observations.

From all this more has been learned about our solar system's innermost world than had been dreamed to ask at the onset of the mission. From newly seen impact basins to the surprising status of the magnetic field, from the makeup of the exosphere to the verification of water ice at the poles and to the discovery of geologic features not found on any other body in the solar system,

MESSENGER's discoveries at Mercury have reshaped the theories planetary geologists have had on the origins of the solar system's littlest planet (as an aside, Pluto is king of a whole separate category of objects).

Wed, Feb 5, 2014



Greg Brown, the Education and Space Settlement Representative for the Mars Foundation will be

presenting a lecture on the Mars' Hillside Settlement at UVA's McCormick Observatory on Feb. 5, 2014 starting at 6:45 pm.

Astro-OP Activities

FMS Astronomy Club

In Fluvanna at the Middle School CAS Treasurer Ed Preston gave a presentation on Finding Things in the Night Sky to the after-school Astronomy Club on November 11th. Approximately 20 (5th through 8th grade) students and Science Teacher Cheryl Gilliam attended the two-hour after school meeting.

Greene County Elementary Schools Science Fair

On November 15th CAS supported an evening Science Fair attended by approximately 100 students and parents at the Nathaniel Greene Elementary school. Ed Preston gave a presentation on The Moon and CAS members Susan Bender and Scott Duresky manned two outdoor stations but bad weather prevented observation of Moon features. CAS Member Rich Drumm delighted students by allowing them to handle a meteorite recovered from a site in South America. Rich also setup and explained his telescope to the students.



CAS Vice-President Rich Drumm and Treasurer, Ed Preston at Greene County Schools Science Fair

LGMS Astronomy Club

The Solar System and Night Sky was the topic of a presentation by CAS President, Steve Layman for the Locust Grove Middle School Astronomy Club. The club consists of approximately 39 (6th through 8th grade) students and is moderated by LGMS Science Teacher Dara Carter.



LGMS Astronomy Club Students at CAS Solar System Presentation

FMS Astronomy Club

On November 25th Steve Layman gave a presentation to approximately 25 students in the Fluvanna Middle School Astronomy Club. The topic, "The Solar System and Night Sky" was well received by the club's students and moderator, Cheryl Gilliam.



CAS President Steve Layman with FMS Astronomy Club Students

CAS Educator Recognition Awards

CAS established an Educator Recognition Award to honor those Science Educators whom inspire their students with a passion for astronomy. The award

consists of a 6" Aperture, F4.5 Newtonian Telescope that was designed and fabricated by CAS Member John G. Avellone from commonly available materials and surplus optical mirrors, eye-pieces, and filters to enable observation by student astronomy clubs.

(Note: CAS will publish a list of parts to build a telescope in a future issue of Astro-OP E-News for interested educators.)

In November, CAS presented the first two Educator Recognition Awards honoring Science Educators, Dara Carter at the Locust Grove Middle School in Orange County and Cheryl Gilliam at the Fluvanna Middle School. The efforts and initiative of each of these educators resulted in the establishment of Astronomy clubs at two schools involving upwards of 60 middle school students. Congratulations to both Dara and Cheryl for their efforts and initiatives.

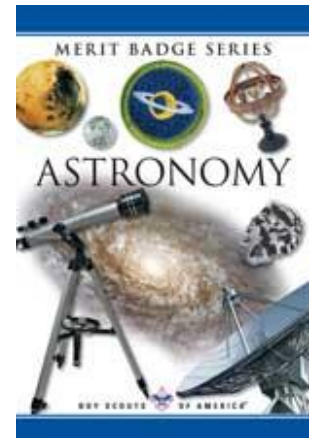


CAS Treasurer, Ed Preston and President Steve Layman presenting the Newtonian Telescope to LGMS Science Educator Dara Carter with Principal, Kim Crandall (from L-R)



FMS Principal Dr. Yardley Farquharson, Science Educator Cheryl Gilliam receiving the Education Recognition Award from, CAS President Steve Layman and Treasurer, Ed Preston (from L-R)

BSA Astronomy Merit Badge



Someone once asked do you know the Boy Scouts of America requirements to earn a merit badge for Astronomy? I didn't have an answer but after researching that query, I found that the requirements were not only quite rigorous but of interest to anyone with an interest in astronomy. So here they are for your edification from the Boy Scouts of America website : <http://www.scouting.org/filestore/boyscouts/html/astronomy.htm>

Astronomy Links

Telescope Basics:

http://www.chuckhawks.com/telescope_basics.htm

<http://www.telescopes.com/telescopes/telescopes101article.cfm>

Weather and Observing Conditions

<http://weatherspark.com/>

<http://cleardarksky.com/c/CharvilVAkey.html>

<http://www.skyandtelescope.com/letsqo/whatsuptonight>

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

<http://www.learnwhatsup.com/astro/index1.shtml>

<http://www.heavens-above.com/>

Organizations

<http://www.aavso.org/>

<http://webari.com/oldscope/>

<http://www.astrosociety.org/edu/nsn/nsn.html>

<http://cvilleastro.com/>

<http://www.planetary.org/>

<http://www.astronomy2009.org/>

<http://www.astroleague.org/>

Best FREE Astronomy Software

<http://www.techsupportalert.com/best-free-astronomy-software.htm>

Purchasing used telescopes

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

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

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

The AIAA Foundation wants to help you make science, technology, engineering, and math (STEM) become real in your classroom - AIAA Foundation Classroom Grant Program:

<http://www.aiaa.org/Secondary.aspx?id=4184&terms=grants%20to%20schools>

Charlottesville Astronomical Society : <http://cvilleastro.com/>

Citizen Science Alliance: <http://www.citizensciencealliance.org/>

Clear Sky Chart Home Page: <http://cleardarksky.com/csk/>

Heavens Above: <http://www.heavens-above.com/>

Kansas Comosphere and Space Center: <http://www.cosmo.org/>

Kitt Peak National Observatory: <http://www.noao.edu/kpno/>

Lowell Observatory: <http://www.lowell.edu/>

Lunar and Planetary Institute: <http://www.lpi.usra.edu/>

Mount Graham International Observatory: <http://mgpc3.as.arizona.edu/>

NASA Educator Links:

<http://www.nasawavelength.org/>

<http://www.nasa.gov/offices/education/about/sequestration-NASA-education-guidance.html#.Umg6wvkqg8w>

<http://www.nasa.gov/audience/foreducators/#.Umg57Pkqg8w>

NASA Science – Citizen Science: <http://science.nasa.gov/citizen-scientists/>

Planetary Science Institute: <http://www.psi.edu/>

Star Size Comparison Video: <http://www.youtube.com/watch?v=HEeh1BH34Q>

The Exploratorium (A 21st – Century Learning Laboratory): <http://www.exploratorium.edu/>

UA Lunar and Planetary Sciences: <http://www.lpl.arizona.edu/>

US Naval Observatory: <http://www.usno.navy.mil/USNO/astronomical-applications>

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Check out the following NASA opportunities for the education community. Full descriptions are listed below.

Mission STEM Diversity & Inclusion Leadership Video Series

Audience: All Educators

Centaur Design Challenge

Audience: Educators of Grades 7-9 in the Cleveland, Ohio Area

EXTENDED Registration Deadline for Educator Professional Development: Sept. 26, 2013

Registration for the Challenge Opens on Oct. 1, 2013

Free Education Webinar Series from the Aerospace Education Services Project

Audience: K-12 Educators

Next Event Date: Sept. 26, 2013, at 7 p.m. EDT

NASA's Digital Learning Network Event -- Radio Astronomy in the Classroom

Audience: Grades K-12

Event Date: Sept. 27, 2013, 1 - 2 p.m. EDT

REGISTRATION EXTENDED: Zero Robotics High School Tournament 2013

Audience: 9-12 Educators and Students

Practice Competition: In progress

Registration deadline: Sept. 27, 2013

Mars Educator Conference at Arizona State University

Audience: All Educators

Conference Date: Sept. 28, 2013

Solar System Ambassadors Program Accepting Applications

Audience: All Educators

Application Deadline: Sept. 30, 2013

IRIS Challenge: Tracking a Solar Storm

Audience: 6-12 Educators

Registration Open Now, Challenge Begins October 2013

NES Web Seminar -- Chemistry of Water: Mars Exploration -- Is There Water on Mars?

Audience: 9-12 and Informal Educators

Event Date: Oct. 1, 2013, at 7:30 p.m. EDT

Robert Noyce Fellowship in Informal STEM Learning

Audience: All Educators

Application Deadline: Oct. 1, 2013

Green Strides Webinar Series

Audience: K-12 Educators

Next Event Date: Oct. 2, 2013, at 4 p.m. EDT

NES Web Seminar -- Linear Equations: NASA CONNECT -- Breaking Barriers

Audience: 6-8 and Informal Educators

Event Date: Oct. 3, 2013, at 7:30 p.m. EDT

Celebrate World Space Week

Audience: All Educators

Event Date: Oct. 4-10, 2013

Heritage Family Day Events at Smithsonian's Air and Space Museum

Audience: All Educators and Students

Next Event Date: Oct. 5, 2013

Celebrate Flight at the International Balloon Fiesta

Audience: All Educators and Students

Event Date: Oct. 5-13, 2013

Celebrate Earth Science Week With NASA's Mapping Our World Interactive

Audience: All Grade Levels

Event Date: Oct. 13-19, 2013

Historical NASA Space Artifacts Available for Educational Use

Audience: Educational Institutions, Museums and Other Education Organizations

Deadline: Oct. 21, 2013

2014 NASA Space Technology Research Fellowships

Audience: Higher Education Students

Application Deadline: Nov. 13, 2013

2014 RASC-AL Robo-Ops Competition

Audience: Higher Education Students

Proposal Deadline: Dec. 8, 2013

NASA Exploration Design Challenge

Audience: K-12 Educators and Students

Virtual Crew Registration Deadline: March 14, 2014

Frequently Asked Questions -- NASA Research Announcement (NRA) Competitive Program for Science Museums, Planetariums, and NASA Visitor Centers Plus Other Opportunities (CP4SMP+) (Announcement Number: NNH13ZHA001N, Catalog of Federal Domestic Assistance (CFDA) Number: 43.008)

Audience: Informal Education Institutions

Don't miss out on upcoming NASA education opportunities.

For a full list of events, opportunities and more, visit the Educator and Student Current Opportunity pages on NASA's website:

-- Educators <http://www.nasa.gov/audience/foreducators/current-opps-index.html>

-- Students <http://www.nasa.gov/audience/forstudents/current-opps-index.html>

Astronomy Resources - compiled by Steve Layman, CAS

Handbook for Astronomy Educators – A Course Planning Guide

Flick, Ventre, Boothe, Rutherford

Astronomical League

Science Service Building

1719 N. Street NW

Washington, DC 20030

Published by the Astronomical League

A+ Projects in Astronomy

Winning Experiments for Science Fairs AND Extra Credit

Janice Van Cleave

John Wiley and Son Publisher

Isbn: 0-471-32820-0

Practical Astronomy – A User Friendly Handbook

H. Robert Mills

Albion Publishing

Isbn: 1-898563-00-4

Eight Easy Observing Projects for Amateur Astronomers

David Cortner and Nancy Hendrickson

Kalmbach Books

Isbn: 0-913135-25-5

Out of this World Astronomy – 50 Amazing Activities and Projects

Joe Rhatigan and Rain Newcomb

Lark Books

Isbn: 1-57990-675-3

Astronomy for All Ages – Discovering the Universe through Activities for Children and Adults

Philip Harrington and Edward Pascuzzi

Globe Pequot Press

Isbn: 0-7627-0809-3

Cosmos in the Classroom – Published most recently in 2010

A Hands on Symposium on Teaching Introductory Astronomy

Published by the Astronomical Society of the Pacific

www.astrosociety.org