the Webfooted Astronomer

Seattle Astronomical Society • April/May 2003

May Meeting

Speaker: Jerry Blackwell

NASA NStars Project and
Nearby Star Observers

Wednesday, May 21
7:30 p.m.

Physics-Astronomy Building
Room A102
Univeristy of Washington
Seattle

Come early at 7 p.m. for coffee and snacks and to visit with your fellow members!

May SAS Meeting to Focus on Nearby Stars

by Brian Allen

The speaker at the May 21 monthly meeting of the Seattle Astronomical Society will be Jerry Blackwell, who will present a briefing on the activities of the NASA NStars Project and the Nearby Star Observers (NBSO), a non-profit worldwide astronomy organization based in Federal Way, Washington.

After working 33 years in the areas of R&D, plant management and sales engineering, Jerry's lifelong interest in physics and computers eventually led him to an exclusive pursuit to study the nearby stars. Utilizing the then-new and growing power of the internet, Jerry formed NBSO to concentrate on nearby star issues. He also compiled the most complete dedicated near star (20 parsec radius) computer database available prior to the launching of the NASA NStars project.

The NASA NStars research project, which originated in 1998, has as its mission to be the most current, complete, and accurate source of scientific data about all stellar objects within the current study radius of 25 parsecs. The NASA NStars website is at http://nstars.arc.nasa.gov/index.cfm.

The NBSO is a non-profit organization whose members are actively engaged in viewing, studying, and exchanging information about stars and star systems 25 parsecs of the Sun. NBSO's website is at http://www.nbso.org.

Seattle Astronomical Society

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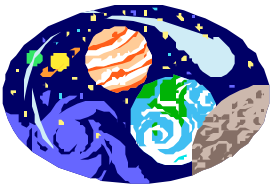

From the President's Desk…

by Stephen Van Rompaey

It's been almost two months since we've had nice clear weather for observing and I'm hopeful that we will have good viewing conditions on Saturday, May 3, our next scheduled **star party at Tiger Mountain**. Meet me at the Tiger Mountain summit parking lot at 8 p.m. and we will unlock the gate, move up the road, and setup for several hours of observing. Unlike the Poo Poo Point site, the Tiger Mountain Trailhead parking lot is only a quarter of a mile from the gate. This means that there will be an opportunity for members to leave earlier and not have to wait until the whole group leaves. This past week I signed the new license with the Washington State Department of Natural Resources that gives the club access to these sites through 2008.

"The other major events this May are the annual* Astronomy Day *activities that will be held on Saturday, May 10."

The other major events this May are the annual **Astronomy Day** activities that will be held on Saturday, May 10. Ed Barnes has been our liaison with the Pacific Science Center and at the April meeting we had a good number of members volunteer to help with this event. The club also has a long-standing tradition of assisting the University of Washington Astronomy Department with their Open House, which is also planned for May 10, from 2 to 5 p.m. I feel it is important to also support the Astronomy Department in this activity; their faculty have been dependable speakers at our meetings and we have access to their auditorium. If you are interested in bringing your telescope or helping at one of our information tables, please contact Ed Barnes at (206) 242-0123 for the Pacific Science Center or contact me via e-mail or phone if you would like to help at the UW Astronomy Department.

During the past couple of months we have been adding new information to the **club's website**. It has long been a goal of the SAS Board to provide more information to club members through the website and with the hard work of Paul Rodman we have made progress in this area. We have added four new enhancements. The first is an "Awards" page where we

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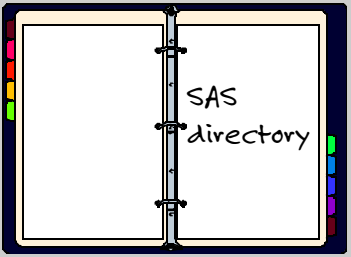
want to list the observing awards that have been earned by club members. Please contact Mike Langley (VP-Education) with your observing award information if it's not listed. We added the SAS bylaws for those members who want to know how the club is organized and how it is supposed to operate (see "About SAS"). We have begun posting the minutes from the monthly Board meetings to inform you about the issues we're working on and the decisions that we've made (see "Board"). Finally, I have begun to post the agenda prior to the Board meeting to give you an opportunity to contact us about theses issues.

Lastly, I'm delighted to welcome the **new editor** for our newsletter, Pam Stucky. Please feel free to contact her with your ideas about articles and other information that you would like to see in the newsletter (editor@seattleastro.org).

Membership Directory Coming in June



We will be publishing the membership directory in June, bundled with the June newsletter. The directory is for member use only and is a convenient tool for contacting others in the club with similar interests or to arrange group observing. Please make sure we have current address, phone, and e-mail information on you by sending any changes to the club treasurer, Jim Peterson. You may e-mail changes to Jim at treasurer@seattleastro.org or mail changes to Jim at Seattle Astronomical Society, PO Box 31746, Seattle, WA 98103-1746. If you do not want your contact information to appear in the directory, e-mail or mail a request to Jim asking him to only include your name in the directory. All changes and requests must be received by May 15, 2003.

Astronomy Websites

Some great websites to check out:

- ★ **Astronomy magazine online**
  http://www.astronomy.com/
- ★ **Earth & Sky radio series**
  http://www.earthsky.com/
- ★ **NASA**
  http://www.nasa.gov/
- ★ **The Nine Planets: A Multimedia Tour of the Solar System**
  http://www.nineplanets.org/
- ★ **Planetary Data System (NASA)**
  http://pds.jpl.nasa.gov/
- ★ **SETI Institute**
  http://www.seti.org/
- ★ **Sky and Telescope magazine online**
  http://www.SkyandTelescope.com/
- ★ **Stardate online**
  http://www.stardate.org/
- ★ **Views of the Solar System**
  http://www.solarviews.com/eng/homepage.htm
- ★ **Windows to the Universe**
  http://www.windows.ucar.edu/

Some great sites for kids:

- ★ **Astronomy for Kids**
  http://www.dustbunny.com/afk/
- ★ **Enchanted Learning: Astronomy**
  http://www.EnchantedLearning.com/subjects/astronomy/
- ★ **NASA for Kids**
  http://kids.msfc.nasa.gov/
- ★ **The Space Place**
  http://spaceplace.jpl.nasa.gov/

NASA's Space Place

In Search of Alien Oceans

by Patrick L. Barry and Dr. Tony Phillips

A robotic submarine plunges into the dark ocean of a distant world, beaming back humanity's first views from an alien ocean. The craft's floodlights pierce the silty water, searching for the first, historic sign of extraterrestrial life.

Such a scenario may not be as fantastic as it sounds. Many scientists believe that Jupiter's moon Europa conceals a vast ocean under its icy crust. If so, heat from the moon's interior-which would keep the ocean from freezing solid-may also drive subaquatic volcanoes and hydrothermal vents. On Earth, such deep-sea vents provide chemical energy for ecosystems that thrive without sunlight, and some scientists even suggest that Earthly life first got started around these vents.

So a warm Europan ocean spotted with thermal vents could be a natural incubator for life. That's why some scientists hope that someday we will send a probe to Europa that could bore through the ice and explore the ocean below like a submarine.

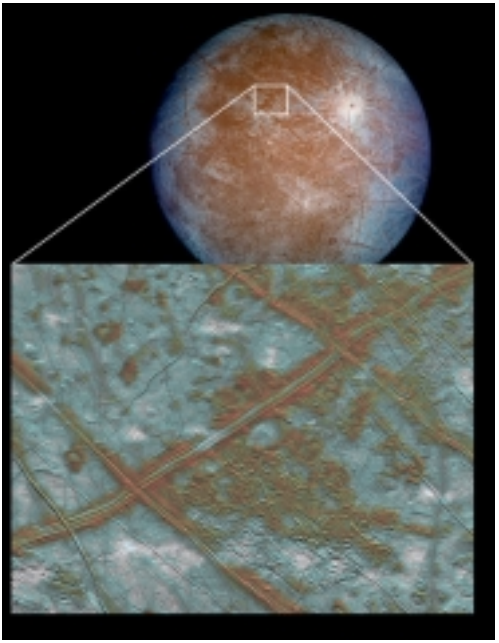
To plan for such a mission, scientists would first need to put a camera in orbit around Europa. By looking for places where water has welled up to fill the spindly cracks that riddle Europa's surface, scientists can estimate where the ice is thinnest-and thus easiest to bore through.

"... a warm Europan ocean spotted with thermal vents could be a natural incubator for life..."

That mission scenario presents a problem, though. Europa orbits Jupiter inside the giant planet's punishing radiation belts. Continuous exposure to such high radiation would damage today's scientific cameras, making the information they gather less reliable and perhaps ruining them completely.

That's why NASA is designing a more radiation-tolerant CCD that could be used on a mapping mission to Europa. A CCD (short for "charge-coupled device") is a digital camera's chip-like core, which converts light into electric signals.

"We've seen the effects of this radiation during the Galileo mission to Jupiter," says JPL's Andy Collins, principal investigator for the Planetary Imager Project. "Galileo has orbited Jupiter for many years, dipping inside the radiation belts only for brief intervals. Even so," he says, "we've seen clear signs of damage to its instruments."



Cracks on the icy surface of Jupiter's moon Europa give evidence of a liquid ocean below.

By using the hardier CCD's developed by the Planetary Imager Project, a future probe could remain in Jupiter's radiation belts for many months, gathering the maps scientists will need to finally get a peek behind Europa's icy veil. And who knows, maybe there will be something peeking back!

To learn more about the Galileo mission to the Jupiter system, visit http://www.jpl.nasa.gov/galileo/. For children, a fun, interactive "Pixel This!" game at http://spaceplace.nasa.gov/p_imager/pixel_this.htm introduces CCDs and how a really tough one will be needed for a future mission to Europa.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

May 2003

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1 UW Astronomy Colloquium: Keivan Stassun, U. of Wisconsin	2	3 Tiger Mountain Star Party 8 p.m.
4	5	6	7 UW Public Viewing Night 9 p.m.	UW 8 Astronomy Colloquium: Pavel Denisenkov, U. of Victoria	9	New 10 Member Orientation Green Lake & Cromwell Star Parties
	May 5-11: Astronomy Week					May 10: Astronomy Day!
11	12	13	14	UW 15 Astronomy Colloquium: Ewine F. Van Dishoeck, Leiden Observatory Lunar Eclipse	16	17 Amateur Telescope Makers SIG Meeting 6:30 p.m.
18 Astro-photography/ Imaging SIG Meeting 2 p.m.	19 SAS Board Meeting 7 p.m.	20	Monthly 21 SAS Meeting UW Room A102 7:30 UW Public Viewing Night 9 p.m.	UW 22 Astronomy Colloquium: Piero Madau, UC Santa Cruz	23	24
25	26	27	28	UW 29 Astronomy Colloquium: Massimo Ricotti, Institute of Astronomy, Cambridge	30	31 Annular Solar Eclipse

For more information on these events, see http://www.seattleastro.org/events.html.

For more information about **Astronomy Day** (and Astronomy Week) see http://www.astroleague.org/al/astroday/astroday.html and http://www.pacsci.org/astro-week-2003/.

June 2003

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4 UW Public Viewing Night 9 p.m.	UW 5 Astronomy Colloquium: Jeremy Mould, NOAO	6	7 Green Lake & Cromwell Star Parties
8	9	10	11	12	13	14 Amateur Telescope Makers SIG Meeting 6:30 p.m.
15	16	17	Monthly 18 SAS Meeting UW Room A102 7:30 UW Public Viewing Night 9 p.m.	19	20	21 Summer Solstice
22	23 SAS Board Meeting 7 p.m.	24	25	26	27	28
29	30					

Save the Date! The **2003 Table Mountain Star Party** will be held July 24-26. For more information: http://www.tmspa.com.

March Minutes
Project AstroBio

by Thomas Vaughan

Speaker: Linda Khandro, Department of Astronomy, University of Washington

Announcements

The meeting began with the following announcements:

★ The position of Newsletter Editor is open. (NOTE: This position may have been filled since the meeting)

★ There will be a Star Party on Saturday, April 5th, at Tiger Mountain. An e-mail announcement will follow.

★ The Pacific Science Center is looking for volunteers for Astronomy Week (May 5-11). They would like:

★ Speakers for the weekend (10th and 11th) at the Pacific Science Center.

★ Groups to lead/host family and group events throughout the week, throughout the city.

★ Speakers for community events.

Contact the VP of Publicity for more information.

Talk: Project AstroBio

The speaker for the evening was Linda Khandro (at the UW's Department of Astronomy), speaking on Project AstroBio. Project AstroBio is a program sponsored by the National Science Foundation, aimed at bringing amateur astronomers together with teachers for all grade levels.

Linda gave a brief overview of the history of Project AstroBio. It began in the Northwest in 1993. It has expanded in the area since then, and now there are 13 expansion sites, with 63 active teacher/ astronomer partnerships. Originally it was termed Project Astro, but its mandate has broadened to include biology (and other sciences) as they relate to astronomy.

Linda screened a video for us, describing the program in the greater Seattle area. It followed teacher/astronomer pairs as they went from meeting each other to leading class activities. Roughly, the program looks like this:

- ★ Astronomers volunteer for schools near them.
- ★ Once an amateur astronomer has been paired with a teacher, the pair attend a two-day workshop with other teacher/astronomer pairs, to get a feel for what sorts of class activities can be conducted.
- ★ The pair are provided with a 700 page activity book for ideas.
- ★ The pair are given a number of in-class resources.

Project AstroBio works with grades 3-12, focusing on hands-on experiences for students. It also helps teachers improve their science skills.

The Astrobiology program has also grown in the University of Washington. The UW now offers degrees in Astrobiology at undergraduate and graduate levels.

"Project AstroBio is a program aimed at bringing amateur astronomers together with teachers for all grade levels."

Astrobiology activities are slowly being added to the Project Astro curriculum. There is now a companion book of AstroBio activities, to go along with the Astro handbook.

Linda is always looking for more volunteers. If you would like to volunteer, or know a teacher or amateur astronomer who would, please contact Linda at lindak@astro.washington.edu. The next two-day training session is scheduled for July 11-12.

After Linda's presentation, two SAS members (Ruby and Karl) gave their impression of the program. Both were very enthusiastic about the experience. As Karl said, it was "like a very fun star party."

April Minutes
Video Astrophotography

by Thomas Vaughan

Speaker: Alan MacFarlane, Video Astrophotographer

Announcements

The meeting began with these announcements.

- ★ There will be a star party, weather permitting, May 3, 7:30 p.m., at Tiger Mountain. It will be held at the new lower site, not at Poo Poo Point.
- ★ Ed Barnes is still looking for more volunteers for Astronomy Day, May 10. Please contact him for more information.
- ★ **Burley Packwood** was awarded the Messier Club Certificate. Congratulations!

Talk: Extraordinary Video Footage

Alan MacFarlane specializes in video astrophotography. He started out years ago as an amateur astronomer with a lifelong interest in Mars. In 1984 he mounted a video camera to his 11-inch Schmidt-Cassegrain telescope, and was able to get some great video footage of various celestial objects, much to everyone's surprise.

Alan uses what he calls an "unorthodox" photographic approach, using a mixture of homemade and high-tech components. In addition to a high-quality Panasonic videocamera, he also occasionally uses light-amplification equipment to capture faint objects (long exposure times aren't an option for his video approach).

Over the course of a year, the Puget Sound has 56 clear nights.

Alan noted that the limiting factor for him was the Earth's atmosphere. He could get great clear shots of planets and other objects, but he was always stuck with the shimmer of the atmosphere. In fact, Alan applied for time with the Hubble telescope, and was one of the finalists in a program designed to give exceptional amateur astronomers time with the orbital telescope.

His talk was peppered with amusing statistics, including this one (perhaps more depressing than amusing): the Puget Sound region, over the course of a year, has

- ★ 228 cloudy nights
- ★ 81 partly cloudy nights
- ★ 56 clear nights

Alan's talk centered on four short video sequences, each with shots he gathered from his camera setup. They are the distillation of over 4 miles of video—22,960 feet, to be exact.

The first video was footage of the planets and the sun. He had great shots of the Moon, Venus, Jupiter, Saturn, and the Sun. He also captured a bit of the Aurora Borealis. At the end of the first video, he also had some samples of random sounds his camera had picked up while filming—birds, sirens, the wind, and even his neighbor singing in the shower.

The second video was about what Alan called "cosmic junk": comets, meteorites, and the like.

The third video focused on Mars. Alan has been trying to capture Mars for years. He calls it one of the most difficult planets to image, due to its faintness and low contrast. In spite of these factors, Alan had some great footage of Mars, where one could see the polar caps, large continental features, and cloud formations.

The fourth video was from his 1991 visit to Hawaii for a solar eclipse, which Alan nicknamed the "Eclipse Trip from Hell." Alan was treated to cloudy skies and a self-absorbed journalist, but managed to capture some images from the eclipse.

He closed with a final quick shot of a fireball (a meteorite burning up in the Earth's atmosphere) that he happened to catch while filming one night. The explosion lit up the entire sky.

The Growing Field of Forensic Astronomy

Editor's note: Forensic astronomy, though not a new field, is also not a well-known field. I asked Dr. Russell Sampson of the Physical Sciences Department at Eastern Connecticut State University to share a bit about his experience in this area, and what forensic astronomy encompasses. Here is his response.

The work I have done in the area involves the use of astronomical information in the assistance of criminal and civil litigation. My main area of research is in atmospheric refraction of high zenith angle astronomical objects—for example the refraction of the light of the setting Sun as it traverses the Earth's atmosphere. This requires a knowledge in positional astronomy and meteorology and has given me the skills necessary to do the more common forensic astronomy requests. To give you an idea of what it involves I think it would be best to give a few examples.

I have been asked to present expert testimony in a number of cases involving traffic accidents. In most of these cases the parties involved were interested in knowing if the Sun could have been a factor in the accident. Here drivers may have had their vision impaired by the glare of the Sun. It was my job to calculate the exact location of the Sun at the time of the accident. I have also been asked to determine the location and brightness of the Moon in order to recreate the lighting conditions during a nighttime accident that happened along an unlit highway.

In one of the most interesting cases I was asked to determine the phase and visibility of the Moon on a given night and a given time. This was used to support or refute a key witness's recollection of the date and time of an alleged crime. One of the key witnesses remembered the Moon to be full on the night in question. I showed that the Moon was in fact close to new phase on that night and could not have been visible—casting doubt on the witness's credibility.

I have also helped in determining the potential obstruction of the Sun by proposed high-rise buildings. I was asked to do this by a neighboring homeowner who was concerned that their property would be negatively affected by the long shadow of the building.

Dr. Russell (Russ) D. Sampson
Physical Sciences Department
Eastern Connecticut State University

Membership Information

Choose from the membership and subscription options listed and mail this form and your check to the address below. For family memberships, please include the names of persons you want to appear in the membership directory. For student memberships, please include verification of full-time student status (such as student ID card). For renewals, please attach magazine subscription renewal cards.

The Seattle Astronomical Society
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__ 1 year of Astronomy (optional)	$29.00
__ Donation (optional)	$ _____
Total amount enclosed:	$ _____

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