UPCOMING EVENTS

8-9 Wednesday: First Quarter Moon
8-11 Friday: Perseid meteor shower: Radiant at 3h 4m, +58 deg -- Max. at midnight 11-12 August MDT
8-12 Saturday: First constitution for Albuquerque Astronomers adopted 30 years ago -- August 12, 1899
8-16 Wednesday: Total Lunar Eclipse begins at 7:21 p.m. MDT; Totality begins at 8:20 p.m. MDT and lasts until 8:56 p.m. MDT (Sunset 7:55; Nautical Dusk 8:53; Astr. Dusk 9:27)
8-17 Thursday: Full Moon
8-19 Saturday: Monthly Meeting of the Society: "The Hubble Space Telescope: The Dream and the Reality," by Dr. Bel Campbell
8-23 Wednesday: Last Quarter Moon
8-24 Thursday: Society Board of Directors meeting, 7 p.m.
8-26 Saturday: Star Party at AAS Observatory Site
8-31 Thursday: New Moon
9-2 Saturday: Dark Sky Night at Gran Quivira
9-8 Friday: First Quarter Moon
9-15 Friday: Full Moon
9-16 Saturday: Monthly meeting of the Society

THIS MONTH'S MEETING

Our August meeting will feature a lecture by Dr. Bel Campbell on "The Hubble Space Telescope: The Dream and the Reality." Dr. Campbell, of the UNM Physics and Astronomy Department, is a member of the scientific team of the Hubble Space Telescope, serving as Principal Investigator for star-formation studies. She is a veteran researcher whose studies of star formation cover a large part of the electromagnetic spectrum, including radio, infrared and optical observations. A member of UNM's Institute for Astrophysics, she received her B.S. in Physics from Georgia State University and her Ph.D. in Astronomy from the University of Arizona.

Dr. Campbell is a member of our Society and has been the leader of our cooperative effort to open the University's campus observatory to the public on Friday nights during the school year. She has lectured to us before, and we are happy to welcome her back. The meeting will be held on Saturday, August 19, at 7:30 p.m., in Regener Hall on the UNM campus.

LAST MONTH'S MEETING

Our July speaker was Dr. Jack Burns, who gave a stimulating lecture on large-scale structure in the universe and how supercomputer simulations are testing the ideas of cosmological theorists. In this lecture, Dr. Burns reviewed the short history of this new field of research, and explained how supercomputers have become a primary tool for theoretical cosmology. He ended by telling us of the many open questions that place this field at the cutting edge of scientific thought.

Dr. Burns is the new chairman of the Astronomy Department of New Mexico State University in Las Cruces. He goes there after nine years in UNM's Physics and Astronomy Department, including service as director of UNM's Institute for Astrophysics. At NMSU, he will be working with the new Apache Peak 3.5-meter telescope, the third largest in the United States, and invited our Society to tour that facility once the telescope's mirror is installed. Our best wishes go to Dr. Burns in his new position.

THE GENERAL NATHAN TWINING OBSERVATORY

Recently, you all received a brochure outlining the goals we have set for our observatory project. This observatory will be a resource not only for those of us who are members of this Society but also for the whole community, which will benefit from the educational functions of our facility.
We have big plans for this observatory, and will look to foundations and corporations for large donations, but we must start by looking to ourselves to get this project underway. Time is an important factor – keep in mind that the land was donated to us with a deadline for erecting a permanent structure. Once we have the first building completed, we can continue our fundraising efforts in the community with the added advantage of being able to actually demonstrate the research and educational benefits of this facility.

I ask each of you to read the brochure, consider the important goals of this project, and join the numbers of our fellow members who already have contributed. If you think science is important, if you think education is important, then I suggest that few causes are as worthy of your donation as this observatory.

How much will it take? If every member gave $100 (less than the price of a top-quality eyepiece), we could build our entire first-phase building – an essentially self-contained observatory – with no outside help. For $50 from every member, we could build the building this year and raise money for the dome next year. No matter how much you can give, though, it’s important to send something NOW, so we can get construction underway this year.

Also, if your company donates to nonprofit organizations, or if you know of a foundation or other source of money that might help us, please let us know.

This observatory is a dream we can make come true. Let’s do it.

Dave Finley, President

SUMMARY OF THE JULY 20TH 1989 BOARD MEETING

Items covered during this board meeting were the treasury report, secretary’s report, upcoming events, the observatory project, and newsletter items.

Art Jacobs, the Society Events Coordinator, talked about the Kiwanis Club Pilot Program held at the Kiwanis Camp for disabled children participating with the Easter Seals. Art also made a call for specific type slides to complete the Society’s collection of educational slides for making presentations. Upcoming events at Bandelier, El Morro, and Las Colinas Retirement Village were mentioned.

Fund raising for building the Society Observatory was the main issue discussed by President David Finley. A trifold brochure was mailed out on July 18th to solicit funds to pay for material and contract special work that cannot be done by our membership. Surveying and groundbreaking were other items discussed. Mac Morgan proposed the idea of having a select committee of the board for the observatory as a source of information and focus of organizational details. Dave Finley moved that there be an Observatory Committee of three board members meeting Mac Morgan’s criteria. The board passed the motion unanimously. Dave Finley and Mac Morgan volunteered to serve on the committee. George Dulleck was asked to be the third member and he also agreed to serve.

ASTRONOMICAL SLIDES NEEDED

The Albuquerque Astronomical Society needs your slides! With the tremendous recent growth in our public education programs there has been a corresponding increase in the demand for astronomical slides from members of the society. The slides are used by members giving presentations about astronomical subjects to school groups, retirement communities, campers at Bandelier National Monument, and many of the other groups we have been involved with in the last year.

In preparing for my own talk at Bandelier several weeks ago it became very apparent that although the Society now owns a fair number of astronomical slides, there are still some very large "holes" in the collection. For example, there is not one single slide in the Society’s collection of any of the planets beyond Saturn! Neither is there a single slide of a globular cluster!

Now is the time to get rid of some of those old slides you've had stashed away in a box for several years and make a valuable contribution to the Albuquerque Astronomical Society's public education efforts. The following is a list of some of the items most urgently needed: (1) Any slides of Uranus, Neptune, or Pluto. (2) Any slides of any globular cluster or open cluster. (3) Any slides depicting exotic cosmic phenomena such as black holes, pulsars, quasars, interacting binaries, etc. (4) Any slides dealing with the large-scale structure of the universe, such as clusters or superclusters of galaxies. (5) Any slides depicting Native American or early Man’s understanding of the heavens. (6) Any slides depicting Man’s future exploration or colonization of space. (7) A portable screen for viewing slides at locations where there is not already a screen.

For the slides both photographs and artists renderings are acceptable. Of course, any slides or equipment not included in the above list which you wish to donate would also be gratefully accepted. And don’t forget, when it comes to tax time the AAS is now a registered charitable organization!
If you are considering making a donation of slides or other equipment to the AAS for our public education programs please call me during the evening at 299-6311.

- Art Jacobs, Event Coordinator

PUBLIC EDUCATION UPDATE

July was a very rewarding month for the Albuquerque Astronomical Society’s public education program, with two main events featured. The first of these was the Kiwanis pilot program, which took place at Camp Kiwanis near Gallup on July 28 (see the July issue of the Sidereal Times). The event was attended by approximately one dozen physically handicapped children, about ten adult supervisors from the Easter Seal Society, and three dedicated AAS members.

By all accounts the event was a great success. Comments from the AAS attendees included praise for the beautiful location, the comfort of the accommodations, and the dedication of the Easter Seal counselors. The children and their counselors were, of course, fascinated with what they saw through the scopes. Perhaps amongst them there is now a future astronomer!

Special thanks to Chris Hilleary, Luis Almaraz, and George Dulleck for making the six to seven hour roundtrip drive to attend this event. Talk is now of another mid-week event at Camp Kiwanis before the end of this summer. Watch future issues of the Sidereal Times for details!

The other major event in July was the public star party and astronomy lecture at Bandelier National Monument, near Los Alamos. This event was attended by five members of our Society, two members of the Pajarito Astronomers (from Los Alamos), two Park Service rangers, and sixty to eighty members of the public. Following the slide show and lecture attendees viewed Saturn, the Moon, M13, M51, the “double double” in Lyra, and a number of other beautiful astronomical objects.

This event was also very successful, with many compliments to the Society from the rangers and members of the public. A bonus for this event was the participation of the Pajarito Astronomers, with whom we look forward to co-hosting other public education events in the future.

Our next event at Bandelier is on Saturday, August 12. If you would like to volunteer to participate in this event, or any other public education event, please call me at 299-6311.

- Art Jacobs, Event Coordinator

STAR HILL INN STAR PARTY

The Board is considering having a two-night star party at the Star Hill Inn outside of Sapello, New Mexico (near Las Vegas) sometime in late September or late October. This star party would likely be in addition to, rather than instead of, the usual dark sky nights scheduled for Gran Quivira. Some of you may recall that Phil Mahon, the proprietor of the Star Hill Inn, spoke before the Society at one of the meetings last fall.

The purpose of this event would be to encourage attendance by members of the Society who don’t often attend the usual star parties because they don’t like to camp out. The cabins at the Star Hill Inn are fully furnished and heated, come with complete kitchen and bathroom facilities, and are very nicely maintained. The cost of the star party would be between $20 and $25 per person per night, for two nights. The cost assumes four persons per cabin, and includes the rental of the Star Hill Inn’s 24” computer controlled Schmidt-Cassegrain telescope.

If you would be interested in attending such an event, please contact me within the next two weeks at 299-6311. Attendance would be limited to perhaps one dozen people.

- Art Jacobs, Event Coordinator

EVENTS OF INTEREST

The New Mexico Museum of Natural History is sponsoring a series of lectures entitled Moon, Man & Mars. On July 26, Colonel Mike Mullane, NASA astronaut, presented Space Shuttle, a history of the U.S. space program and its importance to our nation’s scientific and technological advancement. Future lectures are scheduled as follows:
August 16: Future Geological Exploration of the Moon, by Dr. G. Jeffrey Taylor of U.N.M. Institute of Meteoritics.

August 23: The Earth From Above, by Major Sidney Gutierrez, NASA astronaut.

August 30: A Trip to the Moon, by Harrison Schmidt, NASA astronaut, Apollo 17.

All lectures begin at 7 p.m. and regular museum admission is charged.

An exhibit of the geology of Earth, Mars and the Moon accompanies the lecture series and continues through September 30. The Museum is located at 1801 Mountain Road, N.W. near Old Town. Additional information can be obtained by calling the Museum at 841-8837.

OCCULTATION UPDATE

Please note that the following events are "selections." If you find yourself with a free night to observe an occultation and you don't find an event listed here, please call me. There are other events that I have not thought would be popular for various reasons.

Selected Total Lunar Occultations: (Please refer to the key for column headings.)

Day & Time  P Ref No V O Mag Snit SA MA MZ CA Key
Gran Quivira
Sa805 210948 D X18107 7 6 8.5 18+ 10 257 19N P = Phenomenon; D = Disappearance; R =Reappearance. Ref No = USNO Reference No.
Sa819 234727 R 0006 9 7 5.7 87 30 103 17N V = scientific Value of the observation; 9 is highest.
Sa826 031209 R X09209 8 7 8.0 22- 14 67 36N O = Observability of the event; 9 is easiest. Events for which the sum of V + O < 13 were not selected.
Sa826 043602 R X09191 8 7 8.0 22- 30 76 57N Mag = maximum visual Magnitude of the star.

Shooting Range Park
Zlich

Your Own Back Yard: (Call Mac for correction time.)
We816 210508 R 3193 9 5 9.0 0E 14 119 34U S = Sun Altitude.
We816 214614 D X30136 9 5 9.2 0E 20 125 86U SA = Sun Altitude.
We816 225705 D X30136 9 4 5.2 99- 31 140 85U MA = Moon Altitude.
Fm825 051620 R X07130 7 7 8.1 31- 49 87 50N MA = Moon Altitude.
Sa826 031419 R X09290 8 7 8.0 22- 14 67 39S E =Eclipsed
Sa826 043513 R X09319 8 7 8.0 22- 30 76 53N U = in the Umbra

GRAZING OCCULTATION:
Day/Date MDT Nearest Town Star Magnitude Moon Altitude Moon Azimuth Percent Sunlit Cusp Angle Graze Rating
Mo826 0511 Albuquerque 7.0 13 degrees 73 degrees 7%, waning 6 deg. N Favorable (The exact site has not been picked yet. Sandia Mountain may spoil this one for us. Mac will have further info later.)

ASTRONOMICAL CLASSIFIEDS

Optec SSP-3 stellar photometer, like new, $450; AAVSO Variable Star Atlas, boxed, with extra detailed maps, S25; equatorial mount and pier with clock drive for Meade DS10, best for 8" or smaller Newt., $175; Molytek Model 212 2-pen strip chart recorder, 12V DC or 115V AC, $100; Jim's Mobile Motofocus for Meade 880 Newtonian focuser, $40; Various Meade equipment: (a) Right angle photoguide scope, with rings, 60 mm dia. X 700mm 1.1, 9mm eyepiece, 78X, $40; (b) 1.25" camera adapter for prime focus or eyepiece projection, with both Canon and threaded T-mounts, $30; (c) MA 12 (mm).965" illuminated reticle eyepiece with 1.25" adapter & extra measuring reticle, S35; (d) Orth. eyepieces, 1.25" Series 2: 12.5 mm, S22 and 6 mm, S22; (e) Kellner MA eyepiece, 1.25", 25mm, S15; (f) threaded filters to fit 1.25" eyepieces, 8 total, S55; (g) 2X Barlow, 1.25", $20; contact Jim Van Der Ayde at 898-6474.

FOR SALE: Celestron Comet Catcher Jr. tube assembly, 5" f/8 in a very short 20" tube, no mount, good condition, would make an excellent guide scope for a larger Newtonian, S55. Bushnell 10X50 binoculars withquick focus feature, older model, very good condition, $12. Criterion eyepieces, in very good condition: 50mm Ramsden, $8; 30mm symmetric Plossl, $11. Altitude/azimuth slow motion mechanism, attaches to the top of a photo tripod to provide slow motion for a spotting scope or binoculars, recently paid $40, will sell for $25. Contact Art Jacobs at 299-6311.
TOTAL LUNAR ECLIPSE TO BE OBSERVABLE BY HALF THE GLOBE

On Wednesday, August 16th, 1989 a total lunar eclipse will occur. The eclipse will officially begin at 7:21 p.m. MDT. Those of us in Albuquerque will be able to see this eclipse starting about 8:20 p.m. MDT when totality first begins. Totality will end at 9:56 p.m. MDT.

If the Moon moved exactly along the ecliptic (which would happen only if it orbited exactly in the plane of Earth's orbit), there would be a perfect alignment with the Sun at New and Full Moon times, and there would always be an eclipse of the Sun and Moon respectively at these times. But the Moon's orbit is inclined at 5° to the ecliptic, so eclipses are rare. A lunar eclipse occurs when the Moon passes into the Earth's shadow. In a total lunar eclipse, the Moon passes completely into the central shadow, or umbra. A lunar eclipse can last for several hours and may be total for well over an hour. But even when it is totally eclipsed, the Moon is always dimly visible. The Earth's atmosphere which in thickness can be compared to the skin of an onion, passes some light into its shadow, which gives the Moon a reddish-brown color.

Wizards have computed the duration of this eclipse, and project totality at 96 minutes. This total lunar eclipse may prove unique in an historical sense. References in ancient records occasionally relate that the Moon disappeared completely from sight. Timing may be at the root of this phenomenon...and we will have the rare opportunity to determine for ourselves if timing is the reason.

On August 16th 1989, the eclipse will begin at 7:21 p.m. But sunset will occur at 7:55 p.m. So when the eclipse begins, it will be daylight. And in daylight, the Moon may appear to have disappeared, which will explain ancient records. There is more to be gleaned from this celestial event..."Astronomical twilight" will begin at 9:27 p.m. MDT. That is when it is dark. But totality ends at 9:56! With clear skies, we will have a 29 minute view of a total lunar eclipse. You can watch with just your eyes, but binoculars will help.

Clear skies...
Raymond Lent

(Credits: James Muirden)
The Enigmatic Arrow

Near the southern vertex of the “Summer Triangle” (i.e., Altair), a small arrow-shaped asterism seems to sail across the heavens. Giving way to our imagination, we are tempted to ask several questions: Where did it come from? Where is it going? From whose bow was it shot? In Greek mythology, Sagitta the arrow is associated with two heroic deeds of Hercules (J. D. W. Staa, The New Patterns in the Sky, McDonald & Woodward Publishing Co., Blacksburg, VA, p. 182). One deed occurred in conjunction with the cruel punishment of Prometheus (the Titan who gave mortals fire, thereby greatly angering Jupiter). Sagitta represents the poisoned arrow used by Hercules to deliver Prometheus from the eagle (Aquila) which fed daily upon his liver. In the night sky, the arrow can be pictured as a twin-tipped weapon flying westward toward Aquila. Sagitta also figures in the fifth task of Hercules’ famous twelve labors. This labor required Hercules to combat the man-eating Stymphalian birds. In this case, Sagitta represents a poisoned arrow shot into the midst of three birds—Cygnus, Aquila and Lyra (see here as a Vulture rather than a Lyre). This arrow points eastward with Alpha and Beta Sagittae depicting the feathers on the shaft. Which way does the arrow fly? It all depends on your point of view.

With an area of 80 sq. degrees, tiny Sagitta is the third-smallest constellation in the sky. (Astronomical Trivia Question—Which two constellations are smaller than Sagitta? The answer is given below.) Considering its size, Sagitta contains a remarkable number of interesting and unusual variable stars. The list includes U Sagittae (2000.0 Coordinates: R.A. 24 hr. 18.8’, Dec. +15° 37’), one of the finest Algol-type eclipsing binaries in the sky. This variable is easily located less than two degrees west of Collinder 399 (the remarkable co-star group known as “the Coathanger” or “Brocchi’s Cluster”). Although it is not as bright as Algol, U Sag has exhibits a more dramatic magnitude variation due to the fact that the bright primary component is totally eclipsed by a much fainter companion. At eclipse, U Sag fades from visual magnitude 6.6 to a constant (approximately 1 hr. 40 min. duration) minimum of mag. 9.2. Good opportunities for viewing a U Sag phenomenon occur every 7-10 days or so. Predictions (for minimum light) derived from the heliocentric elements given in Sky Catalogue 2000.0, Vol. 2 (Epoch=2440774.4638, Period=3.3806260 days) are as follows: Aug. 3, 4:25 AM; Aug. 9, 10:41 PM; Aug. 20, 2:05 AM; Aug. 26, 8:22 PM; Sept. 3, 11:46 PM; Sept. 16, 3:10 AM; Sept. 22, 9:26 PM; Oct. 3, 12:51 AM (all times are MDT). A mag. 7 comparison star (22504, primary component) lies southeast of U Sag. The bright and faint components of U Sag are listed as spectral types B8.5 and G3, respectively. What colors do you see at or near eclipse? Many other variable stars in Sagitta are far less predictable. The erratic variable V Sagittae (20 hr. 20.3’, 21° 06’) may be found in the northeastern corner of the constellation. This star displays rapid and irregular variability over a range of mag. 9.5 to mag. 13 and may be a nova candidate. Wf Sagittae (20 hr. 07.6’, 17° 42’) is an interesting recurrent nova. Normally mag. 15-16, WF Sag has produced three recorded major outbursts (to mag. 7-8). These maxima were seen in 1913, 1946, and 1978. Does WF Sag really display a regular period of 32-33 years or is the situation more complex? Only time will tell. PG Sag (24 hr. 11.8’, 20° 20’) and HM Sag (24 hr. 41.9’, 16° 44.6’) are two stars that have displayed dramatic and long-term increases in luminosity. In the former case, the star gradually brightened from mag. 13.7 in 1980 to mag. 9.5 in 1987. HM Sag, on the other hand, soared from mag. 16 to mag. 11 in a period of only 5 months. Each object is surrounded by a tiny, faint nebula. Detailed finder charts for V, Wf and PG Sagittae may be found in Burbank’s Celestial Handbook, Vol. 2.

For many years, astronomers puzzled over the precise nature of the cluster M71 (19 hr. 53.8’, 16° 47’). Only recently has the issue been resolved in favor of classifying M71 as a globular cluster. In terms of absolute magnitude, M71 (Mv=5.60) falls well below the mean for the galactic globular system. This intrinsically low luminosity is largely responsible for the fact that the cluster shines at a relatively disapparent visual magnitude of 8.3 while residing only 4 kpc away. Still, M71 is a fine sight in moderate to large apertures. Other deep sky objects in Sagitta include the sparsely star cluster Harvard 2460 (8°, 55’), 1631 (20°, 20’) and three planetary nebulae, NGC 6689 (20 hr. 10.5’, 16° 55’), NGC 6886 (20 hr. 12.7’, 19° 58’) and IC 4997 (20 hr. 20.2’, 16° 45’).

Trivia question answer—Crux and Equuleus

Update on Comet Borreos-Metcalfe—In typical comet fashion, F/Borreos-Metcalfe has provided an unexpected twist to its 1989 apparition; it has arrived 16 days early! Needless to say, this turn of events has wreaked havoc with ephemerides based on the old predicted perihelion date. Positions in keeping with the new orbital elements (kindly supplied by Daniel Green of the IAU) are as follows:

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<tr>
<th>Date (0 hr. UT)</th>
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<tr>
<td>Aug. 1</td>
<td>3 hr. 12.6’</td>
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<td>Aug. 5</td>
<td>3 hr. 59.0’</td>
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<td>Aug. 15</td>
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<td>7 hr. 11.4’</td>
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<td>Aug. 25</td>
<td>8 hr. 1.0’</td>
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<td>Aug. 30</td>
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<td>Sep. 1</td>
<td>8 hr. 55.1’</td>
<td>29° 29’</td>
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Wayne M. Trott

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DUES: Please note the expiration date on your mailing label. If you are due for membership renewal, you may send your dues by mail to our newsletter return address with your check written out to the Albuquerque Astronomical Society or give your check to the treasurer at the next meeting. Please include the membership application that is sent with your newsletter when it is time to renew. Discount subscriptions to Sky and Telescope, Astronomy, Odyssey, Deep Sky, and Telescope Making magazines, and books through Sky Publishing Corporation are available at a reduced cost when purchased by Albuquerque Astronomical Society members through our Society. Include any of the above magazine renewal mailers and subscription payment as part of your renewal check. Membership dues are $10.00 per year and $2.00 per additional family member. Membership Packets cost $1.75 each for new members or renewing members without the Packet. Contact the treasurer for more information.

SOCIETY COMPUTER BULLETIN BOARD SERVICE: An Astronomy BBS is available for Albuquerque Astronomical Society members for discussion, announcements, and transfer of files and newsletter articles in our software library. The BBS is available 24 hours a day at 255-3623. Set your computer’s modem to 8 N1 (8 data bits, no parity, and 1 stop bit). Contact the Software Coordinator for more information.

NEWSLETTER ARTICLES: Personal astronomical classified advertisements and articles can be submitted within 12 days after the latest Society meeting in order to make it into the next newsletter. The newsletter editor reserves the right to include and/or edit any article or personal classified advertisement. Computer files in ASCII format (WordStar non-document mode) are preferred. Contact the Newsletter Editor for more information.

CHANGE OF ADDRESS: Note that the Sidereal Times is mailed out at non-profit bulk rate. The newsletter will not be forwarded to your new address if you move! Please provide the Secretary with your new mailing address to insure that you receive your newsletter.

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