

Meeting of the Eagle Valley Astronomical Society

When: Thursday, May 10, 2012, 7:30-9:00 PM
Free and open to the public; no reservation required.

Where: Walking Mountains Science Center,
318 Walking Mountains Lane (off Buck Creek Road), Avon, Colorado
Note the new signs directing visitors to the Science Center.

Contact: Lara Carlson, Community Programs Director
Walking Mountains Science Center, [970-827-9725](tel:970-827-9725), ex. 129, or
John W. Briggs, HUT Observatory, john.w.briggs@gmail.com,
[970-328-6228](tel:970-328-6228) or cell [970-343-0618](tel:970-343-0618).

Meeting Topic:

Build Your Own High-Flying Rocket

Eagle Valley Astronomical Society will meet Thursday evening, May 10, starting at 7:30 PM at the Walking Mountains Science Center near the base of Bush Creek Road in Avon. Dale Versteegen, Adult Program Coordinator for Walking Mountains, will demonstrate how to build an amazingly high-flying rocket powered by the energy of compressed air. A NASA website quotes a teacher's description of such rockets as possibly "the greatest physical science tool ever created!"



While our own telescopes allow wonderful views and photographs of celestial objects, robotic instruments like Hubble Space Telescope and the many current solar system

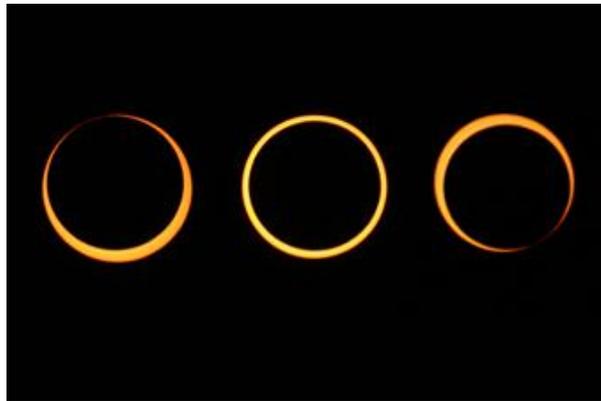
probes are revealing amazing details about the universe around us. Robotic spacecraft are built at facilities like Caltech's Jet Propulsion Laboratory, operated under contract to NASA in Pasadena, California. Thus the fundamental science of rocket propulsion -- originally the province of seeming dreamers like experimentalist Dr. Robert H. Goddard of Massachusetts -- progressed rapidly in the 20th Century. Mr. Versteegen will show how to build a homemade experimental rocket that, firstly, is very fun, and secondly, will, for young and old, inspire an interest in the physical principles that make rocket propulsion and spaceborne astronomy possible.

<http://exploration.grc.nasa.gov/education/rocket/BottleRocket/about.htm>

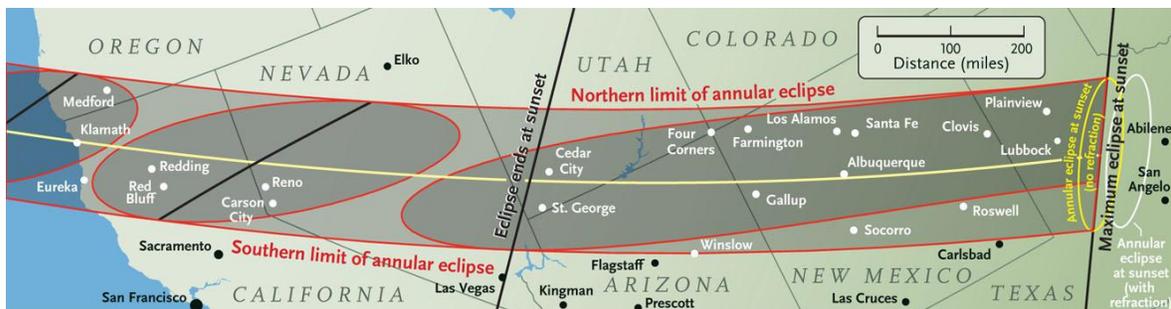
<http://www.youtube.com/watch?v=DusmrzYQiy4>

May 20 Solar Eclipse

As discussed at recent EVAS meetings, the evening of Sunday, May 20, will feature a rare, annular solar eclipse visible at sunset from a wide region in the American West. An annular eclipse occurs when the Moon is far away from the Earth. When the Moon also happens to block the Sun, the Sun appears as a ring in the sky, as seen in this series of photos made by Michael Gill in French Guiana in 2006:



The solar ring will be as blinding as normal sunlight, so caution and a special filter are required when observing the phenomenon. And to see the annular effect, it's necessary to be in a narrow region on Earth. From a broader region, including most of Colorado, the Sun will appear simply in a normal partial solar eclipse -- as though a bite is taken out from the Sun. Locations allowing observation of the much rarer ring phenomenon are mapped here in this diagram prepared by *Sky & Telescope* magazine:



Additional explanation can be found in an article by Kelly Beatty on the *Sky & Telescope* website:

<http://www.skyandtelescope.com/community/skyblog/observingblog/A-Preview-of-May-20ths-Annular-Eclipse-141037803.html>

To see the full annular ring picturesquely just before sunset, it may be necessary to anticipate how mountains can block the view of your local horizon. The farther west your observing location, however, the higher in the sky the Sun will be when it displays the ring phenomenon. EVAS member John Briggs and family are likely to drive to the Magdalena, New Mexico, area, to see a good sunset view of the annular eclipse. *Stellarium* software, carefully initialized with your exact observing location, is a helpful tool for predicting the local appearance of the eclipse.

A convenient, safe filter material for viewing the Sun by eye is to look through a #14 welding glass -- and only #14, the darkest -- available from welding supply stores. It's also easy to build a solar projection pinhole camera, mainly using a cardboard box and a small sheet of aluminum foil:

<http://www.exploratorium.edu/eclipse/how.html>

Beware that projecting an image of the Sun on white paper through binoculars or a telescope can damage the eye-end lens, or "eyepiece," which is not always designed to transmit intense solar heat.

Local Astronomy News

HUT Observatory near Eagle has lent a computer-controlled 10-inch Meade telescope to Walking Mountains Science Center to supplement instruments available there. Mr. Versteegen will be the principal steward of this instrument. EVAS member John Briggs recently visited Mount Wilson Observatory in California in connection with the **extremely rare Transit of Venus visible June 5** and will report later on the subject. This event -- the last until the year 2117 -- will be visible from Colorado in the late afternoon and early evening, Tuesday, June 5. Transits of Venus occur in groups of two, the last being 1874 and 1882, and the current being 2004 and 2012. Seen from Colorado on June 5, 2012, the Sun will set with Venus superimposed on the solar disk. (Thus, coincidentally, the Venus event is analogous to the May 20 solar eclipse.) From more western observing sites like Hawaii and Alaska, however, the whole 6-hour, 40-minute transit -- including the ingress and egress of the planet from the Sun -- will be visible while the Sun is above the local horizon.

Bright planet Venus is presently visible as what is popularly called an "evening star." Observers with telescopes can see the planet revealed in a crescent phase, shining by the brilliant reflected light of the Sun. Coming nearer to Earth each day, the crescent is becoming larger in diameter but thinning in width. Even a small telescope with low magnifying power will reveal these interesting and rapid changes. As Venus approaches

"inferior conjunction" with the Sun -- meaning that it is passing between the Sun and Earth -- it will appear lower in the western sky each day at sunset, until finally and rapidly, sometime before June 5, it will be lost the solar glare. For additional information, see:

<http://www.skyandtelescope.com/observing/highlights/Venus-Takes-the-Plunge-149763175.html>

and

<http://www.skyandtelescope.com/observing/highlights/Transit-of-Venus-February-2012-134332798.html>

An interesting historic telescope originally designed for the 1874 and 1882 transits of Venus and built by the famous Massachusetts firm of Alvan Clark & Sons is presently at HUT Observatory and has been used for special events in connection with Walking Mountain Science Center. It will be featured regularly at coming EVAS events. The photo below is from a link at South African Astronomical Observatory, and the website there includes a great deal of information regarding international efforts to observe the previous transit pair. Nearly forgotten today, the last transit pair afforded an opportunity for what was essentially like a 19th Century international space race!:

<http://www.sao.ac.za/~wpk/tov1882/clarke.html>



Notes from last month's EVAS meeting.

Lisa Judd, Vice President of the Denver Astronomical Society, braved a snowstorm to attend our April 12 meeting and spoke with the title "Observing Mars by Eye, Telescope, and Spacecraft." The topic was especially appropriate given the recent opposition of Mars (its close approach to Earth). John Briggs reciprocated for the Denver Society on May 4, speaking on the history of University of Chicago's Yerkes Observatory. Having finally met Ms. Judd at the Denver event, John can report that Ms. Judd is a resident of Colorado Springs and enjoys visiting astronomical societies all over Colorado. She also attends national events like the annual Texas Star Party (TSP) from which she just returned. At the 5-day-long TSP, Lisa observed some 200 "deep sky" objects. "Deep sky object" is a catchphrase popularized by *Sky & Telescope* magazine to describe interesting celestial targets like star clusters, nebulae, double and multiple stars, and galaxies -- all objects far external to our solar system. The most famous list of deep sky objects is the historic Messier catalogue of 109 objects (usually now published with 110 objects, including a correction for Messier 102, originally an error). Charles Messier, a French astronomer, published a first edition of this list in 1771. Advanced observers like Ms. Judd have long since completed a first-time viewing of all the Messier objects, and they typically move on to examine fainter or otherwise more challenging targets selected from the larger New General Catalogue of 1888. The Caldwell Catalogue, compiled in 1995 by Sir Patrick Moore, is a popular list that is a practical supplement to Messier.

A Note on the Future.

Repeating from previous announcements, we hope that additional astronomers in the Eagle Valley area and beyond will hear about our meetings and join us, normally on the second Thursday of every month at Walking Mountains Science Center in Avon, Colorado. Note that astronomy clubs like ours always welcome folks, young and old, who are experienced or just starting an interest. The purpose of our organization is to share and encourage interest! If you're already involved with astronomy, you can especially help. We look forward to having more telescopes set up at meetings, additional speakers, more loaner telescopes, weekend star parties, and field trips. One of many active clubs setting an excellent example here in Colorado is the Denver Astronomical Society. It meets regularly at the historic and magnificent Chamberlin Observatory of the University of Denver: <http://www.denverastro.org/>. Another organization of interest is the Front Range Astronomy Club, an email-based group that connects members of individual astronomical societies in the Colorado region.

Walking Mountains Science Center: <http://www.walkingmountains.org/>

###