

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

Society's Chronological Astronomical Papers



From the Chair By Bob Arr

Last April in this space, I announced an effort to develop a program that we could show to newcomers, to give them a sense of what we find so compelling in looking at the stars. The hope was that it might--just might--trigger a response in them to investigate astronomy further. I'm happy to say that the program has been completed, and will be shown to the members at the November meeting. For lack of a better term, we call it simply the "Beginners Course". In its final form, it is a CD that is played in a computer. It has text, images and a sound track, and runs interactively with its user. It not only has our Beginner Course, but also a planetarium program that displays the night sky and prints star charts. Every member of SMAS who wants one will get it at the meeting.

These are the members who contributed so generously to producing it: (in alphabetical order) Robb Felthege, Charles Ferguson, Ken Ferguson, Shawn Grant (and yes, I helped, too.) A dozen more helped shakedown the Beta version. I believe it will be a great introduction to astronomy for novices, as well as a frame of reference for our regulars. It is a product of SMAS, testimony to the skill and resources of this club. I couldn't be prouder of what we have put together.

Adoption of the proposed Constitution and Bylaws dated October 2, 2002 will be voted on at the meeting. (It is currently posted on our website, www.smokymtnastro.org.) If 2/3rds of a quorum vote for it, it will become our official C&BL. By the time you receive this newsletter, you should have received instructions for absentee voting. If you have not, contact the Secretary at leerickson@earthlink.net or 379-0612.

The Wiz

Dear Wiz, How come when Orion comes up he's laying on his side, but when he gets up high he's standing on his feet?
S. Agin

Dear Stumped, Good question! It's just an optical illusion, but one that you need to get used to. In both cases, you are judging Orion's posture with respect to your very own horizon. And it's the horizon that rotates, not Orion. When you are looking due east, the eastern horizon seems to be running north and south. This is involuntary, because all your life when you face east you have learned that north is to your left and south to your right. Similarly, when you are looking due south, the southern horizon seems to be running east and west. Orion, rising on the eastern horizon, seems to have his right side resting on a horizon that runs north and south.

At zenith, when you have to look south (and up) to see Orion, he seems to have his feet side aligned with a horizon that runs east and west. But your mind understands that both horizons are the same horizon, so it seems intuitive that Orion must have somehow rotated from lying on his side to standing on his feet.

Wrong. *You and the earth* have rotated 90° and have dragged the southern horizon under Orion. That means you are now referencing him to an east-west line, rather than a north-south line. The impression is that he has rotated 90°, rather than the horizon, which always seems to be fixed. Most computer planetarium programs (Guide, Starry Night, Sky Charts) will perform animation that allows you to watch Orion travel from horizon to horizon. You only have to watch it once to see that it is in fact our moving horizon that causes the optical illusion.

2002 Tennessee Star Party by Mike Fleenor

October is the driest month of the year with the most clear sky opportunities if you live in East Tennessee...well that is generally true most years, but with an El Nino brewing the past month has felt more like April. Nevertheless, Tennessee Star Party 2002 was a tremendous success in spite of contrary weather. The TNSP is hosted by the Barnard-Seyfert Astronomical Society in Nashville and began in 2000. This meeting and future gatherings also will be held at Camp Nakanawa just outside Crossville approximately 85-miles from Knoxville. This was a nice time for fellowship with other astronomers as well as have fun with the family. Next year, I hope to take the wife and kids! I had prepared for the event for some time. I even scheduled vacation this time of year to take advantage of the "October run" as I like to call it. Logging 50 to 60 hours under the stars is typical for me in October, yet a major storm had been forecast to impact the weather the weekend of the 4th-6th so I had tentatively made other plans. I'll admit I am a clear-weather astronomer, so I didn't make the entire event. Lili was heading inland and my hopes began to diminish as local meteorologists began to predict hurricane force winds would be felt in Memphis! It seemed as if my preparations would be in vain! That Friday evening things were soggy and the wind was howling. I stayed home, but by Saturday things were changing fast. Lili weakened and quickly left the area and clean blue skies were fast approaching. Thank goodness for those cool dry Canadian air masses! The preparation had paid off and all those evenings setting up and tearing down in the backyard would prove beneficial on the observing field.

I showed up by noon in time to hear about the Astronomical League's Amateur Telescope that is being planned to go aboard the International Space Station by 2010. It is now a prototype named "Telescope Alpha" and is operational. In fact, you can visit the ISS-AT website, <http://www.issat.org/index.htm>, and make your observing proposal now! Many of the ISS-AT Team were at TNSP and gave an informative presentation. I will confess that I have been a supporter of the AL, but never very active in their observing programs because I began finding my way around the stars many years before I had heard about the League. This new project has me excited though! In fact, many attendees at TNSP were quite impressed with the project thus far. In its current incarnation, the ISS-AT, is a specially constructed Celestron 14-inch SCT with an assortment of CCD detectors riding atop a Paramount Millennium robotic mount. The telescope is designed to "prove" the concept to NASA. This should not be thought of as a competitor to the sophisticated telescopes and sensors already in orbit, but rather a telescope for the amateur community that according to Richard Berry, "...will be controlled remotely by a team of amateurs on the ground." The envisioned telescope will concentrate on taking pictures of the universe that interest the whole human race. The data from the telescope will be ready for public access immediately after download from the ISS. Berry is leading the effort for NASA's approval. He also detailed some of the obstacles that will need to be overcome for the hardware to function while aboard the ISS. Vibration will be a major problem as well as just knowing where you are in the sky. The space station will have the capability to know its attitude within a degree, but the AT will have to point and track objects to sub arc-second accuracy! This ultimately may be what makes or breaks the project, but Boeing aerospace experts are addressing the issue now so we should all feel confident that the problem will be overcome as its solution has tremendous potential for commercial development. The telescope will need to "float" on a platform that will isolate it from the ISS. Berry also described some of the observations that will be possible with the ISS-AT such as planetary studies and photometry of variable stars.

Terry Mann, the current AL vice-president and operations chair for the telescope, described some of the current logistical requirements operating the prototype telescope that is now located in Sonoita, AZ and was formerly at Vanderbilt University in Nashville. Think you would love to live in AZ? I would move there in a heartbeat with the right job opportunity, but you might be surprised to learn that although the skies are very clear they also routinely endure high winds. This has had an impact on the AT since the observatory automatically closes the roof during windy conditions. I guess clear skies aren't necessarily better. The ISS-AT's project manager, Orville Brettman, was also on hand and described some of the operational requirements that will be needed and the communications technology that will link the telescope while in orbit with ground operators. Who are the ground operators you might be asking? Well it could be you! You also could be involved training educators and other folks how to request time on the telescope. Operators will send commands and receive data over satellite links that are already operational at the AZ. site! Dude guess what... It's got a Dell! Dell computer as well as Boeing, SBIG, Apogee and other commercial vendors have been enthusiastic about the project and have generously donated hardware. Since the telescope will operate outside Earth's atmosphere, it will be free of the turbulent effects thus allowing the telescope to operate at very near its theoretical resolving power, which is sub arc-second! Amateur astro-imagers on the ground are fortunate if they can get conditions which allow time exposures with a resolution of 2 seconds of arc while 3 to 5 is more typical. This will be an awesome platform for the amateur community and no doubt will help ignite the passion for astronomy that we share together with many folks around the world. (continued)

TNSP (continued)

TNSP featured astronomy experts from Vanderbilt and Richard Berry also gave an interesting talk on CCD imaging. You really don't have to break the piggybank to get into imaging (Gee, wish I would've heard that earlier.) Actually being a cookbook devotee myself in my earlier years imaging I can appreciate the message that Richard was sharing and would highly encourage anyone interested in the wonderful world of CCD astronomy to give it a try and don't be concerned about having all the right equipment. Incredible results can be had with rather ordinary gear. Even camera lenses deliver great images that can be fun!

Although I missed the main presentation as I was busy in the field shooting images, I did get a preview of Desktop Universe, the new software from the "up and coming" Main Sequence Software. This package has been called revolutionary, but I think that is an understatement. Peter Ceravolo, a name familiar to many, shot tricolor CCD images to create an all-sky mosaic. Objects down to 14th magnitude are shown as they actually appear in the sky and I mean every single object and star! You can zoom in for up close views and of course it has all the features that you would expect from a full featured planetarium software package. It lists for \$299. Ceravolo, a master optician, put the same level of skill and dedication into this product as he did creating his famous Mak-sutov-Newtonian astrographs. I am sure this software will set a new standard for the other guys to follow.



Richard Berry, Terry Mann, and Orville Brettmann



Mike's CCD Rig

If you didn't want to make an all-nighter on the observing field there were plenty of activities to do during the day. Wayne Thompson found time to take a canoe ride. Also in attendance from SMAS were Robb and Becky Feldhege and Bill and Tammy Burgess. I also saw Paul Lewis and Jack McConnell from UT and some former SMAS guys, Clint Bach and Steve Balay.

Saturday night was the high point for me and did we have some good skies! I was the CCD lone ranger and set up literally on the other side of the field as to not interfere with other folks' night vision. The observing field was large. Everyone had plenty of space and several folks pitched a tent. Rustic bunkhouses were available for those not wanting to camp. The interstate was nearby if you wanted to get a motel. The air was steady too, and while fog threatened it, was not a major problem. My new homebuilt dew shield held up remarkably well and my optics were dry, but the next morning the rest of the scope and mount looked like it had rained! The food was

excellent I might add and overall I had a great time. I have to thank the good people of the Barnard-Seyfert Astronomical Society for a job well done. Those Nashville people really know how to throw a good party!

FALL MENTAL WORKOUT

Work your mind and share your astronomical experience with the rest of SMAS and everyone on the Internet by writing an article for SCRAPS. Contact Mike Littleton at (865) 671-1022 or email littlem@ix.netcom.com.

ASTRONOMY AND SKY AND TELESCOPE SUBSCRIPTIONS BY JANICE ERICKSON

This is just a reminder to all club members that you may subscribe or renew your subscription to either Astronomy or Sky and Telescope at reduced rates. You may begin a new subscription or renew your individual subscription at the club rates for either magazine. I just need to know if this is a new subscription or whether you are converting from an individual subscription. We currently have enough subscriptions through Sky and Telescope for anyone to add or renew at any time at the rate of \$29.95 per year. Please make your check payable to Sky Publishing and give it to Janice Erickson or mail to SMAS, P.O. Box 53265, Knoxville, TN 37950. You may also provide a credit card number on the subscription form – see me in person for this. If we have a minimum of 5 subscribers, we can get a reduced rate for Astronomy magazine. A one-year subscription is \$29.00; a two-year subscription is \$55.00. It appears that remittance for Astronomy must be made from the club's checking account, so make your checks payable to SMAS and give to me.

NOVEMBER METEORS BY BOB ARR

Leonids last big show for a long time

About 5 am local time on the morning of November 19 (Tuesday), the earth will pass through the last large band of Leonid meteoroids in this three year maximum cycle. It is not expected to be this good again for 30 years. Meteor storm forecasting has become very accurate in the last few years, and last year's observers were treated to a wonderful, predicted display. The predictions for this year are for a bit less than last year, but the good news is that North America will be in great viewing position (Leo will be about 60° above the eastern horizon at 5 am.) While the moon will be full, it will also be low in the western sky, just one hour from setting. There are two peaks forecast, and the earlier one is expected to be bigger than the later one. But the earlier one is at 11 pm when Leo will still be below our horizon, and the full moon will be overhead. Garry Nolan has invited the club to come to his house in Seymour for any or all of the night's viewing. Bring a lawn chair and warm wraps, a hot thermos and your best tall stories. Directions to Garry's are on our website, www.smokymtnastro.org.

Brent Holt's GEM Project-An Update BY MIKE FLEENOR

Shortly after I joined SMAS, I made the acquaintance of Brent Holt who has been an inspiring friend to me ever since. We share several interests including astrophotography/CCD imaging and metalworking. Brent is an accomplished astro-photographer who has dreamed of a really massive mounting for large aperture telescopes. Serious telescope mounts, that is mounts up to the task of supporting telescopes for imaging and photography at long focal lengths are literally machining masterpieces. Gear and bearing tolerances less than a few ten thousandths are required and they require expert skill to produce. Now you have an understanding why the high-end mounts are so expensive as they demand the skills of master craftsmen to fabricate. I remember when Brent had just started the GEM that now sits in his observatory and I am sure many of you remember the components that Brent would bring in to the meetings. What you may not know is that this work of art was fabricated 100% by Brent. Every part has been expertly milled and or turned on Brent's Smithy multipurpose machine. (continued p 5.)

WANTED

Smallest covered trailer that can haul Sasquatch and 8' ladder, and double as storage. Should have springs, shocks and pneumatic tires >14". Call Bob Arr 681-3999.

16" F8 Cave telescope. The mirrors need re-coating. \$2800 Contact Paul Lewis at gplewis@utk.edu.

GEM Project-(continued)

To date, Brent has five years invested in his mount and has just completed initial testing. Brent reports very smooth periodic error and is confident he will be able to achieve a final periodic gear error of less than 10 seconds of arc. This is indeed very impressive and ranks right up there with the research grade mounts supporting large telescopes and amateur mounts that cost as much as a late model used car. The mount is estimated to weigh approximately 800 lbs. and features right ascension and declination gear assemblies that were fabricated by Brent that are over 17" in diameter! I think Brent won't have to worry about payload capacity with this beast! Brent definitely reminds me of one of my all time favorite people, Thomas Edison. No, he hasn't invented a new light bulb but has that same dogged determination to keep trying new ideas to make something work and see something to its completion. I remember when he first told me he was going to fabricate his own worm gears and my incredulous reply was, "Brent, don't you realize just what degree of accuracy you will have to maintain?" He was unmoved by my pessimism and the monument to his dedication and skill is now on display in his home observatory. What may be most interesting to folks who may be thinking about an ambitious project of their own is that Brent has had no formal training in machining. He has learned what he needed along the way but this has come at an extensive investment of time. My hat is off to Brent and I look forward to seeing this piece of precision in action!



OCTOBER MEETING BY LEE ERICKSON

The SMAS meeting was held October 11, 2002 at the Discovery Center. There were 19 members in attendance and three guests one of whom became a member, Michael McCulloch. Welcome Michael!

Announcements: There is an Astro-photography seminar at the Tamke Allan Observatory beginning November 2d and on succeeding first Saturdays of the month at 6 PM. The seminar is free. If you would like to attend the seminar, please contact Dave Fields of the Roane State Community College. Dave's email is Fieldsde@aol.com

New Business: The SMAS Christmas party is at **RJ's Courtyard** on Alcoa Highway on December 6 at 6:30. RJs is on the West Side of Alcoa Highway, 1/4 mile north of the I-140 (Pellissippi Parkway) intersection. Please RSVP Tammy Burgess at won2one@aol.com or leave a message at Burgess Optical at 865-769-8777 if you will attend.

Jack McConnell described the Tennessee Star Party. Richard Berry (Co-author of The Cook Book CCD Camera and others) was there and presented a lecture on where Earth is located in the Milky Way Galaxy. There is a kit for beginning radio astronomy. It lets you hear radio emissions from Jupiter and is called **Radio Jove**. More information is at the website, www.radiojove.gsfc.nasa.gov.

John Sparks presented Ron Dinkins with his Deep Sky Binocular pin award. There was a discussion on the proposed club constitution. The next step on the proposed constitution will be voting on it at the November meeting on the 8th at the Discovery Center.



November 2002

Chair:
Bob Arr

Vice Chair:
Tom Rimmell

ALCOR:
John Sparks

Secretary:
Lee Erickson

Treasurer:
Janice Erickson

SCRAPS Editor:
Mike Littleton

SUN	MON	TUE	WED	THU	FRI	SAT
					1	2 AP Seminar SMAS Star-party
3	4 New Moon	5	6	7	8 SMAS Mtg.	9 SMAS Star-party
10	11 First Qt.	12	13	14	15	16 Radio Astronomy in Education
17	18	19 Leonids Peak	20	21	22	23
24	25	26	27 Last Qt.	28	29	30

SCHEDULE OF EVENTS

SMAS Website:
<http://www.smokymtnastro.org/>

Webmaster:
Mike Fleenor

- 11/1/02 and 11/15/02 Public observing from the roof of the Physics Building at UTK
- 11/2/02 SMAS Starparty at Unicoi Crest NC
- 11/2/02 Astrophotography Seminar 6 PM at the Tamke-Allen Observatory Roane State CC Open to all interested
- 11/8/02 SMAS Meeting at the Discovery Center
- 11/9/02 SMAS Starparty at Look Rock
- 11/15/02 Venus rises at 5:27 AM; Mars rises at 4:29 AM; Jupiter rises at 11:24 PM; Saturn rises at 7:35 PM
- 11/16/02 Tamke-Allen Observatory (TAO) at Roane State Community College (RSCC) will host an open regional meeting of the Society of Amateur Radio Astronomy. The meeting, with the theme 'Radio Astronomy in Education' is open to anyone interested in radio astronomy.
- 11/19/02 Leonids peak See the article in the newsletter's text