Meeting of the Eagle Valley Astronomical Society

When: Thursday, January 12, 2012, 7:30-9:00 PM
Free and open to the public; no reservation required.

Where: Walking Mountains Science Center, Buck Creek Road, Avon, Colorado.
Note the newly installed signs directing visitors to the Science Center.

Contact: Lara Carlson, Community Programs Director
Walking Mountains Science Center, 970-827-9725, ex. 129, or
John W. Briggs, HUT Observatory, jwb@hutobservatory.com,
970-328-6228 or cell 970-343-0618.

Meeting Topic: "Celestial Geography: Touring the Winter Sky by Eye, Binoculars, or a Backyard Telescope."

Eagle Valley Astronomical Society will meet Thursday evening, January 12, starting at 7:30 PM at the Walking Mountains Science Center near the base of Bush Creek Road in Avon. Local astronomer and Walking Mountains volunteer John Briggs, hosted by staff naturalist Katie Eyles, will lead the program, which will feature recent dramatic photographs made with the HUT Observatory 16-inch reflecting telescope. As the program will demonstrate, however, large telescopes are not necessary for seeing profound sky phenomena of nearly unimaginable size and distance. Light from the Great Orion Nebula, for example, trivial to see with the unaided eye on a dark night, has been travelling some 1,500 years through space before it reaches Earth. Many other colorful space clouds are visible in and around the bright winter constellation Orion. These objects, vast in size, reveal the natural stellar recycling process that is common in the Milky Way and other galaxies. Everyone attending will learn how to identify interesting objects in the winter sky. The program will also include binocular and telescope basics, featuring the 10-inch reflector named "Wood Eye" that was built by Denver aeronautical engineer Frank Millis Sr.

Recent Astronomy in Eagle Valley

A beautiful total lunar eclipse was seen by many families in the early morning hours of Saturday, December 10. It was a clear but very cold morning! Observers with a low western horizon were able to see the Moon as it entered the dark core of the Earth's shadow, called the umbra, starting shortly before 6:00 AM.

An unusual solar telescope deployed from HUT Observatory was set up at Walking Mountains Science Center December 10 and 18. The 6-inch refractor was equipped with a hydrogen-alpha solar filter, a device that allows *only* the red light naturally emitted by hydrogen gas (at a wavelength of 6,563 angstroms, or about 26 millionths of an inch) through to the eyepiece for viewing. The result was that the Sun's hydrogen gas clouds, called prominences and filaments and normally impossible to see, were obvious to visitors as feathery red eruptions on and around the solar disk. On December 10, the rainbow-like spectrum of the Sun, including the chemical absorption lines first mapped by Joseph von Fraunhofer in 1814, was visible through a century-old Adam Hilger prism spectrometer. On the evening of December 18 observations included Jupiter, its Galilean moons, and the distant planet Uranus. These views were through an 8-inch Celestron telescope.

In recent months observations at HUT Observatory have focused on the measurable rotation of tiny solar system objects called minor planets, or asteroids. One of several results is published in the latest issue of *Minor Planet Bulletin*, edited by Professor Richard P. Binzel of MIT (see link below). Asteroids are generally too small to be seen from Earth as anything other than star-like. But because they shine by reflected sunlight, their naturally irregular surfaces have a changing brightness as they rotate. In the current publication, the object under study was asteroid Komppa, discovered in 1936 by the well-known Finnish scientist Yrjö Väisälä who (we recently learned) was affectionately nicknamed the "Wizard of Tuorla." Komppa has a diameter of about 16 miles and an observed rotation of 3.508 hours, plus or minus seven seconds. This result is already linked at the Jet Propulsion Laboratory's Small Bodies Database (URL given below). Having current scientific results that are interesting and easy to explain to students makes science outreach visits at local schools especially powerful.

A Once-in-a-Lifetime Sky Event in 2012
On Tuesday, June 5, 2012. the planet Venus will pass in front of the Sun as viewed from Earth. This extremely rare phenomenon, called a "transit of Venus," will not occur again until 2117. Historically these events were used to measure the scale of the solar system. One of the best sites in the continental United States to observe the phenomenon is Mount Wilson, California. We shall discuss details of the transit and how to observe it at coming meetings of the Eagle Valley Astronomical Society.

Stellarium Software.

The excellent, free software often being used at our meetings is called *Stellarium*. It's easy to use and allows anyone with a home computer to explore the sky in detail. Downloads are available here:

http://www.stellarium.org/

Stellarium must know your approximate location on Earth before it can simulate the sky correctly. Because it was developed by astronomers in France, its default setting is for Paris. Note setting and saving your default location as Denver is easy. It's also possible to set your exact location using latitude and longitude, but for most local applications, a setting to "Denver" is entirely satisfactory.

Notes from last month's meeting.

Our meeting December 8, 2011, at Walking Mountains Science Center included an explanation and demonstration of how the science of spectroscopy allows us to know the chemical composition of the stars. We used a laboratory spectroscope to see how different chemicals emit light in a natural code of color. Starting in the early 1800s, sunlight and starlight were decoded using spectroscopes. Otherwise called "rainbow makers" to young children, these instruments reveals that familiar chemicals in fact make up the celestial bodies. The sky was clear after the demonstrations and allowed views of the Moon, Jupiter, and the Galilean moons.

A Note on the Future.

Repeating from last month, we hope that additional amateur 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. However, please note that astronomy clubs like ours welcome folks, young and old, who are just starting an interest in astronomy. The purpose of the organization is to share and encourage the interest! But if you're already involved with astronomy, you can especially help. We look forward to having more telescopes set up at meetings, additional speakers, 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 organization that connects members of individual astronomical societies in the Colorado region.

Walking Mountains Science Center: http://www.gorerange.org/
Minor Planet Bulletin: http://www.minorplanet.info/MPB/MPB_39-1.pdf (HUT Obs. related article page 25)
Jet Propultion Laboratory Small Bodies Database:
http://ssd.jpl.nasa.gov/sbdb.cgi?sstr=1406+Komppa
Attachment: Winter sky nebula NGC 2359 recently recorded at HUT Observatory.

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