The High Desert Observer
The Bulletin of the Astronomical Society of Las Cruces
July 2010

President's Message - July 2010

The hot, humid, rainy weather has settled into the desert southwest, with it, the clouds, thunderstorms and generally bad observing weather typical of our monsoon season. With few observing days during this period, we have plenty of time to work on equipment. It is also a good time to take a look at our participation in the the community.

The Society participates in a number of community events, including the Renaissaince Faire, Science Day, and Astronomy Day. While these are important, perhaps the most important events are the ones we hold at the schools. With these star parties, we expose the youth to the joy of observing the sky. I know that while I have always had an interest in science, my interest in astronomy crystalized when I first saw Saturn through a 55 mm refractor.

In fact, one of my co-workers was at one of our school star prties and she has mentioned to me a number of times how wonderful it was that we show the students the sky. I am sure that this is very fufilling for our members who put on these events. But with the new school year starting in a month, we will need to gear-up for the new season and we will need more participants.

As an astronomical society, we have multiple goals. One is to share our knowledge of astronomy with each other and our neophyte members. Another is to help educate and inspire the young. But for us to be able to do anything, we need voluneteers. While we have been able to fufill many star party requests, there is a need for more volunteers.

Right now, we need a new web master. Rich Richins, who has done an excellent job on our website for many years, has become overcomitted and has resigned the position. We need someone to step up and take over this position.

Thanks, Rich, for doing such a great job on our website for many years!

Your Humble President
Bert Stevens

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.

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Next Meeting

Kirby Benson will present "Astrophotography and Art". We will look at some of the philosophical and aesthetic questions regarding this branch of photography. I will also address some basic design principles that we may apply to astrophotography and if they are relevant to this type of photography. What are the limits this branch of photography imposes if a photo is to be considered acceptable by the astronomy community?

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. For information on these and other events, please see the ASLC website.

Http://www.aslc-nm.org

August Issue of the HDO

A note to all members, we need more contributors! Sharpen your writing skills, share your knowledge and help bolster our newsletter! Articles for future issues should be sent to Bert Stevens no later than one week prior to the monthly meeting. Text should be submitted as email (blslcnm@comcast.net) or as an attached Microsoft Word format document. All Images should be in gif or jpg format.

If you have any questions about submitting materials for publication in the HDO, please don't hesitate to contact Bert at 382-9131, blslcnm@comcast.net

Thanks in advance!

The June 19, 2010, Moongaze

By Jerry McMahan

This month's Moongaze, at the International Delights Cafe, was attended by Steve Shaffer, John McCullough and Jerry McMahan.

Steve brought his 3.5 inch Questar Maksutov Cassegrain, Jerry had the 5 inch Meade Maksutov Cassegrain and John was there to answer questions about Astronomy and about the Astronomical Society of Las Cruces.

As last time, the objects observed were the Moon and Saturn. Venus was observed early, showing a phase close to the same as that of the Moon. That phase is not obvious to most people unless pointed out to them. When Venus is showing a thin crescent, people often think they are looking at the Moon.

The seeing was not good just before sunset, but improved by 9:00 P.M., to give nice steady views of both Saturn and the Moon. The Moon was just past first quarter. Near the terminator, in the North, was the crater Goldschmidt. Plato was half illuminated at 9:00 P.M., but later, the entire crater rim was visible with a dark floor. The Alpine Valley was in a good position and made a good target for higher magnification views. The crater Archimedes, along with Aristillus and Autolycus made a good direction finder to locate the Apollo 15 landing site. The entire Apennine mountain range was visible, but Hadley Rill and the actual landing site were still in the shadows of the mountains.

Going south of the equator, we could see the craters Ptolemaeus, Alphonsus and Arzachel. The Straight Wall was visible, but not obvious, early on, but was easily seen later in the evening. The crater Maginus was prominent in the southern highlands.

A printout of was is visible that night, for both the Moon, and the moons of Saturn, is useful for pointing out what features to look for to observers.

The observer turnout was fairly good once again. There was one stretch were there was a line of people waiting to use both telescopes. One man had even looked at a calendar to see when the next Moongaze would be, since he wanted to be there for it. He had to tell me that it would be July 17. Another was interested in buying a telescope and was given an Orion catalog so that he could get an idea of what type of scopes and there price ranges are available.

Another man stayed nearly the entire evening to talk and ask questions. He is going on an archaeological dig, in Peru, next month. He said he doesn't know exactly where they are going, or what they are looking for. He said that NASA is financing the trip. That sounds very curious and it would be interesting to know what that is all about.

I had my share of blunders. When going to a higher magnification, I lost Saturn. I couldn't see it in the Telrad, so one of the girls that had been looking at it, had to find it again for me. I lost Saturn again, around mid-night. Steve was polite enough to inform me, gently, that I lost it because it had gone behind the building.

The next Moongaze will be on August 14, a day before the first quarter Moon.

The Hertzsprung-Russell Diagram

By Berton Stevens

The Pleiades is one of the most studied star clusters in the sky. Almost every possible study of stars and star clusters has been done on the Pleiades. Some of these studies were pioneering efforts that opened new doors for astronomers and astrophysicists.

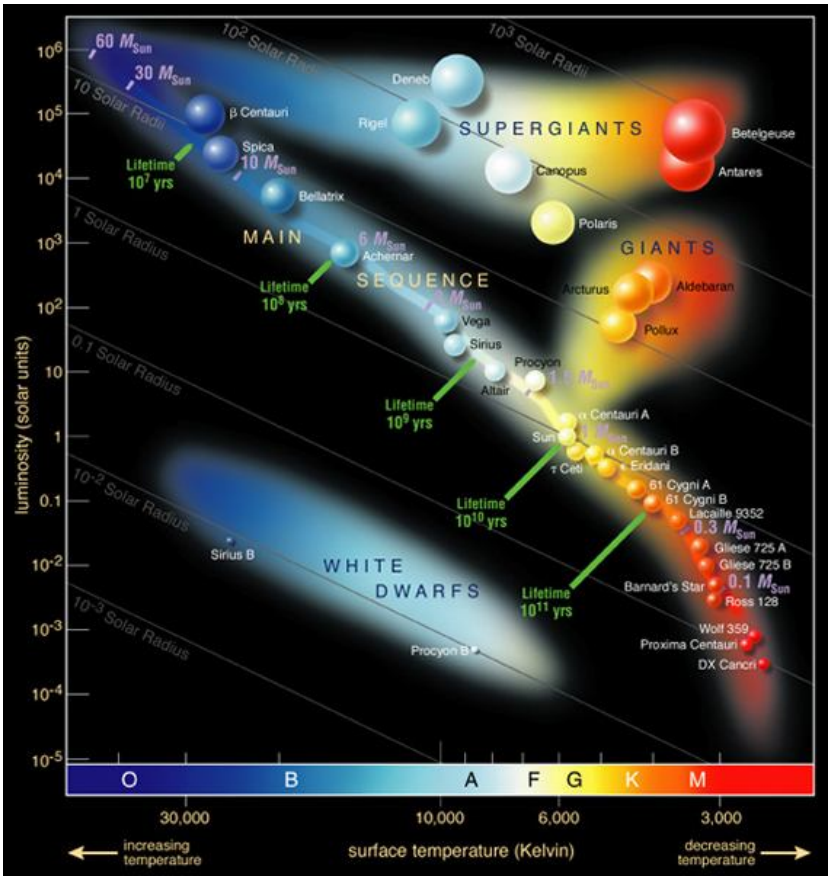
One of the most significant discoveries was that by Ejnar Hertzsprung and H. N. Russell. These two astronomers, each acting independently, observed each star in the Pleiades with a photometer. This device provides an electrical current proportional to the amount of light coming from the star. This current is measured and the brightness of the star, in magnitudes, computed.

Hertzsprung and Russell had each chosen the Pleiades for study because as an open cluster, all the stars in the Pleiades are of the same distance, since they were all formed out of the same gas cloud a mere 4.2 million years ago. This meant that the brightness differences between the stars of the Pleiades must be caused by an intrinsic property of each star rather than by the stars being at different distances.

This "discovery" was not particularly new, but a confirmation that different stars had different intrinsic brightnesses. Hertzsprung and Russell felt that if the brightness of a star was a property of that star, then there may be some other properties of the starlight that would shed light on the nature of stars.

Light is the only property of a star that can be measured directly, so Hertzsprung and Russell went back to the telescope and re measured the brightnesses of the different stars. This time they took two measurements of each star. The first was through a filter that allowed only blue light to reach the photometer. This measurement was called the B(lue) magnitude of the star. The second measurement was through a yellow filter that closely matches the spectral response of the eye. This measurement was called the V(isual) magnitude of the star. Comparing these two magnitudes, we can measure the color of the star.

The Hertzsprung-Russell Diagram



The difference between the B magnitude and the V magnitude is called the color index of the star and indicates its color. If the star was really "white", then the star would have the same brightness in the blue part of the spectrum (B magnitude) as in the visual (yellow or V magnitude). The difference of the B magnitude minus the V magnitude, written B V, would be zero. Note that this difference is a constant regardless of the magnitude of the star or its distance. What can affect the color index is interstellar dust, which causes a "reddening" of the star.

If the star is bluish, then the B magnitude will be brighter, meaning it will be

numerically smaller (remember that first magnitude stars are brighter than second magnitude stars). This makes the difference B V negative for bluish stars. The more negative B-V, the bluer the star. Reddish stars have smaller V magnitudes, making the difference B-V positive. The more positive B-V, the redder the star.

Our sun has a color index of +0.63, making it somewhat yellowish. Betelgeuse, in Orion, has a color index of +1.87, indicating a very red star: a red giant. Achernar (Alpha Eridani) is a blue giant, and has a color index of 0.16. Vega with a color index of 0.00 is a white star.

Hertzsprung and Russell completed their color index measurements on the Pleiades and then plotted the magnitude of each star on the y-axis and its color index on the x-axis. The resulting diagram showed an amazing correlation between the color index and the magnitude!

This diagram, reproduced below, is called a Hertzsprung Russell diagram (or H-R diagram for short). It shows that most of the stars can exist only with certain color indices and brightnesses. The main "line" of stars from the upper left to the lower right is called the "main sequence". The stars in it are called "main sequence stars". The stars not on the main sequence are either dwarf stars (lower left) or giant stars (upper right) that are either near the beginning or the end of their life cycle.

Magnitude and color measurements of nearby stars whose distance is known from trigonometric parallax allow the H R diagram to be calibrated in absolute magnitude. Absolute magnitude is the brightness of a star as it would be measured from a distance of ten parsecs from the star.

The H-R diagram can then tell us the actual brightness of a star based on its color index and the knowledge that it is a main sequence star. This was a tremendous step forward in understanding the nature of stars. It lead to an understanding of the evolution of stars from dwarf to main sequence to giant and then back to dwarf.

The truly amazing thing about the H R diagram is the large variety of labels that can be put on the axes of the H R diagram. For example, the same diagram that plots magnitude versus color index also plots absolute magnitude versus surface temperature, and absolute magnitude versus spectral classification. This lead to their relating color index, spectral classification, and stellar temperature. Thus, Hertzsprung and Russell discovered a starting point for the science of Cosmology and stellar evolution, on which all astro physics has been built.

Minutes, June 2010 ASLC General Meeting

By John McCullough, Secretary, ASLC

Call to Order:

Bert Stevens, President, and Janet Stevens, Treasurer, of the Astronomical Society of Las Cruces (ASLC), were attending the Astronomical League Convention in Tucson, AZ. In their absence, Kirby Benson, Vice-President, called the meeting to order at 7:29 pm., 25 June 2010, Rm. 77, Dona Ana Community College Las Cruces, New Mexico.

Vice President's Comments:
Kirby Benson welcomed the group and recognized new members and/or visitors present. Diane and Tim of Las Cruces were attending to see what the Society is about.

Secretary's Report:
The Secretary reported that the minutes for the May meeting were published in the most recent issue of the Society newsletter, the High Desert Observer (HDO). Frank Miller moved to dispense with reading the minutes; Ron Kramer seconded. There were no objections and the motion passed. There was not an additional Secretary's report.

Treasurer's Report:
The Treasurer was not present (see above). There was no Treasurer's report.

Committee Reports:

Observatory Committee:
Rich Richins, Committee Chairman, was not present to provide an update on the status of the Society observatory proposed for Leasburg Dam State Park (LDSP).

Apparel Committee:
Ron Kramer, Committee Chairman, announced that the Society has sold approximately $1050.00 worth of apparel items to date. He has approximately $500.00 of inventory still available. He expects to replenish his stock in August.

Outreach Committee:
Ron Kramer, Outreach Coordinator, reported no events planned during the month. He is teaching an introductory astronomy class at the DACC East Mesa campus for the next six weeks. He plans one evening of viewing, conditions permitting, and may need members' help for that.

Loaner Telescope Program:
Janet Stevens, Committee Chairman, was absent (see above) and could not report on receiving information regarding Society-owned equipment. If a member currently has a Society telescope in their possession, they may also have one or more Society eyepieces as well. Please contact (email) her as soon as possible if you know you have any Society equipment in your possession along with a description of that equipment. This includes telescopes and eyepieces.

Tombaugh Observatory:
Steve Barkes and Ron Kramer continue to work with NMSU to effect door repairs for the Observatory building.

Druids:
There was no report on the recent summer solstice.

There were no additional committee reports.

Old Business:

The Meade 16" LX200 on loan from the NMSU Astronomy Department and destined for the Society observatory was relocated from Chuck Sterling's property to Bert Stevens' last month.

There was no additional old business for discussion.

New Business:

There was no new business for discussion.

A motion to adjourn was offered by Chuck Sterling and seconded by John Kutney The motion passed by acclamation. The business portion of the meeting was adjourned at 7:38 pm.

Announcements:

Chuck Sterling presented a new type of focusing map, an example of the map and directions for its use. All were available after the meeting and Chuck will post the information to the yahoo group.

Vince Dovydaitis had an article about the Sloan Digital Sky Survey available. Fred Pilcher indicated he would like to read the article and took it with him.

Ron Kramer announced he will be out of town for the July meeting and would like someone to be custodian of the meeting room key. John McCullough will take the key following tonight's meeting.

Items for Sale:

No items were offered for sale.

Presentation:

The June program was a presentation by Society member Ron Kramer entitled "Astronomy in da Vinci's Time". This was a presentation Ron has made several times since first doing it at the opening of the El Paso Museum of Natural History's Leonardo da Vinci exhibit this spring. He described who da Vinci was and the times in which he lived (b. 1452, d. 1519) as a painter, sculptor, engineer and scientist. Ron did this using a historical timeline going back to the first probable astronomical observations. Although da Vinci made few direct contributions to the science of astronomy, he was truly a man of the Renaissance.
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 June 2010 monthly meeting concluded at 8:35 pm.

-Respectfully submitted by John McCullough, ASLC Secretary

Calendar of Events July-August (MDT)

July	27	5 p.m.	Mercury 0.3 degree south of Regulus
	31	3 a.m.	Jupiter 7 degrees south of the Moon
Aug.	01	1 p.m.	Mars 1.9 degree south of Saturn
	02	10:59 p.m.	Last Quarter Moon
	06	7 p.m.	Mercury greatest distance east of the Sun (27 degrees)
	09	7 p.m.	Venus 3 degrees south of Saturn
	09	9:08 p.m.	New Moon
	12	Evening	Perseid Meteor Shower
	14	Evening	Moongaze at International Delights on El Paseo
	16	12:14 p.m.	First Quarter Moon
	19	10 p.m.	Venus greatest distance east of the Sun (46 degrees)
	23	3 p.m.	Venus 2 degrees south of Mars
	24	11:05 a.m.	Full Moon
	27		ASLC General Meeting

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

ASTRONOMICAL SOCIETY of Las Cruces
PO Box 921
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ASLC - Sharing the Universe
With Our Community
for Over 50 Years