THE SIDEREAL TIMES
SEPTEMBER 1986
The Newsletter of the Albuquerque Astronomers

AUGUST MEETING: 7:30 PM Friday 22 August 1986

The next meeting will be held at the UNM Physics & Astronomy building, at 7:30 PM, on Friday, 22 August 1986. We have outside guest speakers lined up for September through November. This month, however, various members will be showing slides from the recent club outings. It will be a good opportunity to start plans for future field trips.

STAR PARTY: 8:30 PM Saturday 30 August 1986
Backup night 8:30 PM, 5 or 6 September 1986

The star party will be held from 8:30 PM until whenever, at the shooting range park on the West Mesa. (Take the freeway to the top of the hill, and turn off to the north, toward the new Double Eagle airport. The turnoff to the shooting range park is shortly before the airport, on the left.)

DARK SKY NIGHT: 8:30 PM Saturday 6 September 1986

Contact Dean Balmer for details as the date approaches. We may use this as the star party night if the weather is poor before then.

CLUB OFFICERS: (Several requests have been received to have the club officers info on the front page of the SidTimes, so here it is.)

President: Bruce Levin 299-0891
Vice President: Dean Balmer 293-9182
Secretary/Treasurer: Jim Cox 294-5214
Editor: Kirk Mathews 831-5547
Librarian: Brett Coningham 293-9563
Telescope Curator: Elizabeth Peck 881-8812

OBSERVING SITES:

Both the Gran Quivera and Shooting Range Park observing sites will be available on each Friday and Saturday night, except for weekends at full moon. This means the club locks will be used at the gates of those sites. To get the combinations for the locks, talk to one of the club officers, in person. (To protect the club, we can’t give them out over the phone.) So if the weather is good, we can go to a good observing site, even if it isn’t one of the scheduled club events. See you there sometime!
NEW MEXICO MUSEUM PLANETARIUM NEEDS VOLUNTEER OPERATORS:

The New Mexico Museum of Natural History has a planetarium! Its one of those small, inflatable ones, and the kids love it. Unfortunately, they're not really staffed for planetarium work, and are only able to give four shows a month. One of our members, John Brown, is leading this operation, and is seeking volunteers to help with the planetarium so more shows can be given. Lots of good things could be done; what is needed is enthusiasm and some effort. Call John at 888-9656 if you'd be interested in helping with this work.

ARTICLES NEEDED FOR NEWSLETTER:

I (editor) don't know how many of you have found the articles I've been writing for the newsletter to be interesting or useful. I know they tend toward the technical, but that's me all over! I'd like to include articles by other club members, but haven't exactly been swamped with input. Call me if you have anything for inclusion, and I'll make arrangements to get it from you. (Also, I'm teaching a course at UNM this fall, so I'll have somewhat less free time for this.)
TRIPOD STAR-FINDER:

Here's an idea for a simple star-finder that doesn't require a telescope, or mount, or clock drive. Take three sticks (yard-sticks, for example) and connect them together at the lower end (forming the "eyepiece") so that they're free to spread apart at the upper end, like an upside-down three-legged stool. Then use 3 strings to connect the upper ends together. The length of each string will set the angle between each pair of "legs".

Now, suppose you know how to find two bright stars that are up at the same time as another object you want to find. Call the legs A, B, and C. Adjust the strings so the angle between A and B is the same as the angle between the stars you can find, and the angles between A and C and between B and C are also the angles from each of these stars to the object you want to find. Then, sight along leg A, pointing it at the first star, and simultaneously along leg B, pointing it at the second star. Then the third stick will point out the desired object! (If the desired object is on the other side of the line between the guide stars, then turn the tripod around, so that B points at the first guide star, and A points at the second guide star, and then you'll have C pointing at the desired object.)

So, to do this, all we need (besides the sticks and strings) is the celestial coordinates of the two guide stars and the object to be found, and a way of calculating the angles among them, and the needed lengths of string. I'll assume you have a reference where you can look up the coordinates, and a calculator. Here are the equations you'll need for the calculations:

**Angle between two stars:**

Let DEC1 and RA1 be the declination and right ascension of the first star, and DEC2 and RA2 be those for the second star. Let ANGLE be the angular separation of the two stars. Then:

\[
\text{ANGLE} = \arccos(\sin(\text{DEC1})\sin(\text{DEC2}) + \cos(\text{DEC1})\cos(\text{DEC2}) \cos(\text{RA1}-\text{RA2}))
\]

where the right ascensions are in angles (not hours), north declinations are positive, and south declinations are negative.

**Length of string:**

Let L be the length of the sticks (all the same length), and S be the length of string between their ends in order to have ANGLE between the sticks (at the other end where the sticks come together). Then:

\[
S = 2 \times L \times \sin(\text{ANGLE}/2)
\]

Kirk Mathews