

*The Springfield Telescope Makers &
The Hartness House Inn*

Present

A Lunar Morphology Workshop

Thursday, August 5, 2010



We are pleased to offer a pre-Stellafane workshop at the historic Hartness House Inn and Porter-Hartness Museum of Telescope Making located in Springfield, Vermont, cosponsored by the Antique telescope Society. Proceeds will go towards the purchase of a replacement furnace for the Museum, which is run by volunteers from the Springfield Telescope Makers. This year we have added an evening banquet and after-dinner speaker, Professor Peter Schultz from Brown University.

In addition to the evening lecture, workshop speakers include:

- Bert Willard
- Peter Schultz
- William P. Sheehan
- Charles A. Wood
- Thomas A. Dobbins
- Richard Evans

Reservations for a room at the Hartness House Inn can be made by calling (802) 885-2115 or on line at www.hartnesshouse.com.

*******Register Now! Space is limited!*******

Mail your registration to: Dan Lorraine, Lunar Morphology Workshop Registrar, 63 Cranberry Terrace, Cranston, RI 02921-3513

Name: _____

Address: _____

email: _____

Registration \$75.00 _____ Evening Banquet \$50.00 _____

Please consider making a donation for the badly needed furnace:

_____ \$25 _____ \$50 _____ \$75 _____ Other Total Enclosed: \$ _____

*******Make checks payable to John W. Briggs*******

Schedule and Preliminary Agenda

Please also visit the Stellafane site for additional information:

<http://stellafane.org/convention/2010/2010-hartnesshouse.html>

Lunar Morphology Workshop, Thursday, August 5, 2010

Hartness House Inn, 30 Orchard Street, Springfield, Vermont, 05156; phone 802-885-2115

Note that registration includes coffee breaks and a buffet luncheon at Hartness House. Registration for the evening meal and after-dinner presentation is separate. The small profit from these fees will support a replacement furnace for the Telescope Museum.

8:00 – 8:55 **Coffee and Registration**

8:55 – 9:00 **John Briggs** *Words of Welcome*

9:00 – 9:30 **Bert Willard** *Russell W. Porter – His lunar drawings and crater Porter*

9:30 – 10:15 **Chuck Wood** *Learning to read the Moon*

10:15 – 10:30 **Coffee Break**

10:30 – 11:15 **Chuck Wood** *Lunar Exploration Tools*

11:15 – 12:15 **Peter Schultz** *Making the man in the Moon: Observing the Moon in the context of its geological history*

12:15 – 1:15 **Lunch**

1:15 – 2:00 **Open House** *Porter-Hartness Museum of Telescope Making with curator **Bert Willard***

2:00 – 2:45 **Tom Dobbins** *Transient Lunacy*

2:45 – 3:00 **Coffee Break**

3:00 – 3:45 **William Sheehan** *A man in a far-away place with an idea far ahead of its time: A. C. Gifford and the Modern Impact Theory of Lunar Crater Formation*

3:45 – 4:30 **Richard Evans** *Lunar rock and mineral mapping using public-domain software with Clementine and Lunar Prospector data: The Geological Lunar Research Group (GLR) Experience*

4:30 – 5:30 **Panel discussion**

5:30 – 6:15 **Cocktails**

6:15 – 7:15 **Banquet**

7:15 – 8:15 **Peter Schultz** *Secrets from the Shadows of the Moon: Results from LCROSS*

Titles and Abstracts

As additional details become available, please check the Stellafane site maintained by Ken Slater: <http://stellafane.org/convention/2010/2010-hartnesshouse.html>

Bert Willard *Russell W. Porter – His lunar drawings and crater Porter*

Abstract: While living in Port Clyde, Maine, Porter made some fanciful drawings of the moon using his 16-inch polar telescope. Having spent many years above the Arctic Circle, he likened the lunar landscape to that of the polar landscape. The drawings are from the perspective of a lunar probe about to land on the moon. These were published in *Popular Astronomy* magazine in 1916. They will be compared to modern photographs taken by a member of the Springfield Telescope Makers.

Bert Willard joined the Springfield Telescope Makers in 1953 while a freshman in high school. He is the club historian, museum curator and archivist, and biographer of Stellafane founder Russell W. Porter. He works half-time at MIT Lincoln Laboratory as an optical systems designer. He attributes the STM for steering him into a career in optics.

Chuck Wood *Learning to Read the Moon*

Abstract: The Moon is the most visually complex object in the night sky, with more than 12,000 craters, mountains, rilles and domes visible with backyard telescopes. Many observers check to see that conspicuous craters such as Copernicus or Clavius are still there but then, perhaps overwhelmed by details, shift their view to Mars or a distant galaxy, where an indistinct smudge of low contrast is all there is to see. Learning to read the processes and relationships of lunar landforms opens up an entire world for exploration and understanding.

Chuck Wood *Lunar Exploration Tools*

Abstract: It used to be that exploring the Moon meant shivering (or mosquito slapping) at the eyepiece and casual sketching. Today there are many tools to increase observing effectiveness and exploration beyond the eyepiece. Video cameras and stacking software have made it possible for amateurs to take better lunar images that professionals use to, and tools such as *LTVT* permit high-quality measurements of crater depths and mountain heights. Computer experiences such as *Selene* and *MoonWorld* permit personal immersion in lunar science.

Charles Wood is the author of *The Modern Moon - A Personal View* and coauthor of *Volcanoes of North America*, *Astronauts Guide to Impact Craters*, and the upcoming *Kaguya Lunar Atlas*. He has written monthly lunar articles for *Sky and Telescope* for nearly a decade, and established the *Moon Wiki* and *Lunar Photo of the Day* web sites. He is a member of the Titan Radar team for the Cassini Saturn mission, and is Senior Scientist at the Planetary Science Institute in Tucson and Executive Director of the Center for Educational Technologies in Wheeling, WV.

Peter Schultz *Making the man in the Moon: Observing the Moon in the context of its geological history*

Peter H. Schultz received his Ph.D. in Astronomy at the University of Texas at Austin in 1972. After working as a research associate at the NASA Ames Research Center, and a Staff Scientist at The Lunar and Planetary Institute, he became an Associate Professor in the Department of Geological Sciences at Brown University in 1984. He was promoted to full Professor in 1994. In addition to his research and teaching responsibilities at Brown, Pete has served as Director of the Lunar and Planetary Institute Planetary Image Facility, and is currently the Director for both the Northeast Planetary Data Center and the NASA/Rhode Island University Space Grant Consortium.

Tom Dobbins *Transient Lunacy*

Thomas A. Dobbins is a keen observer of the Moon and planets and a contributing editor of *Sky & Telescope* magazine. He is the co-author of *Introduction to Observing and Photographing the Solar System* (with Donald C. Parker and the late Charles F. Capen) and *Video Astronomy* (with Steve Massey and Eric Douglas). Students of the Moon will be especially familiar with his acclaimed book, coauthored with William Sheehan, *Epic Moon, a History of Lunar Exploration in the age of the Telescope*. Dobbins holds patents in diverse fields ranging from chemical processing and rocket propulsion to acoustic amplifier design.

Bill Sheehan *A man in a far-away place with an idea far ahead of its time: A. C. Gifford and the Modern Impact Theory of Lunar Crater Formation*

Abstract: The craters of the Moon, discovered by Galileo with his small telescope, are the distinguishing feature of the lunar surface. From the first, every telescopic glance at the Moon called forth the question of the origin of these remarkable features. Perhaps in part because of the name, the craters were long believed by most astronomers to be volcanic, but after it was reliably established (by Chladni and others in the 18th century) that stones--meteorites--actually fell from the sky onto the surface of the Earth, early versions of a meteorite impact theory were proposed to explain the lunar craters. They were not, however, regarded as plausible by most astronomers.

Even one of the pioneers of the modern impact theory, the geologist G.K. Gilbert, who in 1892 presented his analysis that the lunar maria were formed by impacts, assumed that these structures were formed by mechanical impacts like the holes formed in a target by bullets fired from a gun. In order to account for their circularity, he assumed they resulted from nearly vertical falls, and explained this peculiarity through the ad hoc assumption that the Earth must once have been surrounded by a Saturn-like ring.

The great breakthrough in understanding the formation of lunar craters came from applying basic principles of physics. In 1915, just after the beginning of World War I, the eccentric New Zealand Professor A.W. Bickerton, author of the controversial "partial impact theory" to explain novae and a host of other astronomical phenomena, realized that meteors travel with sufficient speed to produce results like those being seen with the exploding shells of the battlefields of Flanders and the Somme. Bickerton, however, was a poor mathematician; it was left to his friend and fellow New Zealander A. C. Gifford--who as a student had won the

Herschel prize for mathematical astronomy at Cambridge--to demonstrate, in 1924, the physics of impact, and to show that a collision of a meteorite with the Moon would be explosive in nature, and produce features modeling in all respects the actual forms of the lunar craters. Gifford's life and contributions will be presented here; he deserves to be more widely appreciated as one of the most important figures in the modern study of the Moon.

A psychiatrist with a lifelong interest in astronomy, William Sheehan is a contributing editor of *Sky & Telescope* magazine, a member of the History of Astronomy Division of the American Astronomical Association, and a consultant to Committee 41 (History) of the International Astronomical Union. His books include *Planets and Perception*, the definitive history of the Martian canal controversy; *The Immortal Fire Within*, a critically acclaimed biography of the astronomer Edward Emerson Barnard; and *In Search of Planet Vulcan* (with Richard Baum). Sheehan is a 2001 fellow of the John Simon Guggenheim Memorial Foundation, a prestigious award given to artists, scholars and scientists "on the basis of distinguished achievement in the past and exceptional promise for future accomplishment." Students of the Moon will be especially familiar with Bill's acclaimed 2001 work, coauthored with Tom Dobbins, *Epic Moon, a History of Lunar Exploration in the age of the Telescope*.

Richard Evans *Lunar rock and mineral mapping using public-domain software with Clementine and Lunar Prospector data: The Geological Lunar Research Group (GLR) Experience*

Note: Rick Evan's presentation will be prefaced by a brief recorded message prepared especially for our gathering by **Raffaello Lena** of Italy, founder of Geological Lunar Research Group, an amateur organization that publishes the specialty journal, *Selenology Today*. Followers of Chuck Wood's websites, *Moon Wiki* and *Lunar Photo of the Day*, will already be familiar with this very interesting group and publication. Rick's abstract is as follows:

Abstract: This presentation describes the experience of the Geological Lunar Research Group (GLR) over the past several years in working with lunar spectra. Although experience with small telescopes is included, the main presentation deals with data mining Clementine and Lunar Prospector data. GLR has written *Octave*-based programs to extract and map spectral parameters including the bandcenter, band depth, FWHM and continuum slope of the principal lunar iron absorption trough near 1 micron. These maps and their pairwise products are used in a matrix regression procedure to spatially enhance Lunar Prospector elemental abundance data for Fe, Mg, Ca, Al, Ti and O. The resulting elemental abundance maps are used to create petrographic and basaltic rock/mineral maps of lunar features. Materials will be included at the presentation which should allow interested colleagues to duplicate our results and further explore the rock/mineral composition of the lunar surface.

Dr. Rick Evans writes, "I am a mostly retired physician with an undergrad background in mathematics and chemistry. I've been an amateur astronomer most of my life. In the mid 1990s I became very interested in the Clementine mission, and this led to my following the literature produced by the well-known team of Brown University astrogeologists. Eventually, mainly via self-study, I began to understand the basic principles involved in this science. About 2006 or so I joined the GLR (Geologic Lunar Research) Group and discovered a community interested in these issues. Since then, working as a team, we have made substantial progress in approaching

lunar rock and mineral composition via analysis of lunar spectral parameters derived from Clementine spectral band images, as well as progress enhancing the spatial resolution of Lunar Prospector data. Otherwise I'm a more-or-less typical amateur astronomer interested in both solar system and deep sky objects.

Peter Schultz *Secrets from the Shadows of the Moon: Results from the LCROSS mission*

Please note Professor Schultz's brief biography above.