Smoky Mountain Astronomical Society

S. C. R. A. P. S.

Society's **ChR**onological **A**stronomical **P**aper**S**

> In all times and in all places is Creation.
> In all times and in all places is Death.
> Man is a Gateway.
> Sermons to the Dead ... Carl Jung

From the President - Lee Erickson

July's weather has not been kind to us for deep sky observing. The July 14 Unicoi Crest star party was a wash out. However, the rain has brought back to life my dried out lawn.

July 21st, I had a rewarding make up experience. Along with Michael McCulloch, Tim Hunt and Gary and Ann Bridges we had a nice public out reach event. To what my vague memory says was about 60 Young Marines, we showed the Moon, Jupiter, a hint of the Milky Way and some of the brighter Star Clusters. I had a good time talking my throat sore and showed almost every one how to track the 20-inch telescope on Jupiter.

If August's weather is kinder and for astronomers willing to say up quite late or get up early Mars is returning. Mars, named after the Roman war god, is the red object near the Pleiades and noticeably brighter than Aldebaran, all of which are in Taurus the Bull. On the morning of July 26 2007, I woke early. Through the clouds, I could see Mars and some of the bright objects in Taurus. I estimated the angular distance between Mars and Aldebaran. Holding my clenched fist at arms length, I counted about three fist widths from Mars to Aldebaran so that is about 30 degrees.

At last month's meeting Jim Sanders gave us an introduction to freeware planetarium program Cartes du Ciel. To reinforce what I learned from Jim, I used it to work up an image of Mars and Taurus.
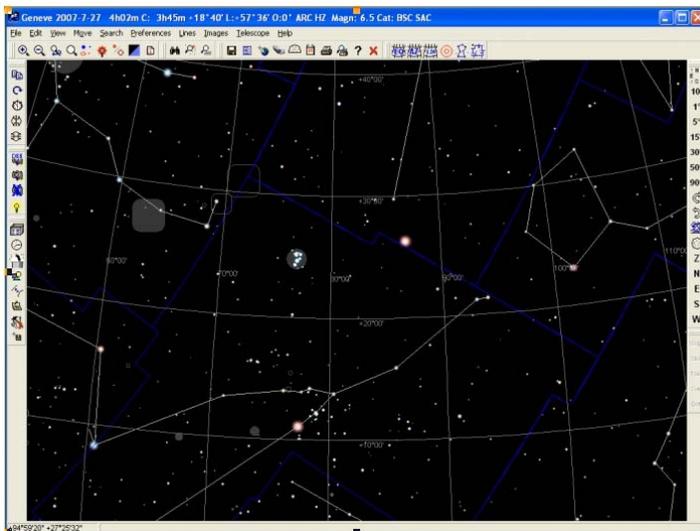
I had to set the time so that the sky was dark, then I used the menu commands Search, Find, Solar System, Planets and Mars. I turned on the Constellation Shapes (asterism lines) and the Constellation Boundaries and simply use the key strokes <Alt> Print Scrn to capture the above image to the windows clipboard.

Agenda for August 10, 2007 Meeting

7:00 Meet and greet
      Return checked out library books
7:30 Formal meeting begins.
      The main program will feature Mike Fleenor telling about his
      participation in the Space Telescope Science Institute's project XO,
      the hunt for planets beyond our solar system. Mike's effort was recently
      written up in the Knoxville News-Sentinel (July 16), a front page story!
Gastronomy to follow meeting.

July Question of the Month

This recent bit of conversation was posted on a Yahoo chat group:
Jack: "Well podner, I'll sign off for now. Did you know we had a Blue Moon
in May?"
Jacques: "Au contraire, Jack, you 'ave ze month wrong. Eet was June.
Au revoir."
They're both right. Can you explain?

Answer

When two full moons occur in the same calendar month, the second one is called a Blue Moon. Since the moon's cycle takes 28 ½ days, they can fit within a 30 (or 31) day month. (February, except on leap year, is thus disqualified.)

A full moon, by definition, occurs exactly when the moon and sun cross diametrically opposite meridians of the earth. That is only a single point in celestial time.

But what time is it on earth when that happens? Well, it's 24 different times, each an hour apart, in the 24 standard time zones. To someone in France, that may be 2 am; to someone in Texas, that may be 9 pm, even though it is the same event. Git that, podner?

And suppose it happened to be 2 am on the first day of June in France. Twenty-eight and a half days later they will have another full moon, and it will still be June. So France's Blue Moon will have occurred in June.

But in Texas, where it was only 9 pm on the last day of May, they had a full moon 28 ½ days earlier, giving Texas two full moons in May. In other words, the Blue Moon in Texas occurred in May, even though it was defined by the same full moon as France's.

It's just an artifact of mankind's artificial time keeping system, which chops up both time and dates into 24 local units every day.

Congratulations to Janice Erickson who nailed it within 24 hours of publication. A new volume will be added to our library in her name.

Minutes of July Meeting

At 7 o'clock, several members were present for socializing. Kenny Pridgen asked Lee Erickson "What is matter?" The formal meeting began at 7:30.

We had three guests, two of whom must remain unidentified because of events beyond our control. The third one, however, is Dwayne Dunlap. We hope all three might be interested in joining SMAS; we promise we won't lose their names again.

Old business

A course in computer image processing using PSTCC's facilites was discussed, and it became clear that there are more factors to be explored before any formal proposal can be put forward. There are several commercial softwares available; Mike Fleenor noted that Maxim DL offers a 30 day free trial. This item will be continued.

New Business

Our public Great Smoky Mountains National Park stargaze in Cades Cove is scheduled in October. More information will be published in the September SCRAPS.

The Main Presentation was an introduction to Cartes du Ceil planetarium software, presented by Jim Sanders. This is a free program, with exceptional capabilities, many of which were demonstrated by Jim. It has excellent search capability and can display virtually all digital celestial catalogs (almost all of which are available free on line). It makes great finder charts and can even display the field of view of 10 of the owner's eyepieces superimposed on the charts (great stuff for star hopping). Download at http://www.astrosurf.com/astropc/

From Adam Thanz, director of Bays Mountain Planetarium, Kingsport:

Bays Mountain is proud to have Doug Gegen for it's main speaker for StarFest 2007. He is the curator and staff astronomer at the Roper Mountain Science Center in Greenville, SC. He is in charge of the observatory which houses a 23" Alvan Clark refractor! Doug will talk about the history of the telescope as well as its use in a school district setting. You'll also learn how it made it's way from Princeton University, via the US Navy, and then to Roper Mountain. I'm sure it will be great fun and very interesting.

StarFest will be held Oct. 6-7, 2007. Registration forms should be sent in August. Note: Pre-registration is the only way to attend StarFest.

http://www.baysmountain.com/planetdept/starfest/starfest2007.html

Young Marines

By

Michael McCulloch

SMAS members were present at a Young Marines camp on the evening of July 21st. The camp was near Carter Park in the Strawberry Plains area and included 47 campers with several supervising adults. The actual tent area was an open field of approximately an acre surrounded by tall trees.

SMAS members in attendance were: Gary Bridges with his Meade SCT, Tim Hunt with his Orion dob, Lee Erickson with Sasquatch, and myself with binoculars. SMASer's arrived at approximately 8:30 PM at the campsite and provided a brief introduction to the campers at an amphitheater adjacent to the tent field. The intro was followed with a question and answer session. Of course, the first question was, "How much do your telescopes cost?" This was followed with several other questions including whether man-made satellites can be observed. Gary explained that some computerized scopes can accept orbital data and actually track satellites such as the Space Station.

About 45 minutes later we SMASer's had our scopes setup and ready for action under a darkening sky. The first quarter Moon near Spica was visible, but the western horizon was blocked by trees. It was therefore not possible to show Saturn and Venus in the scopes. Jupiter was visible above the tree line to the south.

The Young Marines organized into small groups of 8 or so campers and visited each SMAS member for a look at the sky. I cannot speak for all the objects highlighted by each SMAS member the entire evening, but I believe Lee focused on Jupiter in Sasquatch. I do know that Jupiter, the Moon, and Alberio were popular scope targets.

I made use of a borrowed laser pointer to show some of the summer stars and constellations. I started with the Big Dipper and used it to jump to Polaris and the Little Dipper, Arcturus/ Bootes (the Kite), and Spica. The Summer Triangle was also visible along with the constellations of the Northern Cross (Cygnus) and Lyra. Antares and Scorpius peeked above the trees. Later in the evening the Teapot (Sagittarius) was completely visible above the tree line. Unfortunately, the laser pointer itself seemed of more interest to some campers than the sky! Oh well…

During the evening I had the experience of being asked several times by one young camper, "Where is the constellation Poop?" After dismissing his question in passing several times, I finally answered him directly indicating no such constellation existed. He seemed satisfied, although somewhat disappointed, and didn't return to ask again.

Pretty, huh?

Know what it is?

It's Prudhoe Bay, Alaska, at midnight. That's right, the midnight sun.

Thanks to Jim Kaler's Skylights

"So what's this leading up to?", you ask. Why, the August Question of the Month, of course. As if you had to ask…

As a good astronomer, you know that at the summer solstice (usually June 21) anyone located inside the Arctic Circle would see the sun above the horizon for all 24 hours of that day. And the farther north you go, the more days it stays above the horizon; at least for a while. If you go all the way to the north pole, it will remain above the horizon all the way to the autumnal equinox (often September 23).

The question is, if an observer in the Arctic Circle sees the sun above the horizon for 24 hours, does that mean that his Antarctic counterpart (on the same meridian at the equivalent southern latitude) cannot see the sun because it is below his horizon?

And when the northern observer finally sees the sun dip below the horizon, does his southern buddy finally see it slip up above his horizon for an identical time?

Whichever way you answer, are there any exceptions?

Of course there is refraction and weather to consider, but let's not. In other words, answer as if they don't exist. And to simplify even further, consider the sun as a single point of light, rather than as a disk. Oh yeah, let's flatten all the mountains so they don't block the horizon.

There, that makes it much easier, doesn't it?

You know where to send it.

Blount County
Public Library Event

The Blount County Library public outreach event was held on July 17. About 25 people attended, several of them children.

I showed them Introduction to Telescopes, a Power Point presentation composed by Angela Quick. Bill Dittus had helped me modify it with some images having consistent telescope light paths. Then I played Bob Arr's new DVD Beginners Course. There were a few heads nodding during the program, but most were entertained throughout. (Next time we'll shorten the academics.)

After the presentation I received lots of help carrying the telescopes out the sidewalk on the west side where we waited for the sun to set and the moon to appear. To demonstrate the deficiencies of the cheap DO NOT BUY TELESCOPE relative to our 6" reflector (Telescopes for Kids), we observed the "Star of Broadway", a red light on the top of the antenna on a building called the Broadway towers about 1/4 mile away. They got the point.

By dark about 7 people were left and the Moon and Venus peaked out from the clouds. They enjoyed the moon and I showed them how to track the moon with the Dobsonian. I could tell the parent of the one youngster who remained was concerned that his son was touching our equipment. I addressed the father's concern by instructing the young man how he could track the moon west and he did it   .

I would like to do this again in the fall.   ~~~ Lee Erickson

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President's Message continued from Page One

I am looking forward to the return of Mars, I will never forget the remarkable change we observed in the Martian polar ice caps about 4 years ago. From very late one spring night at the South View overlook off of the Cherohala Parkway through Bob Arr's telescope I saw the large southern polar ice cap with a noticeable feature, a gouge mark. The mark was shaped kind of like a Nike swoosh logo. Then about 4-5 months later, as Mars was hitting its southern summer, the polar ice cap was dramatically smaller. The Nike logo was gone. I guess Nike canceled the advertising contract.

The day after our August 2007 meeting, on the 11th is this month's Unicoi Crest Star Party. The Milky Way will dominate the sky. If you have not seen our Galaxy from a dark location, you really owe it to yourself to make the trip. I plan a departure from Maryville Back Yard Burger at about 7:30 PM that evening.

Tones from the Deep
by Patrick Barry and Tony Phillips

Artist rendering of a panoramic view of the New Horizons Spacecraft approaching Pluto

Now is an exciting time for space enthusiasts. In the history of the Space Age, there have never been so many missions "out there" at once. NASA has, e.g., robots on Mars, satellites orbiting Mars, a spacecraft circling Saturn, probes en route to Pluto and Mercury—and four spacecraft, the Voyagers and Pioneers, are exiting the solar system altogether.

It's wonderful, but it is also creating a challenge.

The Deep Space Network that NASA uses to communicate with distant probes is becoming overtaxed. Status reports and data transmissions are coming in from all over the solar system—and there's only so much time to listen. Expanding the network would be expensive, so it would be nice if these probes could learn to communicate with greater brevity. But how?

Solving problems like this is why NASA created the New Millennium Program (NMP). The goal of NMP is to flight-test experimental hardware and software for future space missions. In 1998, for instance, NMP launched an experimental spacecraft called Deep Space 1 that carried a suite of new technologies, including a new kind of communication system known as Beacon Monitor.

The system leverages the fact that for most of a probe's long voyage to a distant planet or asteroid or comet, it's not doing very much. There's little to report. During that time, mission scientists usually only need to know whether the spacecraft is in good health.

"If you don't need to transmit a full data stream, if you only need some basic state information, then you can use a much simpler transmission system," notes Henry Hotz, an engineer at NASA's Jet Propulsion Laboratory who worked on Beacon Monitor for Deep Space 1. So instead of beaming back complete data about the spacecraft's operation, Beacon Monitor uses sophisticated software in the probe's onboard computer to boil that data down to a single "diagnosis." It then uses a low-power antenna to transmit that diagnosis as one of four simple radio tones, signifying "all clear," "need some attention whenever you can," "need attention soon," or "I'm in big trouble—need attention right now!"

These simple tones are much easier to detect from Earth than complex data streams, so the mission needs far less of the network's valuable time and bandwidth, Hotz says. After being tested on Deep Space 1, Beacon Monitor was approved for the New Horizons mission, which is currently on its way to Pluto, beaming back a simple beacon as it goes.

August 2007

SUN	MON	TUE	WED	THU	FRI	SAT
UTK—roof of Neilson Physics Building on The Hill at UT 1st & 3rd Fridays TAO —Tamke-Allan Observatory Public Stargaze Watts Bar Lake, Roane County 1st & 3rd Saturdays			1	2	3 UTK	4 TAO
5	6	7	8	9	10 SMAS Meeting 7 pm PSTCC	11 SMAS Star Party UC
12 New Moon	13	14	15	16	17 UTK	18 SMAS Star Party LR #1 TAO
19	20	21	22	23	24	25
26	27 **SCRAPS depends Upon its friends**	28 **Help! Help!**	29	30	31	