



President's Message - January 2012



A new year is upon us, and it should be a good one. Of course, we have to survive past the November elections and December 21 (end of Mayan calendar), but that is pretty likely.

We had a great Holiday Party at the Las Cruces Airport EAA hanger. About twenty people showed up and there was plenty of food and entertainment. We even had music this time and Tracy gave a great presentation of the highlights of 2011. Thanks to all for attending and participating.

2012 will be a rather busy year for our Society and for astronomers in general. Major astronomical events for the year include:

- March 13: Venus and Jupiter conjunction, only 3° apart in the western sky.
- March 25/26: The crescent moon will appear near Venus & Jupiter which will make a pretty picture.
- May 20: Annular eclipse of the sun, visible from New Mexico. It should be beautiful.
- June 4: Partial lunar eclipse.
- June 5: Venus transit, a very rare event. The next one will be in 2117, so don't miss this one.
- August 12: Perseid meteor shower, with a waning crescent moon, so it should be pretty dark.
- December 13/14: Geminid meteor shower, with a new moon, so it should be a great one; up to 120 meteors per hour are possible.
- December 25: On Christmas Day, Jupiter will be just above a waxing gibbous moon in a very pretty display.

Of course everything is based on the weather, but overall it should be an exciting year.

We plan to start construction of the Leasburg Dam State Park Observatory. Our Committee will meet with Park and State officials in mid-January to discuss the details. I should have something to report at the January meeting.

I am hoping to get our Telescope Loaner Program up and fully running this year. We have plenty of instruments and could still use some eyepieces. A list of available equipment will be presented shortly.

We are also eager to add to our membership roster. Please contact John McCullough if you have any ideas on how to bring in new members. The 2012 SEA Share Fair is scheduled for Saturday, February 11 at the Mesilla Valley Mall. An email was sent out recently calling for volunteers.

There are several star parties scheduled already. Contact Chuck Sterling if you are interested in participating.

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The Astronomical Society of Las Cruces (ASLC) is dedicated to expanding public awareness and understanding of the wonders of the universe. ASLC holds frequent observing sessions and star parties and provides opportunities to work on club and public educational projects. Members receive the High Desert Observer, our monthly newsletter, membership in the Astronomical League, including AL's quarterly A.L. Reflector. Club dues are \$30.00 per year, including electronic delivery. Send dues payable to ASLC with an application form or note to: Treasurer ASLC, PO Box 921, Las Cruces, NM 88004

ASLC members are entitled to a \$10.00 discount to Sky and Telescope magazine.

ASLC OFFICERS, 2012

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Next Meeting

The January meeting will be held on Friday, January 27, in Room 77 at Doña Ana Community College. "Show and Tell" begins at 7:00 p.m., while the regular meeting starts at 7:30 p.m. Our speaker for this meeting is Fred Pilcher. He will be discussing "Yarkovsky and YORP, or How Lowly Photons Control the Destiny of Planets".

All objects with temperature above absolute zero, that is, of course, all objects, radiate electromagnetic radiation. By the De Broglie relation the photons of this radiation carry momentum. Radiation from a surface is therefore analogous to rocket exhaust, and the radiating object recoils like the rocket body. The recoil is very small and completely negligible for larger bodies. For objects of 60 kilometers and smaller the net effect over the lifetime of the solar system can be large. Bodies of these sizes can be moved toward or away from the Sun, or be deflected into orbits crossing the major planets. The rotation periods can increase or decrease, sometimes by large amounts, the axes of rotation can reorient in space. It is even possible that a piece can become detached to become an orbiting satellite or, in some cases, move away to become an independent Sun-orbiting object. The Yarkovsky effect has a major role in delivering killer asteroids to the Earth.

Events

ASLC hosts both a deep sky viewing and imaging at our dark sky location in Upham and a public in-town observing session for the public at the International Delights Cafe. Both sessions begin at dusk. We also frequently provide solar observing at the Farmer's Market on Saturday mornings. For information on these and other events, please see <http://www.aslc-nm.org> .



President’s Message – January 2012

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Our next meeting is scheduled for Friday, January 27, starting with "Show & Tell" at 7:00 pm. I hope to see you all there. By the way, please don't forget to pay your dues; it's our major source of income. Thanks.

We also have plenty of apparel available. Contact Ann McPhee for your caps, hoodies and shirts.

We have had a few adjustments to the Board of Directors. Robert Yearley, the Treasurer-Elect for 2012 has resigned, being replaced by Patricia (Trish) Conley. Trish, who had been elected to a Director-at-Large position had to resign that position and will be replaced by David Anderson. Therefore the new Board is:

- Ron Kramer - President
- Tracy Stuart - Vice President
- John McCullough - Secretary
- Patricia Conley - Treasurer
- Steve Shaffer - Director-at-Large
- David Anderson - Director-at-Large
- Bert Stevens - Immediate Past President
- Walter Haas - Director Emeritus

Finally, here is a list of the current Committees and Chairs. If you are interested in serving on any committee, please contact the appropriate Chair. If you wish to Chair any of the VACANT committees, please contact the President.

- Apparel - Ann McPhee
- Education - Rich Richins
- Leasburg Dam Observatory - Ron Kramer
- Loaner Telescope - Janet Stevens
- Membership - John McCullough
- Public Outreach - Chuck Sterling
- Publicity - VACANT
- Tombaugh Observatory - Steve Shaffer
- Web-Site - Steve Barkes

Your President,
Ron J. Kramer

December Outreach Activities Roundup

By Jerry McMahan

Two December Moongazes - December 3, 2011 and December 31, 2011

On December Third, Chuck Sterling and I attended the Moongaze at the International Delights. The targets were the Moon on my 5-inch Mak and Chuck's 10-inch Meade. I was having a lot of trouble with tracking on the 5-inch. The "Smart Finder" was broken, but I assumed (wrongly) that it just affected the red dot finder which I could not adjust in one axis any way. When I attempted to align the scope, it was not coming close. Chuck suggested (correctly) that the smart finder did more than the red dot. The scope goes through a checking level,



tilt and finding north procedure. Chuck held the finder down while I tried aligning again, and it worked. He has since glued the finder in place. Once again, I was outsmarted by the technology.

Another Moongaze was held on December 31. I, again, had the 5-inch, working better now, and Chuck brought both the 10-inch and his 100mm Orion refractor. The targets, were again, the Moon and Jupiter, with the refractor on the Pleiades. He also put the 10-inch on M31, but the bright lights made even the core hard to see. We had a lot of spectators until about 9:00 p.m. and very few after that. I assume people had gone to their New Year's Eve parties by that time.

Eris – Not Larger Than Pluto After All

By Fred Pilcher

Introduction

When former ASLC member Clyde Tombaugh discovered Pluto in 1930, he realized from its faintness that it was more comparable in size to the four small inner planets than to the gas giants. However, even the best equipment was not able to measure its size, even approximately, for many years. In 1978, a large satellite, subsequently named Charon, was discovered. In the interval from 1986 to 1988, a series of occultation-transits between Pluto and Charon enabled the size of both to be measured. Pluto turned out to have a diameter of only 1,430 miles, much smaller than anyone had previously considered, and Charon only 750 miles. Pluto, however, was found to have a tenuous atmosphere, about one millionth the surface pressure of Earth's atmosphere and an unknown amount of extinction by this atmosphere makes the measured diameter of Pluto uncertain by about 30 miles. The diameter of Charon, with no observable atmosphere, is correct within a few miles.

Many years ago as a teenager I had hypothesized a second asteroid belt beyond the orbit of Neptune, of which Pluto was the brightest and largest member. In 1992, David Jewitt discovered a body, assigned the designation 1992 QB1, eight magnitudes fainter than Pluto and also with an orbit beyond Neptune. In the nearly two following decades, hundreds of trans-Neptunian objects have been discovered. The largest are nearly as large as Pluto, and they become more numerous with progressively smaller size down to the limit of current surveys. It became progressively more uncomfortable to call Pluto a planet comparable to the other eight major planets.

In the year 2003, M. E. Brown, C. A. Trujillo, and D. C. Rabinowitz discovered an object, now named Eris, at a distance nine billion miles from the Sun. From its brightness in visible light, as well as the infrared radiation measured by the Spitzer infrared telescope satellite, a diameter near 1,800 miles was inferred. A satellite of Eris, now named Dysnomia, was soon found. From the satellite orbit the gravitational attraction by Eris, and therefore Eris' mass, was found. It turned out to be 27% greater than the mass of Pluto. One could not call Pluto a planet with Eris not a planet, and action on nomenclature was forced.

The 2006 convention of the International Astronomical Union (IAU) in Prague, adopted a resolution defining the concept of dwarf planet. The exact wording of this resolution has been extremely controversial, and I do not endorse this wording. But I find the concept of a dwarf planet useful. Basically, a dwarf planet has sufficient size and mass for gravity to force it into a near spherical shape with elongation well defined by centrifugal forces arising from rotation. And it has had sufficient internal activity for differentiation to have occurred, with the denser materials sinking toward the center. But it is not the dominant object in its region of space.

Consider the first eight planets, Mercury through Neptune. Each is by far the largest object in its vicinity. The only other nearby objects are very small, comets or Earth-approaching (planet-approaching) asteroids which have entered these regions from elsewhere in the past few tens of millions of years. In the next few tens of millions of years all these current small bodies will have been removed, either by collision with the major planets or the Sun, or ejection from the solar system by a gravitational encounter with a major planet.



The three objects currently assigned dwarf planet status are Ceres, the largest of the asteroids with orbits between those of Mars and Jupiter (main belt), and Pluto and Eris, the largest objects with orbits beyond Neptune's. All of these are merely the largest objects in their region of space. Their smaller neighbors are primordial, having existed there since the early stages of the development of the Solar System. Some of these neighbors are only slightly smaller and have been considered for dwarf planet status, but I will not speculate on which may actually be assigned such status in the future.

In Nature magazine, 27 Oct. 2011, Vol. 478, Issue No. 7370, p. 493, B. Sicardy and 61 coauthors describe an occultation of a faint star by Eris on 2010 Nov. 6. Only two occultation chords and one miss were recorded. A good fit to a circle of diameter 1,445 miles could be made, but there are equally good fits to ellipses with larger eccentricities and semimajor axes. The size and shape are not nearly as indeterminate as the occultation alone suggests. Brightness variation with rotation is small and the rotation period has not been found. A rapid rotation with elongated shape and consequent larger amplitude should have been observed, if present. That it was not strongly suggests slow rotation, consequent spherical shape, and the 1,445-mile diameter found by fitting the occultation data to a spherical shape. This is the same within errors of measurement as the diameter of Pluto. From its mass, a density of 2.52 grams per cubic centimeter is computed, indicating a composition about 85% rock and 15% ice, with the ice presumably on the surface.

The smaller size, coupled with the measurements of both reflected sunlight and infrared flux, indicates its surface is nearly 100% reflecting. The spectrum shows solid methane with solid nitrogen and perhaps argon likely as well. Icy surfaces elsewhere in the outer solar system have been darkened by exposure to cosmic rays and the solar wind. The high albedo suggests a recently renewed surface. It should be noted that Eris has a highly eccentric orbit with perihelion at 37.8 Astronomical Units (about 3.5 billion miles), which it passes every 560 years. Therefore, it is suggested that the surface methane evaporates at perihelion to form an atmosphere similar to that of Pluto at the present time and which has deposited back on the surface now that Eris is far from the Sun. It is only a little more than 200 years before Eris returns to perihelion and we can observe whether an atmosphere actually forms by increased solar heating.

Minutes, November 2012 ASLC General Meeting

By John McCullough, Secretary, ASLC

Show and Tell:

Jerry Gaber started off this month's session by describing a simple and inexpensive way to start astro-imaging using a camera tripod and digital or film SLR camera. He would consider conducting a weekend workshop if there is enough interest among Society members.

Ron Kramer followed by describing another of his interests. He collects old/rare books, some astronomy related, some not. He noted that Galileo arranged for posthumous publication of some of his observations, avoiding conflict with Roman Catholic Church authorities. Ron has always wanted one of these rare editions and now has one: "Opera de Galileo, Vol. 1". It contains multiple drawings, including ones of sunspots and Jupiter's moons. He made it available for viewing, **not** handling.

Bert Stevens concluded the session by displaying material from the 2011 ALPO annual meeting. He also had RASC items, handbooks and calendars, that had been ordered earlier..



Call to Order:

Ron Kramer, President, Astronomical Society of Las Cruces (ASLC), called the business meeting to order at 7:35 pm., 18 November 2011, Room 77, Doña Ana Community College, Las Cruces, New Mexico.

President's Comments:

Ron Kramer, President, welcomed the group, noting that tonight's meeting was again preceded by a "Show and Tell" session organized by David Anderson. Ron thanked Dave and noted that presentations for "Show & Tell" do not have to be highly technical to be informative. Ron welcomed several visitors to tonight's meeting: Michael La Torra, a longtime Las Cruces resident and educator; Melissa Ames, the Home/School Liaison for Las Cruces Public Schools; Sidney Webb, a recent retiree and amateur astronomer; Denzil Burnam; and Jason Jackiewicz, tonight's speaker.

There were no additional new members or guests present at tonight's meeting.

Secretary's Report:

The Secretary, John McCullough, reported that the minutes for the October 2011 meeting were submitted for publication in the November edition of the Society newsletter, the *High Desert Observer* (HDO). Bert Stevens moved that the minutes from the October general meeting be accepted as submitted; Tracy Stuart seconded. The motion passed by acclamation. There was not an additional Secretary's report.

Treasurer's Report:

The Treasurer, Janet Stevens, continues to recuperate at home and was not present. Bert Stevens, Past-President, provided a report on the status of the Society's accounts, although interest on the CD has not been posted for inclusion. He also requested that all members' dues for 2012 be paid by the end of this year. There was not an additional Treasurer's report.

Committee Reports:

Apparel Committee:

Ann McPhee, Committee Chairman, reported no sales since August, as she has been out-of-town. There remains \$642 of inventory and \$1,551 of apparel has been sold. Items will be available for purchase following tonight's meeting. She suggested that warmer, cool weather apparel may need to be ordered.

Holiday Party/December Meeting:

The December meeting and Holiday party will be held 10 December at the EAA hangar at the Las Cruces airport starting at 5:30 pm. Please contact Ron Kramer if you intend to attend. The dinner will be a pot-luck, attendees with last names starting with A-M will bring a salad or dessert, those ending with N-Z will bring side dishes, and entrees will be provided by the Society. Organizers are needed for Decorations, Entertainment (music), Gift Exchange (\$25-\$30, Trish Conley will coordinate), Program/2011 in Review Presentation (Tracy Stuart will coordinate). At least seventeen (17) Society members have already contacted Ron that they will attend. The age limit is fifteen (15), please let Ron Kramer know via email.

Loaner Telescope Program:

Janet Stevens, Committee Chairman, was not present (see Treasurer's Report above). There was no activity to report.

Membership:

John McCullough, Committee Chairman, thanked Tracy Stuart and the rest of the Society for their efforts at the 2011 Renaissance Arts Faire. Many people in the larger community were made aware of the Society's presence and multiple information brochures were distributed.



Leasburg Observatory Committee:

Ron Kramer, Committee Chairman, reported that a meeting between the Society, the State Parks Department, and LDSP personnel to discuss construction plans is expected to occur on or before 08 December. The State is paying for the building and support, the Society will provide the telescope and operational expertise.

Tombaugh Observatory:

Steve Barkes was not present. Steve Shaffer, also not present, will have the remaining keys to the meeting.

Outreach Committee:

Chuck Sterling, Outreach Coordinator, reported that the first week and a half of the month was very busy. Details are in the HDO. A star party at a pre-school is scheduled for March 2012. Various scouting groups have requested support to work on observing skills. The Mesilla Valley Bosque State Park (MVBSP) star party resulted in a \$50 donation. Please contact Chuck via the yahoo group if you can support any of these outreach activities.

2012 Renaissance Arts Faire:

Tracy Stuart, Committee Chairman, reported on this year's Faire at Young Park. The Society's booth was located in the general area of the Faire, out of the Children's Realm. Despite unpleasant weather on Saturday, there was a good public turn-out for the weekend, especially Sunday. The Society did not attempt to sell images this year but may consider it for 2012. As noted above, many of the Society's informational brochures were distributed. Tracy thanked all the members that supported the efforts through the weekend.

Society Website:

Steve Barkes, webmaster, was not present. There was no update on issues regarding the Society's web site.

There were no additional committee or officer reports.

Old Business:

There was no old business discussed.

New Business:

There was no new business for discussion.

Announcements:

Announcements:

Bert Stevens announced that the HDO will not be published in December.

There were no additional announcements made.

Recognitions/Achievements:

John Kutney received the Astronomical League (AL) Southern Arp award for observing at least 100 Arp galaxies south of -22 degrees declination, the second one awarded in the US.

There were no additional recognitions or achievements announced at tonight's meeting..

Tracy Stuart moved to adjourn the business portion of the meeting, Jerry Gaber seconded. The motion carried.



The business portion of the meeting was adjourned at 8:04 pm.

Presentation:

Jason Jackiewicz, assistant professor in the New Mexico State University (NMSU) Astronomy Department, provided tonight's presentation. His topic was "A Taste of Seismology of the Sun and Stars". Dr. Jackiewicz is a researcher in the field of solar physics. He studies helioseismology, which involves using solar surface oscillations (sunquakes) to probe the Sun and determine its internal structure and dynamics. His work employs a combination of mostly space-based high-resolution observations, rigorous local helioseismology techniques, large-scale numerical simulations, and quantitative analysis of synoptic maps of subsurface solar properties. His primary goals are to address the root causes of solar magnetic activity and quantitatively establish physical relationships between subsurface properties and the magnetic activity observed in the solar chromosphere and corona.

This presentation was not recorded for rebroadcast on the Internet. Other meeting presentations can be accessed on the web at <http://www.aics-research.com/lectures/aslcnm/>.

The November meeting of the Astronomical Society of Las Cruces concluded at 8:57 p.m.

-Respectfully submitted by John McCullough, ASLC Secretary



Annular Solar Eclipse, May 10, 1994



Calendar of Events January/February 2012 (MST)

Jan. 16	2:08 a.m.	Last Quarter Moon
23	12:39 a.m.	New Moon
24	6:00 p.m.	Mars stationary
27	7:30 p.m.	January ASLC Meeting
30	9:10 p.m.	First Quarter Moon
Feb. 07	2:54 p.m.	Full Moon
08	5 a.m.	Saturn stationary
14	10:04 a.m.	Last Quarter Moon
15		Mars farthest from the Sun
21	3:35 p.m.	New Moon
24	7:30 p.m.	February ASLC Meeting

Be sure to visit our web site for the latest updates: <http://www.aslc-nm.org>

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ASLC - Sharing the Universe
With Our Community
for Over 50 Years

