The High Desert Observer

The Bulletin of the Astonomical Society of Las Cruces

September, 2006

President's Note

This year our Governor Bill Richardson will proclaim a special day and night to acknowledge the New Mexico night and sky as a unique resource and a special heritage. The night is Monday October 9, also Columbus Day. This would be a good evening for us to hold some star parties, like at our own campus observatory, and a special moon gaze (the gibbous moon will occult the Pleiades), and perhaps some neighborhood events for our own neighbors. My suggestions may seem to be somewhat ambitious, but the star parties need not be large crowd events, just for our neighbors and neighborhood children to build neighborhood good will and dark sky awareness. The larger event could be at the observatory for the larger crowd. Let's discuss this at our next (September) meeting, do some of our usual high level volunteering, and issue some public releases. By the way, my surgery went well, now I am like an old car, with a new metal ball joint in my right shoulder.

This Month's Observer

I hope to see you at our meeting this month. As usual, it will be held the fourth Friday of the month, (September 22) at 7:30pm, in room 77 of the main campus of the Dona Ana Branch Community College (DABCC). Dave Dockery will speak on some aspect of astrophotography. Your Prez, VinceD

White Sands Star Party in Doubt

Heavy rains have flooded some areas of White Sands. The following was sent on September 6 by John Mangimeli, Chief of Interpretation, White Sands National Monument.

"The amphitheater and Area 19 have almost a foot of standing water in them, and the last 4 miles of the Dunes Drive is flooded and closed. With more rain coming and cool temperatures, it's very unlikely that things will dry up in the next two weeks. There are no other parking areas dry enough to accommodate star party participants. Is there any alternative venue we could use?..."

The attached image was taken September 7. At this point no definite decision has been made regarding the cancellation of the WSSP, which is scheduled for September 22-24. For additional information, please see the WSSP website: http://www.zianet.com/wssp/ or call the NM Museum of Space History, Education Department at (877) 333-6589 or (505) 437 2840.

Some Insider Comments on the New Definition of a Planet

Fred Pilcher

The first eight principal planets to be discovered, Mercury through Neptune, are all much larger than the largest asteroid, Ceres, and larger still than any comet. Compare Mercury, diameter 3030 miles, with Ceres, diameter 570 miles. This large size gap constitutes a natural boundary between a "major planet" and an asteroid or minor planet. When Pluto was discovered in 1930 it was initially believed to be nearly as large as Earth, and thus acquired the reputation of being in the "major planet" category. By the mid-1980's the diameter of Pluto was at last reliably measured at only 1420 miles, much the smallest planet but still larger than any asteroid.

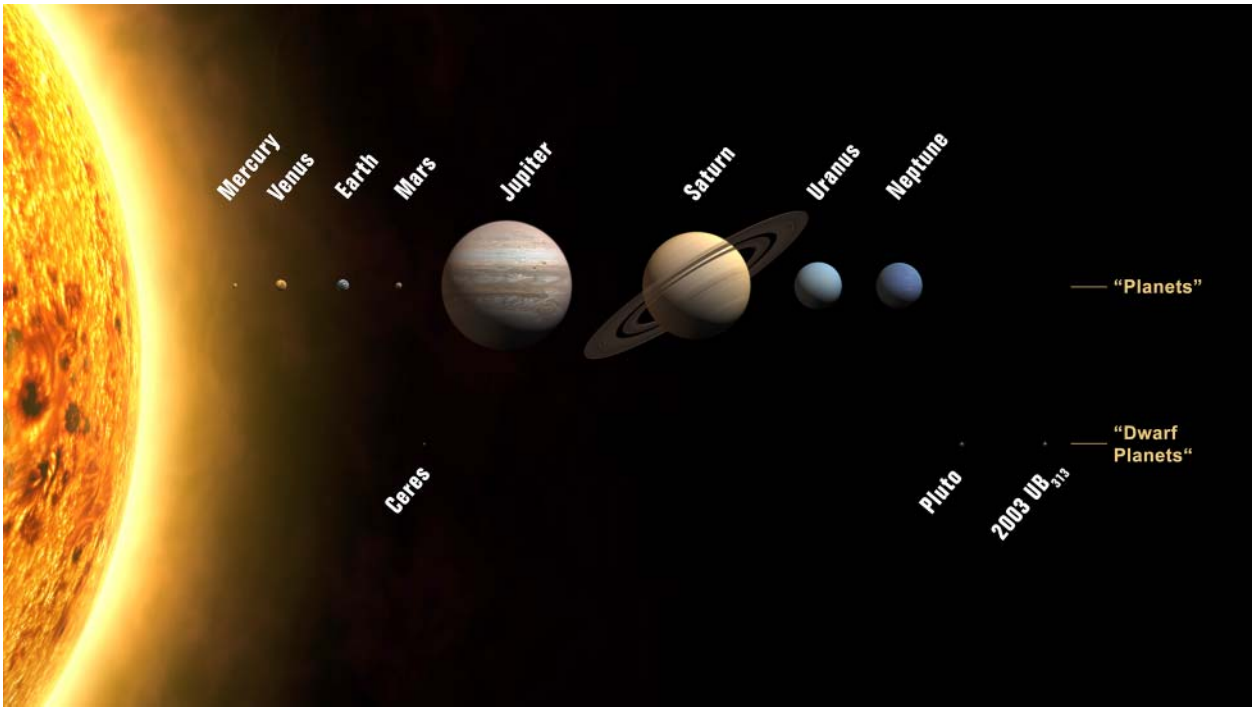

Image Credit: The International Astronomical Union/Martin Kornmesser

Starting in 1992 other objects much fainter (and smaller) than Pluto beyond the orbit of Neptune began to be discovered in large numbers. Some few of these were up to half of Pluto's size. Pluto, like the asteroid Ceres, became merely the largest of many objects with orbits in its general region in the solar system. In October, 2003, Michael Brown discovered an object slightly larger than Pluto, to date known by its provisional designation 2003 UB313, about 1500 to 1800 miles diameter. Its discovery had been delayed because it is about three times as far as Pluto from the Sun and hence much fainter.

If Pluto should be called a planet, then larger 2003 UB313 should be also. But if these are merely the largest of many objects outside the orbit of Neptune, a second "asteroid belt," then perhaps neither should qualify. But designating Pluto a planet had powerful historical precedent. Astronomers argued vehemently among themselves. The International Astronomical Union (IAU) formed the IAU Planet Definition Committee of seven chaired by Owen Gingerich, an expert in both the content and history of astronomy, to write a recommendation for the definition of a planet to be presented to the IAU at its triennial convention in Prague.

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The Planet Definition Committee proposed that an object should be termed a planet if it (1) has an orbit around the Sun rather than another planet, and (2) has enough mass that its own gravity compresses it into hydrostatic equilibrium (departing significantly from spherical only by an equatorial bulge caused by rotation and centrifugal force). By this definition Pluto, Ceres, 2003 UB313, and likely other trans-Neptunian objects are planets.

Dissention arose early in the convention in IAU Division III Planetary Systems Sciences. Andrea Milani, a well-respected dynamicist, added a third condition. Since planets are generally believed to have been formed by a collection of smaller bodies, an object satisfying (1) and (2) above should only be termed a planet if in addition (3) it has cleared its own region of space of small bodies orbiting the Sun. By this condition there are only eight planets, Mercury through Neptune. Pluto, 2003 UB313, other large trans-Neptunian objects, and the asteroid Ceres have not cleared out the smaller bodies orbiting the Sun near them, and are not planets. Milani's recommendation was endorsed by a large majority in IAU Division III.

Milani's group won acceptance of their third condition in the final draft of the definition of a planet approved by the IAU General Assembly. To accommodate Sun orbiting objects satisfying the original two conditions, but not the third, a new class of planetary object was defined: Dwarf planet, specifically includes so far only Pluto, Ceres, and 2003 UB313. Sun orbiting objects so small they do not satisfy the second condition of roundness are termed "small solar system objects (SSSO)." Another committee is yet to be formed to consider which other individual solar system objects should be assigned dwarf planet status.

This leaves much unsettled business. (a) The resolution, perhaps through oversight, omits extra-solar planets, as they are currently called, which have enough mass to satisfy condition (2) but revolve around stars other than the Sun. (b) The special committee to allow or deny dwarf planet status to specific objects may have an impossible task. It is clear that all objects at Neptune's distance or closer which may qualify as major planets or dwarf planets have already been discovered. For objects beyond Neptune and smaller than Pluto, it may be difficult to impossible for the Hubble Space Telescope to determine whether or not they are sufficiently round to qualify as "dwarf planets" or should be termed "small solar system objects." (c) There are challenges to education, to define the term "planet" with sufficient simplicity and clarity to stimulate rather than dampen interest in astronomy among children. (d) Most of media attention following the IAU resolution will be directed toward continuing publicly vented outrage among astronomers unhappy with the vote. This conflict will diminish public confidence in astronomers, to the detriment of all. (e) A plethora of terminology and acronyms, some historical, some new, is confusing: planet, major planet, dwarf planet, minor planet, asteroid, SSSO, Trans-Neptunian object (TNO). I list all of these below in one place in order to distinguish and hopefully clarify them.

The IAU accepts three terms as official:

(1) Planet. A Sun orbiting object satisfying all three conditions above. In our solar system there are only eight, Mercury through Neptune.

(2) Dwarf planet. A Sun orbiting object satisfying conditions (1) and (2) above but not condition (3). Three are now recognized: Pluto, Ceres, and 2003 UB313. Others may be assigned dwarf planet status in the future.

(3) Small solar system object, or small solar system body. Any Sun orbiting body which does not satisfy conditions (2) and (3). This includes all asteroids, comets, and Trans-Neptunian objects not qualifying as planets or dwarf planets.

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However, all the familiar terms from the past may still be used with their former meaning:

(4) Major planet, which no longer includes Pluto and has eight members Mercury through Neptune.

(5) Terrestrial planet, with four members Mercury, Venus, Earth, Mars (not Pluto).

(6) Giant planet, or gas giant, with four members Jupiter, Saturn, Uranus, Neptune.

(7) Asteroid, or synonymously minor planet, includes Ceres and all smaller sun orbiting bodies which do not show the significant production of gas characteristic of comets.

(8) Trans-Neptunian Objects includes all objects beyond the orbit of Neptune, including Pluto and 2003 UB313.

(9) Thus Pluto and 2003 UB313 have dual designations both as dwarf planets and as Trans-Neptunian objects. Ceres has dual designation as a dwarf planet and as an asteroid. Michael Brown, discoverer of 2003 UB313, has stated that he has chosen a name for this object but has delayed announcement until its status was officially decided. The press has often referred to this object as Xena (after a character in a TV series) but this will be replaced as soon as Dr. Brown reveals his real choice.

One source of misunderstanding should be clarified. Because Pluto at its closest is nearer to the Sun than Neptune, it has been claimed that Neptune has not cleared small objects from its region of space. Although the first statement is true, the second is wrong. Pluto makes exactly two revolutions around the Sun in the time required for Neptune to make three revolutions. This condition is called a 2:3 resonance and is a gravitational lock by Neptune which has endured since the solar system evolved into its present configuration. Neptune passes between Pluto and the Sun always when Pluto is at its greatest distance from the Sun, nearly two billion miles beyond Neptune. This is the closest distance possible between Pluto and Neptune. Three Neptune revolutions and two Pluto revolutions later when next Pluto, Neptune, and the Sun line up, Pluto is again at its far point. When Pluto is closer to the Sun than Neptune, Neptune is always elsewhere in its orbit. At this circumstance the angle between Neptune and Pluto, measured at the Sun, is about ninety degrees. Many of the small bodies beyond Neptune are also locked into this 2:3 resonance. Others are farther out still with longer periods of revolution and not subject to the 2:3 resonance lock, but all of these stay well outside Neptune's orbit even at perihelion. Neptune has definitively cleared its region of space of small bodies, and satisfies all three conditions required by the new definition of planetary status.

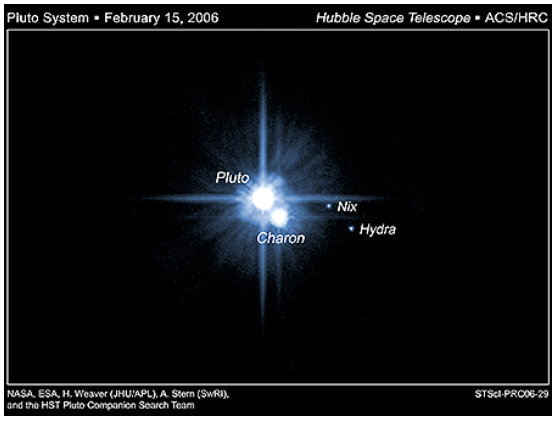
Following adoption of the IAU resolution, on September 7, 2006, the Minor Planet Center, responsible for assigning permanent numbers to asteroids since the end of World War II, designated Pluto as minor planet number 134340 and 2003 UB313 as minor planet number 136199. Two Trans-Neptunian objects only slightly smaller than Pluto and being considered for dwarf planet status are now (136108)=2003 EL61; and (136472)=2005 FY9. About ten years ago as minor planet numbering approached 10,000, several Trans-Neptunian objects had already been discovered and assigned asteroid provisional designations. Former director of the Minor Planet Center Brian G. Marsden wanted to give Pluto number 10000 as the lowest numbered as well as first discovered Trans-Neptunian object. The IAU refused to allow this. Now Pluto is rather ignominious #134340. Ceres, as the first asteroid to be discovered, has always been at the top of the minor planet list as #1.

All dwarf planets now have dual designations also as minor planets. Readers may wish to follow the media to learn whether opponents of the IAU resolution undo this farther into the future.

When is a Celestial Object a Planet?

Walter Haas

Those of us who knew our ASLC founder, Clyde Tombaugh, must feel disappointed by the IAU decision that Pluto is no longer a planet. It could not be called anything else when he discovered it in 1930 and indeed for several decades afterwards. It is difficult to add anything meaningful to the flood, say rather tsunami, of words which this decision has caused. I would urge that the criteria for considering a body to be a planet should consist wholly of parameters which can be measured at the present time. Thus orbit around a star, size, and near-sphericity are acceptable enough tests, but the requirement that the "planet" has cleared space debris from the space near its orbit depends on current theories about the formation and development of the Solar System. These may be just fine, but in science everything is subject to future revision. The Laplace Nebular Hypothesis long dominated textbooks and is now only of historical interest. Of course, the application of observable parameters is arbitrary and subject to future decisions. Would we call a conjectured perfectly spherical body 50 miles in diameter a planet? Certainly not. How about Ceres approximately 500 miles in diameter? Well, perhaps. Is Mars at about 4200 miles in diameter a planet? Really, are you kidding? At least classification should follow observation. Enough said.



What Matters Most – Equipment, Conditions, or Skills?

Nils Allen

My experiences in this hobby over many years have led to varying opinions about these three factors, which I consider the primary areas that really impact the success of your observing or imaging. Perhaps you can relate to this, and even learn something from examining these issues yourself.

First, what do I mean by each term? Equipment is straightforward… it's the level of quality and capability of the hardware you employ to "do your thing", be it optics, sensors, support tools, etc. Conditions is slightly more subtle… how dark it is, the clarity and steadiness of the atmosphere, the moisture, temperature and wind speed… even your physical condition, visual and otherwise. Finally personal skills can mean several things – skill with your equipment and observing aids, degree of visual (i.e., mental) skill development, and practical knowledge of the sky and factors that can complicate your task at hand (typically learned through lots of personal experience!).

When I was new to my astronomy "addiction," say the first 5 years or so, it seemed like equipment was everything… the experienced amateurs I saw or read about in *Sky and Telescope* had big, expensive scopes with fancy eyepieces, complex cold cameras and special wide-field astrographs, etc. The hardware was the most obvious thing I saw, so I decided to build a Big scope, get a trailer to haul it, a vehicle to pull it… so forth and so on. I still have large scopes, and have lately acquired fancy eyepieces and other tools – all things being equal (which they rarely are), it can really help to have these powerful (often expensive) resources. But it still intrigues me when I get out my small $100 Dob and have a great time observing… perhaps it's more about using the right tool for the job at hand, with optimal timing and proper expectations. Success is success, and more is better!

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However, considering the current weather and all, it's not surprising that in recent years I've come to believe that conditions may be more important than equipment – after all, you generally end up with whatever equipment you choose to have, but it's much harder to control the conditions under which you must function. For example, if you observe mostly in your backyard or on the edge of town, you might be amazed at the sights from a truly dark high altitude site. Or likewise compare the planetary detail you see from the usually-turbulent desert to that routinely available from a Florida beach…. Certainly lots of moisture (dew), or wind, or cold, or even insects can wreck any astro-outing. It may be more important to be in the right place at the right time working on tasks that are appropriate for the conditions. But, don't forget that using the right tools can mediate the effect of certain conditions (web-cams, dark frames, super-duty mounts, and observatories….).

Choosing when and where, and picking the right tools… sounds like we're getting into the use of skills and applied knowledge! This crucial factor can be hard to evaluate because it's so unique to each person, and often takes years to develop. I stress this point when I instruct students in our introductory astronomy courses: it's not enough to get a nice scope and head out to the boonies or up to the mountains… to have a rewarding experience you must become intimately familiar with your equipment and the sky and your own visual system and what works for you. For example, consider just target selection… where is it, when best, what FOV, how faint, filters?, etc, etc. This typically takes persistence and dedication, and I feel is best learned with and from other astronomers.

Consider Joseph our VP as a balanced example for visual observing. He has acquired (or built) a small stable of quality astro-equipment over the years, through careful testing and personal fitting to his needs (the biggest is 8"). He is good at both anticipating and evaluating environmental conditions and finding numerous places and means to optimize his productive observing time and reach his goals, which are typically well thought-out beforehand. He has invested much time in learning the sky and practicing skill-building techniques like sketching and limiting-mag observing, and thankfully is quite willing to share his techniques and insights. A successful astronomer indeed and one worth emulating! So how 'bout you – are you balanced in your approach to this fascinating hobby? Myself, I've got a way to go, I think!

Astro-Tidbits (formerly Beginner's Corner) - September Meeting

Nils Allen

August meeting: Our topic was somewhat unusual – "What matters most… equipment, conditions, or skills?" That is, for you, which area contributes the most to a successful observing/imaging session? Is it possible that rethinking your priorities in these areas might be helpful? Interesting idea and discussion. A summary is included in this issue of the HDO.

September meeting: Well, many of us expect to be out at the White Sands Star Party if our September meeting stays on its usual 4th Friday schedule. In that case, come on out to the Party Saturday evening and we'll have an Astro-Tidbits session right there with my scope. Otherwise, if the meeting is postponed till the 29th or the WSSP is cancelled (see "White Sands Star Party in Doubt" elsewhere in this issue of the HDO) we'll discuss some of the neat objects to see in our Fall skies. The normal meeting time for Astro-Tidbits is 7:10pm, just prior to the monthly ASLC meeting.

The Astronomical Society of Las Cruces (ASLC) is dedicated to expanding members and 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 $35 per year. Those opting to receive the ASLC newsletter electronically, receive a $5 membership discount. Send dues, payable to A.S.L.C. with an application form or a note to: Treasurer ASLC, PO Box 921, Las Cruces, NM 88004

ASLC members are entitled to a $10 discount on subscriptions to *Sky and Telescope* magazine. S&T subscribers MUST subscribe and renew through the Society Treasurer for the special club rate. To avoid a lapse in delivery, this must be done when S&T sends their reminder, 4 months in advance.

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Minutes, August 2006 ASLC Meeting

Joseph Mancilla, ASLC Vice President, called the meeting to order. Joseph announced that Vince Dovydaitis was in the hospital having elective shoulder surgery. Joseph asked for any new business. Bert Stevens reminded the members that there would be a Mercury transit of the Sun on November 8. John McCullough announced that the X-Prize Cup Event was coming up at Las Cruces Airport on 20-21 October. On October 20, there would be approximately 5,000 school kids coming to the event. He would like people to volunteer to support the event. October 21 would be the big event day. There has been some difficulty in obtaining booth space for the ASLC. However, Rich Richins has been working this issue. Two weeks after this event will be the Renaissance Craft Show. ASLC will be represented at this event too.

Al and Marie Hughey brought up the topic of the condition of the observatory building on NMSU campus that houses the club's 14" telescope. The bolt on the east-side door is rusted shut. On the west side there is a gap for small animals and insects to get into the building. The telescope has historic significance as it is a classic 14" Cassegrain built by Clyde Tombaugh and Brad Smith. Steve Barkes recommended that we get an estimate on repairing the door, and for scrapping, sealing and repainting the building. Al agreed to obtain some quotes.

Janet Stevens handed out some brochures from High Point Scientific. They will offer a small discount to ASLC members. Jerry Gaber asked a question about registration at the White Sands Star Party (WSSP) and how does one obtain a discount. Steve Barkes stated that you register and pay the full fee. Then after you perform your volunteer work, they will send you a refund check. Because of a potential conflict between the WSSP date and our next ASLC meeting, John McCullough suggested we might want to move the ASLC meeting date. Steve Barkes voiced the consensus opinion that we should keep the existing ASLC date for the fourth Friday of the month (September 22).

Nils Allen brought up some education issues. He stated that we need volunteer astronomers to come to schools in support of Project Astro. Nils has heard no word on a Project Astro Workshop which usually takes place in September. He then introduced Ms. Pam Egan who works for the Las Cruces Public Schools and is the Science Advisory Program Coordinator. Pam is hoping to recruit ASLC members to help teachers with instructing Astronomy.

Janet Stevens announced that the American Astronomical Society (AAS) has a new award ($1000) to recognize amateur astronomy research. The nominee needs to be nominated by three AAS members. Janet stated that she is an AAS member and is on the Professional/Amateur Astronomers Working Group. Finally, there was a brief discussion on the recent International Astronomical Union (IAU) resolution redefining a planet and making Pluto a dwarf planet.

For the evening program, our ASLC members, Jerry Gaber, Bob James, George Hatfield and Bill Stein gave PowerPoint presentations on the design and construction of their home observatories. This and other meeting presentations can be seen on the web at http://www.aics-research.com/lectures/aslcnm/.

Bill Stein, ASLC Secretary

Educationally Speaking... ASLC Educational Programs Gearing Up

Nils Allen, ASLC Education Chairman

Introductory Astronomy Course: Well, another fall season typically means a new introductory astronomy class at the DABCC East Mesa campus. Hopefully we'll have enough students sign up for the classes to "make" this semester - that didn't happen last fall. Steve Barkes, Dave Dockery and myself are gearing up to instruct the classes, which start on September 20 and go for nine weeks. Perhaps you could help by spreading the word about our courses to someone you know who might be interested. The pertinent information is on the ASLC website, or you can ask me about it or direct potential students to me.

As many of us have discovered, a little knowledge and experience can go a long way to enabling new folks to be more successful and actually enjoy this hobby. Hopefully you realize that this is not an insignificant venture - the future health of our Society may well depend on this slow, but steady, source of new recruits! So do what you can to help out! I welcome all questions, comments, contributions, etc, etc.

Astronomy for our school kids: Would anyone who has an interest or has indicated an interest in presenting or helping to present some basic astro-instruction at our area schools please get in touch with me, either by phone (505 522-1456) or email (nils_a@comcast.net). Thanks!

Southern New Mexico Star Party

Join astronomers from throughout the Southwest under the pristine dark skies of Southern New Mexico at the Southern New Mexico Star Party. The event takes place over five evenings, October 17-22, at New Mexico's City of Rocks State Park - home to thousands of strange monolithic rock formations found in only six other locations in the world.

At an elevation of over 5200 feet (1600 meters) and located scores of miles from any population centers, the park offers some of the finest dark sky viewing conditions to be found. October is an ideal month to visit *City of Rocks* with daytime temperatures typically in the 70s and pleasantly cool clear evenings. In addition to pristine skies, there are hiking trails, picnic areas, camping sites, RV hookups, nearby hot springs, and over a thousand acres of monolithic rocks to climb and explore.

This year, participants will have the opportunity to share their love of the night sky with the public during two evening sessions (Wednesday and Saturday from 7 to 9 pm) using their personal scopes and the park's own observatory-housed 14" SCT. And if that's not enough, the second annual X-Prize Cup Exposition is being conducted October 20-21 only 75 miles from our observing field. You can easily take in the Expo during the day and view the stars that evening. So download a registration form today (http://aslc-nm.org/SNMSP_Home.htm) and join us. The event is jointly-sponsored by the National Public Observatory, the El Paso Astronomy Club and the Astronomical Society of Las Cruces.

Want Ads

For Sale: 8-inch classical Cassegrain f/20 on a heavy-duty Starliner mount for sale; $500 or best offer. The secondary was made by Dan Joyce at the Adler Planetarium in Chicago. The mount is clock-driven and has electric slow-motions on both axis. It comes with an inverter that runs off 12-volts and drives the scope. Contact me at bstevens@zianet.com if interested (or phone 382-9131). Also, last chance on a box of amateur darkroom equipment: bulk loader, tanks, etc., before it gets tossed. Same goes for two boxes of *Sky and Telescope* from the 1990s. Get 'em while they are still here! Bert Stevens

X-Prize Expo and Renaissance Craft Faire

John McCullough

The X-Prize Expo and Renaissance Craft Faire are fast approaching. ALSC's applications to participate in both these events have been accepted and planning for our display(s) is in progress. Both events are 2-day events and last all day both days. The X-Prize Expo will be October 20-21 at the Las Cruces Airport and attendance is expected to top last year's estimated 20,000 attendees. The Renaissance Craft Faire is November 4-5 at Young Park and is one of the region's most popular fall events. If you can help set up or take down the ASLC displays or would like to spend a day or part of a day interfacing with the public during one or both of these events, contact Rich Richins (505 646-5169, rrichins@zianet.com) or John McCullough (mcculloj@zianet.com, 505 524-3030) for information and details.

October Issue HDO

Articles for the October issue should be to me by Sunday, October 8. Material should be sent as email (gmhlcnm@msn.com) or as an attached Microsoft Word document. If you have any questions about submitting something to the HDO, please don't hesitate to contact me (532-5648 or via email). Thanks in advance! George Hatfield, Editor, ASLC Newsletter

Sunset Rainbow, Photo by Frank Miller

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