The Sidereal Times

Newsletter of the Albuquerque Astronomers

President: Steve Snider 831-9359
Vice-President: Mike Peck 881-8812
Secretary-Treasurer: Bruce Levin 299-0891
Editor: Alan Lampson 821-3289
Librarian: Lee Mesibov 296-9242
Telescope Curator: Elizabeth Peck 881-8812

June 1985

Upcoming meetings:

The meeting for June will be on Friday, June 14, at 7:30 p.m. Susan Dietrich will host the meeting in the new clubhouse at the Valle Grande Apartments at 8401 Spain NE (see map). (Please do not go to the old clubhouse; you will not find anyone there.) The speaker for the evening will be Raymond Lent and the subject will be Halley’s Comet. Ray is a member of the Albuquerque Astronomers and gave the talk for Astronomy Day this year. This meeting will provide an opportunity for club members who were unable to attend the earlier talk to catch his excellent presentation.

The information Raymond will be presenting is of current interest, and is geared towards the general public. The Albuquerque Astronomers extend a specific invitation to members of the junior club to attend this meeting.

As discussed at the last meeting, there will be an astronomical flea market or swap meet at the next meeting. If you have some astronomy-related items that you no longer want or need, bring them and maybe someone else will be able to use them. Please exercise some common sense; don’t bring a pickup truck full of old telescope mounts, as there will be no place to put them.

The next star party will be at the Jemez Dam on Saturday, June 22, starting around 8:30 p.m. There is no backup date for this star party. If you have doubts about whether anyone will be there (due to marginal weather), call Steve Snider at 831-9359.

Although the proposed tour of the VLA has not been finalized, in anticipation of the tour being on Saturday, July 13, the July club meeting is tentatively set for Friday, July 12. (The previous weekend is the July 4th weekend.) If all goes well, we may even hold a star party on the evening of the 13th, down in the mountains somewhere around the VLA.
At the last club meeting, recent increases in postage and in printing costs were discussed. As a result, the club voted to increase its membership dues by $1.00 effective July 1, 1985. The club dues become $7.00 per year without a Sky & Telescope subscription, and $20.00 per year with a subscription. There have been rumors that Sky & Telescope will increase its subscription rates "soon," but maybe not until January. It is expected that the increase will be $1.00 per year. At the time that the club receives notice of the increased rates, the club membership including a Sky & Telescope subscription will increase by the same amount.

At the last meeting, Mike Peck gave an excellent presentation on equipment for viewing the planets and comets. Mike discussed the different types of telescopes available and the advantages and disadvantages of each.

My standard reminder:

The expiration date of your membership is printed in the upper right-hand corner of the newsletter mailing label. Please check the date, and if there is any discrepancy, notify the treasurer right away so that we can correct any errors. Membership dues are $6.00/year without a Sky & Telescope subscription, and $19.00/year with a subscription ($7.00 and $20.00 per year, respectively, after July 1). You do not have to attend a meeting to join, just send a check made out to 'Albuquerque Astronomers' to Bruce Levin at the address listed below.

For those of you who need to renew, bring your dues and your Sky & Telescope renewal notice (if you subscribe) to the club meeting, or mail them to treasurer Bruce Levin at 14328 Mocho NE, Albuquerque, NM 87123. Members with Sky & Tel should include the postage-paid return envelope to save the club the cost of sending renewals on to the magazine.

Saturday, June 22, 8:30 pm
Jemez Dam
Basic Astronomical Information
(from A Companion Guidebook For Galactic Travelers, Tomas J. Filsinger, Hallmark Cards, Inc., Kansas City, MO, 1983)

The Pole Star

The earth and the sky can be considered two great spheres, one inside the other. The North and South Poles of earth have their counterparts in the celestial sphere. At the north celestial pole is a star, Polaris, the pole star. It is the only star in the northern hemisphere which appears never to move and can always be found in the same spot, directly north. This is why Polaris is used in navigation. The altitude of this star equals the observer's latitude.

For example: If you were standing exactly on the North Pole, Polaris would be directly overhead, or at 90 degrees. Once you travel in any direction, this star moves toward the horizon the exact degrees you move south. If you reached New York (latitude 53 degrees north), Polaris would be 53 degrees above the horizon. If you were in Tokyo (lat. 35 deg N), Polaris would be 35 degrees above the horizon. Navigators, measuring the position of Polaris in the heavens, can pinpoint their exact latitude location or degrees from the equator.

Precession Cycle

Polaris will not always be the pole star. The earth rotates on its axis with a slight "wobble" which affects the polar projection of the pole onto the celestial sphere. Hipparchus, an early Greek astronomer, noticed this when he compared ancient Phoenician clay tablets of star positions with his own. In 2,300 B.C., the pole star was Thuban, the brightest star in the constellation Draco; by 12,000 A.D., Vega, in the constellation Lyra, will be the pole star.

Calculations have shown that this movement of the earth's projected axis traces a 48 degree circle passing through the constellations Cepheus, Lyra, Hercules, and Draco. This movement takes 26,000 years to complete. Two factors cause precession: the fact that the earth is not a perfect sphere and the angle of the axis inclining 23 degrees to the orbit. The gravity of the sun tends to straighten out the axis, and the earth responds by precessing, just as a toy gyroscope does.

The Equator

The equator is a great circle perpendicular to the earth's axis that divides the earth into two equal hemispheres. The celestial equator is the earth's equator projected onto the heavens, dividing the celestial sphere into the North and South hemispheres. Latitude refers to the degrees north or south of the equator on earth (0 to 90 degrees north or south). Declination refers to the degrees north or south of the celestial equator on the celestial sphere. Degrees north are considered positive (+); degrees south are considered negative (-).

Hour Angle and Right Ascension

The hour angle of a star is the number of hours ago that the star, in its daily circuit of the sky, crossed the observer's meridian. The right ascension is the hours, minutes, and seconds a star has with respect to the spring equinox. The universe
can be divided into 24 hours, corresponding to the hours in a day on earth. Ancient astronomers decided that point "zero" would be the point toward which a line drawn between the sun and the earth fell on the first day of spring, the vernal equinox. So that gives the point "zero" in the sky. Now you need point "zero" on the earth. In the seventeenth century, an astronomical congress in England decided that the meridian which passed through their observatory in Greenwich would be marked "zero."

This way, precise star charts could be made. If you were at sea and had a precise clock set on Greenwich time, you could calculate your position east or west using the stars. The celestial coordinates correspond to longitude and latitude coordinates on earth. The right ascension coordinate is read like a 24-hour clock with point "zero" exactly on the first day of spring. The declination coordinate tells how many degrees north or south of the celestial equator and object is found.

The Ecliptic

The ecliptic is the apparent path of the sun through the stars. The concept of the ecliptic comes from the time when it was thought that the sun revolved around the earth. The ecliptic is still used because it serves to plot the apparent position of the sun.

A good way to visualize the ecliptic is to imagine that the sun did not obscure the stars with its light. Seen this way, you would observe, for example, that on August 24, the sun is in the constellation Leo very near the star Regulus. Day by day, you would observe it move away from Leo toward Virgo. Since the sun does obscure the stars, its position must be calculated using the stars just after sunset or exactly at midnight. (The stars visible at midnight will be on the opposite side of a map.)

**Hagar**

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**I HATE MY 5-TO-9 JOB**

**DON'T YOU MEAN 9-TO-5?**

**NAW... 5-TO-9... I'M AN ASTRONOMER.**

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**LOOK AT THAT, JIM... JUPITER HAS THIRTEEN MOONS... ISN'T THAT AMAZING? THIRTEEN FULL MOONS...**