

# Meeting of the Eagle Valley Astronomical Society

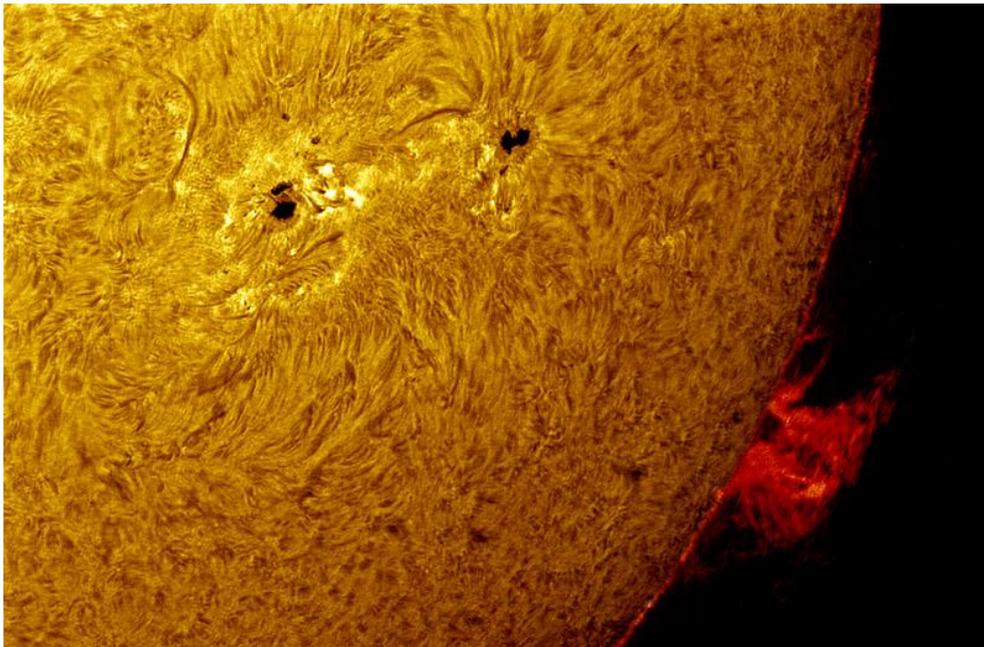
**When:** Thursday, July 12, 2012, 7:30-9:00 PM  
Free and open to the public; no reservation required.

**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](mailto:john.w.briggs@gmail.com),  
[970-328-6228](tel:970-328-6228) or cell [970-343-0618](tel:970-343-0618).

**Meeting Topic:**

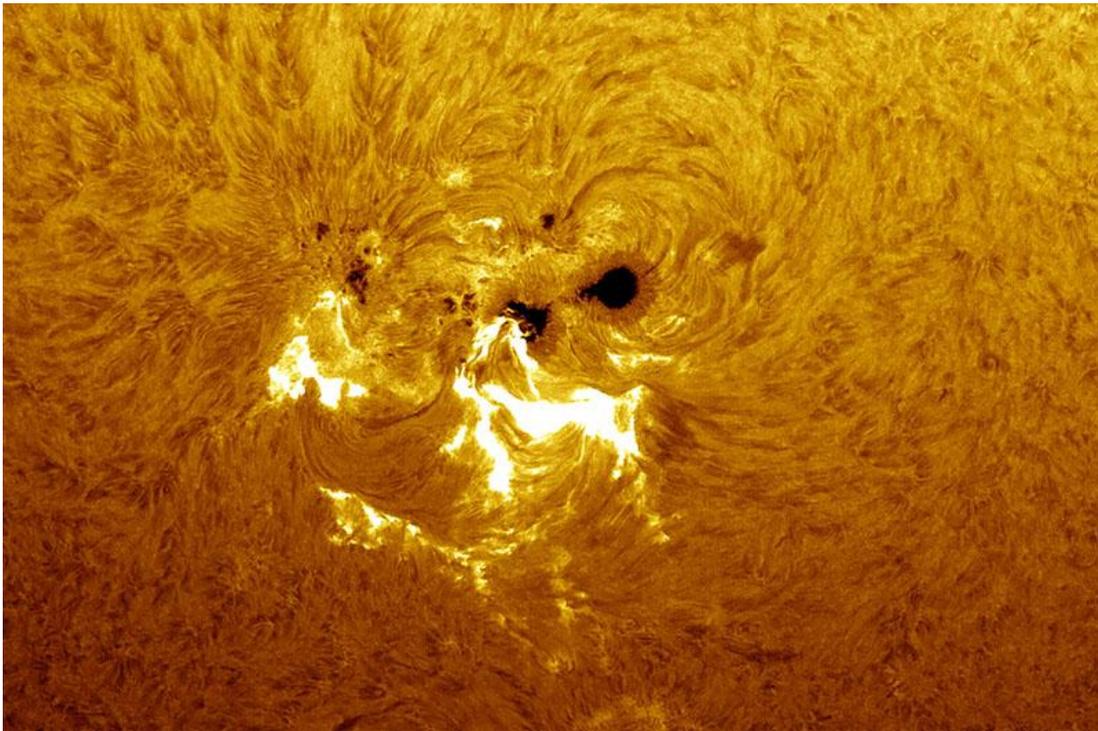
## *Secrets of the Sun*



### *July Meeting Description*

Eagle Valley Astronomical Society will gather Thursday evening, July 12, starting at 7:30 PM at the Walking Mountains Science Center near the base of Bush Creek Road in Avon. Local astronomer John Briggs will explain how specialized solar telescopes allow seeing amazing details that are present on the Sun every day. Impressive as these solar

features are, they nevertheless remain unknown to most people. In the photograph above, for example, each of the dark spots on the Sun is about the size of the Earth and is caused by intense magnetic forces. A finer texture, visible through filtered telescopes, is called solar granulation. Each “granule” is a short-lived bubble of rising hot gas and is about the size of Texas. In the image above, the hydrogen gas cloud extending beyond the solar limb is called a prominence. But the most striking solar features are only occasional and are called solar flares.



Flares are huge explosions on the solar surface, indicated by the bright eruptions in the image above, that release a nearly unimaginable amount of energy in the course of just fifteen or twenty minutes. Mr. Briggs has made progress with several specialized, portable solar telescopes at HUT Observatory, and he has a video system that is capable of filming solar flares. Video results will be shown at the meeting. Mr. Briggs will have at least one solar telescope set up for demonstration at the July meeting.

Also part of the demonstration will be how to make a simple “pinhole camera” that allows anyone to see a solar image safely, including the phases of a solar eclipse. We shall have hand-held #14 glass welding filters, available at many hardware stores, that are another way for safe viewing of the Sun by naked eye. Commercially available solar filters for telescopes will also be explained and demonstrated – the key being that any such filter must reduce the brightness of the Sun, in all colors, to about one part in a million, or less, of the natural level.

Most people don't know, but Colorado figures prominently in the history and ongoing progress of solar science. Donald H. Menzel, a Director of Harvard College Observatory and one of the most prominent solar astronomers of the 20<sup>th</sup> Century, was a native of

Leadville. Familiar with Colorado's high-altitude clear skies, Menzel created a WWII-era solar observatory above Leadville to study how solar flares disrupted radio communications. This facility evolved into an organization called High Altitude Observatory with headquarters in Boulder, and it remains one of the world's leading solar research centers. The National Solar Observatory, now in Tucson, recently decided to transfer its headquarters to Boulder. It is easy to envision a connection between Menzel's early days in Colorado and ongoing consequences in solar astronomy today.



The Rutherford telescope from 1868 was set up horizontally for last month's Transit of Venus at Mount Wilson Observatory. Sam Hale, beside the 13-inch Rutherford lens, is the grandson of George Ellery Hale, the founding director of Mount Wilson.

### **Local Astronomy News**

The first telescope used to photograph the solar granulation was a 13-inch refractor built in 1868. At the time, this lens-style telescope was among the largest in the country, and it was used by the famous early American astronomer, Lewis M. Rutherford, in New York City. In the photo above, the Rutherford telescope is set up horizontally behind Sam Hale, and you can see the precious 13-inch lens in the center of the image. The white apparatus to the right is a tracking system of mirrors that allows light from the Sun, or from any celestial source, to be directed into the stationary telescope.

In collaboration with solar astronomer Dr. Jack Harvey of National Solar Observatory, John Briggs will be attempting to reenact Rutherford's photographic observations of the

solar granulation with the 13-inch telescope. The idea was suggested by Dr. Harvey. To do this, Jack and John will set up the Rutherford telescope with a much larger system of tracking mirrors available at the National Solar Observatory's McMath-Pierce telescope at Kitt Peak in Arizona. (The 13-inch lens will thus be fully illuminated.) The experiment is scheduled for five days in September, and we shall share results at a future meeting of the EVAS.



The McMath-Pierce Solar Telescope at Kitt Peak National Observatory

A motivation for reenacting the historic observation, by the way, is that Lewis Rutherford published his original success rather modestly and obscurely, such that many historians incorrectly give credit to a European astronomer working independently of Rutherford. Thus we have an opportunity set the record straight. The gigantic McMath-Pierce facility, which is among the world's largest solar telescopes, will be a particularly dramatic setting. The historic Rutherford telescope will be displayed at our July meeting of the EVAS.

### **Recent Results from HUT Observatory**

Two new scientific papers reporting results from HUT Observatory near Eagle, Colorado, are published in the current issue of *Minor Planet Bulletin*, a specialty on-line journal edited at MIT. The titles are *Eight Months of Lightcurves of 1036 Ganymed* and

*Rotation Period Determination for 5143 Heracles.* A link to the current issue is here: [http://www.minorplanet.info/MPB/MPB\\_39-3.pdf](http://www.minorplanet.info/MPB/MPB_39-3.pdf)

At HUT Observatory we are proud that of the twelve collaborators contributing to these two papers, seven are coauthors in foreign countries, including Serbia, Italy, Georgia Republic, Ukraine, Russia, and Czech Republic. This dramatizes the international collaboration that is, in fact, common in observational astronomy today, thanks much to the convenience of the Internet.

### **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/>

###