

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

Society's ChRonological Astronomical PaperS



From the President by Bob Arr

Our Christmas dinner at Naples, 6:30, Dec 6, promises to be a very pleasant close to an exciting year. (We will not have a regular meeting in December.) If you haven't been able to finalize plans for it, don't fret--just show up. We have plenty of room for extras.

We will not have a Friday night meeting in January, either. Instead, our regular meeting will be on Sunday, Jan 18, 3 PM, at PSTCC, which will be devoted exclusively to John Dobson. That said, I should add that there is a Friday night meeting on Jan 16, at 7:45, devoted exclusively to folks who would like to hear John talk about his cosmology, ask questions, and perhaps advance some ideas of their own. We understand that is not everybody's cup of tea, but many people find this the very essence of astronomy. John certainly does! The late start is to accommodate those who need extra travel time. (There are actually 5 JD presentations in 5 days. See the schedule, below.)

Here is our tentative schedule for John Dobson's talks in January. What is tentative is the subject of each talk. John is famous for extemporizing, and the conversation might wander. He may not be predictable, but he's never a bore! Anybody may attend any talk; it is not necessary to attend with your club. We do not yet have specific buildings and room numbers, but those will be posted well before the actual events.

- **WEDNESDAY, Jan 14th**, 7:00 PM, Oak Ridge Campus, Roane State CC. The intended audience is ORION, area astronomers, RSCC students and faculty. John Dobson will discuss general astronomy-from telescopes to observing, and some cosmology.
- **THURSDAY, Jan 15th**, 7:00 PM, Oak Ridge Campus, Roane State CC. The intended audience is TAO astronomers, area astronomers, RSCC students and faculty. John Dobson will discuss mirror making, his dobsonian mount, and general observing.
- **FRIDAY, Jan 16th**, 7:45 PM, Main Campus, Pellissippi State TCC. . The intended audience is all cosmologists, practicing or plotting. This presentation is devoted to John Dobson's cosmology.
- **SATURDAY, Jan 17th**, 6:00 PM, Tamke-Allan Observatory. . The intended audience is TAO astronomers, Public Stargazers, and home-schooled children. John Dobson will lead observing activities and discuss the Sidewalk Astronomers.
- **SUNDAY, Jan 18th**, 3:00 PM, Main Campus, Pellissippi State TCC. . The intended audience is SMAS, wide-area astronomy club members. The public, PSTCC students and faculty are also invited. John Dobson will discuss general astronomy, from telescopes to observing, and some cosmology.

2003 In Review by Bob Arr

January	SMAS moves to Division St campus of PSTCC.
February	Liability insurance covers members Gene Johnson stars in TV spectacular "Warehouse Warriors" Mike Fleenor's CCD images displayed by Smithsonian
March	Freels Bend Nature Walk public observing in Oak Ridge New members: Don Rising, Jim Sanders
April	Road washout at Look Rock Public invitations to Look Pebble begin SMAS inaugurates Starless Star Parties at LP New members: Pete Bush, Owen Hoffman, John Tipton
May	Cherohala Skyway observations begin South View discovered First Telescope for Kids presented to Central HS smokymtnastro@yahoo group inaugurated New member: Michael McCulloch
June	Mars begins showing itself to SMASers Mike Littleton leads plebes to watery disaster at UC (Hey, it was just a "little" fog! - The Editor) New members: Tracey Monroe, Scott Byers
July	Picnic at TAO New member: Bill Buchanan Michael McCulloch's firm sponsors Clear Sky Clock
August	Mars Opposition week PSTCC+MC=1200 viewers
Sept.	SMAS meetings moved to Main Campus of PSTCC
Oct.	Boy Scout Camporee with 300 viewers Members approve initiative to host John Dobson New members: David Fields, D.R. Fudge, Mary Watson
Nov.	SMAS library installed in Room 223, PSTCC
Dec.	Christmas Dinner at Naples Italian Restaurant

Equipment milestones:

- Angela Quick gets Skyview Pro 100 EQ
- Lee Erickson gets Skywatcher 4" refractor EQ
- First light for Mike Fleenor's mak-cas
- Bob Arr gets TV Binoviewer
- Michael McCulloch gets Portaball
- John Tipton gets Nexstar

2003 In Review (continued)

- Jerry Calia gets C11
- Robb Feldhege gets Denkmeier Binoviewer
- Bill Buchanan gets 20x80 binoculars
- Owen Hoffman orders an XT10, waits, and waits...for 2004?
- Mike Littleton orders a AstroSystems Telekit for a 13.1 dob and waits...March 2004?

The Wiz

Hey Wiz, I ain't dumb. I know to use a red flashlight, but some red flashlights ain't bright enough to read a star chart by, so I got me a good bright one. Now I can read my star charts, but it ruins my night vision anyway. That ain't fair--red's red, ain't it? What's goin' on?

V. Undnod

Dear Vinkinblinkin,

In a word (or two), over-excitement and spillover. A bright red light has enough white light mixed in it to stimulate your cones, which allows you to see fine detail (you can read your charts better). However, your rods, which are extremely sensitive to dim light, are overwhelmed by the brightness; they instantly go into a self-protection mode that shuts down their sensitivity all together. Yes, even if it's red brightness. Then you have to let them rest for 15 minutes or so to get them back to normal.

There are a couple recommendations. Since our cone's greatest sensitivity is in the blue-green range, a dim blue-green light may allow your cones to see the charts well enough, and still not trigger shutdown of the rods. (Old pilots (e.g. the Wiz) remember when all cockpit instrument lights were red, but were changed over the years to blue-green.) The intensity and color involve trial and error to find a combination that works for you, because every eye is different, and age is a big factor.

Another is to use one eye for observing and the other for reading. An eye patch might help, providing you don't use glasses (eye patches and glasses just don't mix.) Even if you use binoculars (or a binoviewer) this can help, since your brain uses the better image to synthesize the two.

An Invitation to SMAS and ORION Members by Dave Fields

Sponsoring John Dobson's January visit is a big event for us. I have decided to assemble a small book commemorating the visit and I invite contributions. My hope is to include photos, comments, poems, or articles from all of us, that apply to John's history or his visit. Photos of him are especially welcome. So if you have a Dob, be sure to send me a photo of you and your Dob or better yet, you and John beside it – or an astrophoto of Telescopium signed by John – or a photo of a J. Dobson cake – or a comment about sidewalk astronomers, or cosmology, or his reaction to TN weather. I'll credit you for your contribution, but will probably keep everything you send me.

November Meeting by Angela Quick

The SMAS Meeting was held on Friday, November 15, 2003 at the Main Campus of Pellissippi State Technical Community College. The meeting began at 7:10, with 13 members present. Bob introduced guests Paul Wooten and Denise Munsay.

First came show and tell: Bob reviewed the book, *Night Sky Observer's Guide*. Bob praised the two-volume set as "an updated and expanded Burnham's Celestial Handbook". The publisher's web page contains the following description of the book:

"The books take objects constellation by constellation with full page charts and numerous smaller finder charts and drawings. Tables list variable and double stars, and a few individual stars are highlighted. The meat of the volumes is its descriptions of galaxies, nebulae, and star clusters as they appear through a variety of apertures. If you're looking for targets to keep you busy and challenge your observing skills, the *Night Sky Observer's Guide* has come to your rescue."

You can purchase the volumes directly from the publisher, Willman-Bell, for \$35 each. See <http://www.willbell.com/HANDBOOK/nitesky.htm> for details.

SMAS will take nominations for officers for 2004 at the January meeting. As secretary, Angela Quick is responsible for finding nominees for the elected offices of the club, which are president, vice president, secretary, and treasurer. To start the nomination process, each current officer gave a brief description of the duties and time commitment required by their office and a passed around a handout describing the duties of each office. If you are interested in being an officer in the coming year, or would like to suggest someone for an office, please email Angela at aquick@bananaskin.com.

Gary Nolan invited SMAS to observe the annual Leonid Meteor Shower at his home on Monday night, November 17. Bob succeeded in his quest to locate the missing volumes in the Time-Life "Voyage Through the Universe" series for the club library. If you have not seen these books, look at them during a future meeting!

The SMAS Christmas party will be held at Naples Italian Restaurant on Saturday, December 6. Naples Italian Restaurant is on Kingston Pike in Bearden – just off the Papermill exit. Diners may choose from lasagna, spaghetti with meatballs, or chicken parmesan. There is a 32-meal minimum, so if fewer than 32 people show up, we will all order take out to make up the difference. Bob circulated a sign up sheet at the meeting; he will also request RSVP via email.

SMAS organized a joint purchase of three Royal Astronomical Society of Canada publications: the 2004 calendar, the 2004 Observer's Handbook, and the Beginning Observer's Guide. Erik Iverson passed around sample copies from previous years, announced prices, and compiled an order. Items should be available at the January meeting.

Michael McCulloch gave a presentation on the Night Sky in Perseus, highlighting a variety of objects for all sizes of telescope. The sky chart and text of his presentation are available on the Internet at <http://www.gamesforone.com/stars/index.htm> -- scroll down to the link titled Night Sky Perseus, click, and enjoy. We had ample time at the end of the meeting for socializing! After pleasant conversations on things astronomical (and not), the meeting dissolved around 9 PM.

Telescope Math by Mike Littleton

To review some telescope math, it is worthwhile to compare the performances of two different telescopes: a compound telescope and a large and fast Newtonian. For discussion, let us compare an 8" f/10 Schmidt Cassegrain telescope (SCT) to a 15" f/4.5 dobsonian? Well the Moon is up, so lets try them on the Moon. How big is the Moon at prime focus of the telescopes? The width in millimeters (mm) of an object at prime focus is given by $w = f \theta / 180^\circ$. Where f is the focal length of the telescope in mm and θ is the angular size of the object (the Moon is about 0.5°). This yields 18 mm for the SCT and 15 mm for the dob. Interesting, they are about the same because the image size only depends on focal length and focal lengths are similar (2032 mm vs. 1714 mm). Both will fit nicely on a frame of 35 mm film. If an eyepiece is added to the telescope, the image size is $w \times \text{magnification}$. Magnification is equal to the focal length of the telescope divided by the focal length of the eyepiece.

What about the Moon's image brightness on the two telescopes? The brightness is proportional to the area of the primary mirror divided by the image area. For a round image like the Moon, this is proportional to the diameter. This yields $(8^2 / 18^2) : (15^2 / 15^2) = 1 : 5$ or the dob's image is about 5 brighter. This is the same ratio as the inverse of the square of the focal ratios (i.e $1/10^2 \div 1/(4.5)^2$). This is why the focal ratios on a camera lens are not double for each 50% drop in exposure they are f/2, f/2.8, 4,...

Resolution is the ability of the telescope to separate two close objects like double stars and brings out detail on extended objects like the planets. Resolution of a telescope under good atmospheric conditions is given by *Dawes Limit*: $R \text{ (arcseconds)} = 116/D \text{ (mm)}$. Where D is the telescope objective diameter in mm. This yields a resolution of 0.6 arcsecond for the SCT and 0.3 arcsecond for the dob. Because of the effects of the atmosphere, resolution is rarely better than 0.1 arcseconds for any size telescope.

Finally, the limiting magnitude (m) for a telescope of objective diameter (D) in mm is given by $m = 2.7 + 5 \log D$. Therefore the SCT can see down to magnitude 14, but the dob can see to magnitude 15.6. This represents a difference in brightness of about a factor of 4.

LIKE THIS NEWSLETTER?

If you do, keep it going by sharing your astronomical experiences and images 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 mlittleton1022@charter.net.



Copyright Jimmy Westlake (Colorado Mountain College)
Astronomy Picture of the Day 3/30/03



December 2003

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Bob Arr

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SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5 UTK	6 Xmas Party TAO
7	8 Full Moon	9	10	11	12	13
14 Geminids	15	16 Last Qt. Moon	17	18	19 UTK	20 Starparty TAO
21	22 Solstice	23 New Moon	24	25	26	27
28	29	30 1St Qt. Moon	31			

SCHEDULE OF EVENTS

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

- 12/5/03 and 12/19/03** Tamke Allen Observatory "Look Pebble"
 Public observing from the roof of the Physics Building at UTK
- 12/14/03** Geminid Meteor Shower peaks
- 12/22/03** Winter Solstice is at 2:04 AM EST
- 12/6/03** 6:30 PM SMAS Christmas Party at Naples Italian Restaurant off Kingston Pike near Bearden
- 12/15/03** Mercury sets at 6:41 PM; Venus sets at 7:32 PM; Mars sets at 1:00 AM; Jupiter rises at 12:01 AM; Saturn rises at 6:34 PM
- 12/6/03 and 12/20/03** Public observing at
- 12/20/03** SMAS starparty off Foothills Parkway at