

THE FLINT RIVER OBSERVER

Newsletter of the Flint River Astronomy Club
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Club Calendar. **Thurs., Sept. 9:** FRAC meeting (Beaverbrook media center, 7:30); **Fri.-Sat., Sept. 10-11:** Cox Field observings (at dark); **Fri.-Sat., Sept. 17-18:** Cox Field observings (at dark).

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Editor's Message. First, of course, there was then-18-year-old **Katie Moore's** winning the "Jack Horkheimer 2000 Award for Excellent Service to

Astronomy By a Young Astronomer" at AstroCon 2000 in Ventura, Calif., in July of that year.

Then, in Nov. 2001, I achieved Master Observer status, becoming the fourth person among the A. L.'s 18,000 members ever to earn ten observing pins.

Shortly thereafter, in Feb., 2002, **Phil Sacco** became Master Observer #11, making FRAC by far the smallest club in the world to boast *two* Master Observers among its members.

Also in 2002, Phil assumed the post of Representative for the Southeastern Region of the Astronomical League (SERAL), a post he has held continuously since then. An article of mine, "How To Become a Master Observer," appeared in the May 2002 issue of the A. L.'s quarterly newsletter, the *Reflector* (pp. 22, 30).

Steve Knight's excellent article, "Putting Heat In Its Place" (which originally appeared in 3-part form in the *FRAC Observer*) was published in expanded form in the Winter 2003 issue of *Amateur Astronomy Magazine* (pp. 46-48).

Dr. Richard Schmude, a FRAC member and astronomy/physics professor at Gordon College who was already serving as coordinator for both the Jupiter and Outer Planets sections of the Assn. for Lunar and Planetary Observers (ALPO) and an officer in the Royal Canadian Astronomical Society (RCAS) as well as having written several articles for the *Reflector*, was elected to serve as A. L. Secretary for 2004. (See also "This 'n That", p. 3.)

Most recently, at AstroCon 2004 held in Berkeley, Calif., it was announced that FRAC won first prize honors in *Sky & Telescope's* annual Astronomy Day Award competition for having the most Astronomy Day activities for a club of our size. FRAC's application for honors consideration was written and submitted by **Dawn Knight**.

Add to that my own (undocumented) suspicion that we're probably the smallest astronomy club in the U. S. to host a star party – and probably one of just a few astronomy clubs to schedule *two* American Cancer Society 2004 Walk-A-Thon all-night observings (Griffin and Barnesville) – and the inescapable conclusion is that **our little club is doing things in a very BIG way**, especially when you

consider that FRAC is not yet 8 years old and has less than 40 members!

It's not just a matter of a handful of go-getters working to earn honors, either: it took a lot of people working long hours at Ga. Sky View 2004 and Astronomy Day 2004 to make those events successful. Was it worth it? Ask any of the workers who volunteered their time, energy and enthusiasm.

Yes, our leaders have lots of drive and big ambitions for FRAC – but that commitment is shared by many of you who believe strongly in what FRAC stands for and what we hope to achieve. It is that powerful base of support that allows FRAC to pursue visions of greatness.

Go back and re-read that list of accolades, honors and national recognitions achieved by FRAC and its members in the short span of 7-1/2 years, and then you tell me: *What other club of comparable size, whether astronomy-related or otherwise, could you have joined that is doing more to further its stated goals than FRAC is?*

Are you proud to be a member of FRAC? You should be, because we're 'way past the stage of being "that other, little astronomy club south of Atlanta." We're doing things in a very big way, and we've earned the respect of amateur astronomers and clubs all over the southeastern U. S. With your help and support, FRAC will continue to defy the odds and achieve what few people thought such a small club could do.

Finally, I know you'll want to join me in welcoming to our happy little club **David Hoover** of Atlanta and **Kathy Davis** of Forest Park. Please let us know what we can do, folks, to help make your membership in FRAC everything you hoped it would be.

-Bill Warren

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Membership Renewals Due in September: None.

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Last Month's Meeting/Activities. Six intrepid FRACsters – **Brendon, Sara & David O'Keeffe, Smitty** and **yr. editor** – gave Cox Field a try on an unscheduled evening, Aug. 7th. Like a mediocre seamstress, the sky was only sew-sew, but compared to most other evenings of late it was exceptional.

We had 13 in attendance at our Aug. meeting: **Smitty, Larry Fallin, Doug Maxwell, Steve & Dawn Knight, Curt Cole, Felix Luciano, Dr. Richard Schmude, Chuck Sims, John Wallace**, new member **Kathy Davis, yr. editor** and **Jim Hamilton**. Having seen us previously only in the dark, Jim discovered that we more closely resemble the Dirty Dozen than twelve Greek gods and goddesses – except for yr. editor, of course.

The evening's highlight was the announcement that FRAC had won the "**Most For Its Size**" award in this year's Astronomy Day Award competition sponsored by *Sky & Telescope* Magazine, that honor going to the club that does the most for its size to promote Astronomy Day. While our 7-hr. day/night public observing in Fayetteville on Apr. 24th weighed heavily in our favor, A. L. president **Bob Gent** wrote in his congratulatory letter, the deciding factor that put us over the top in the judges' estimation was **Dr. Richard Schmude's** solar observing at a nursing home in Thomaston.

Also at the meeting, **Smitty** received his Caldwell certificate and pin (#48), thereby tying **Dawn Knight** for 3rd place in FRAC in observing pins earned. **Felix "Bring It On!" Luciano** won the door prize.

While a vicious hurricane and milder tropical storm raged across and around Florida on Friday the 13th, we had better luck at Cox Field that evening, with clear skies but the air heavy with dew for observers **Dan Newcombe, Dawn & Steve Knight, Smitty, John Wallace, Chuck Sims** and **yr. editor**. The following evening brought equally good skies till about midnight, to the delight of **Steve, Smitty, Felix Luciano, Kathy Davis, Chuck, yr. editor** and **Joe Auriemma** and his far-too-seldom-seen Starmaster 10" truss tube telescope.

Our Cox Field boy scout observing was cancelled due to bad weather. It will be rescheduled for later this fall.

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Upcoming Meetings/Activities. Our FRAC meeting will be held at **7:30 p.m. on Thurs., Sept. 9th**, in the Beaverbrook media center.

The first of two scheduled Cox Field observing weekends is slated for **Fri.-Sat., Sept. 10th-11th**.

Despite what **yr. addled editor** told you at the Aug. meeting, we *won't* have a BB observing in September, since the parents will be visiting their children's classrooms after the business portion of the PTA meeting.

Our 2nd Cox Field Sept. observing weekend will be **Fri.-Sat., Sept. 17th-18th**. New moon is on the 14th, so the Moon won't be a factor on either of our Sept. observing weekends.

The speaker at our October meeting will be **Dr. Richard Schmude**.

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This 'n That. **Dr. Schmude's** new book, *JUPITER OBSERVER'S HANDBOOK*, is now on the market and available from **A. L. Sales, P.O. Box 572, West Burlington, IA 52655**, or you can order it at www.astronomicalleague.com. His book, part of an ongoing series of A. L. observers' handbooks, costs \$10, and the A. L. accepts Visa and MasterCard. (And they don't charge shipping & handling fees.)

*In the "Community News" section of the Oct. '04 issue of *Sky & Telescope* (p. 114), **Edwin L. Aguirre** lists the Flint River Astronomy Club among the *S&T* Astronomy Day 2004 Award winners.

*First place overall in that competition went to another Ga.-based astronomy club, the Ga. Southern Planetarium /Statesboro Astronomy Club.

*From **Smitty**: "The Chiefland Fall Star Party will run from **Sun.-Sun., Nov. 7th-14th**. The event is open to non-members of Chiefland, but *registrations must be postmarked by Oct. 1st*. There will be no admission for those not pre-registered.

"Please note: If you haven't already sent in your registration, make your check payable to **Jeannie Clark** and mail it to **Sam Cosgrove, Registrar, 2275 Pinnacle Circle South, Palm Harbor, FL 34684**. The new registration form and other information

about the Fall Star Party can be obtained via Internet by typing in Chiefland Astronomy Village, clicking on **Go** and following the subsequent link.

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The Sky in September. Seen any good asteroids lately? The Sept. '04 issue of *Sky & Tel* shows you where to locate the brightest asteroid in the sky, **4 Vesta** (mag. 6.1), in *Aquarius* between **Sept. 12th-19th**. Locating it will be a cinch on the evenings of the 16th and 17th, when Vesta lies between mag. 5.2 *Omega 1 Aqr* and mag. 4.6 *Omega 2 Aqr*. While all three will fit easily in any binocular field of view, it'll take special optics to fit the Omegas into a telescopic field since they lie about 2 degrees apart.

On the 16th, Vesta will be about ¾ degree ESE of Omega 1 and about ½ degree NW of Omega 2. Although both stars will be brighter than the asteroid, Vesta will be much brighter than anything else except them in your field of view. On the following evening (Sept. 17th), Vesta will be ¾ degree E of Omega 2 and ¾ degree SW of Omega 1.

Around the middle of the month, a new meteor shower, the **September Taurids**, is expected to peak. Since it's only been studied for 2 years, little is known about what to expect. The radiant will lie in the E sky between the **Pleiades (M45)** and the **Hyades**, the V-shaped face of *Taurus*, the Bull.

Incidentally, it's called the "September Taurids" to distinguish it from the older, established Taurids meteor shower that produces meteor activity annually between mid-Oct. and late Nov.

Three of the planets will be morning targets in Sept.: **Mercury**, low in the E (watch out for the **Sun!**), **Saturn** and **Venus** (also in the E, 2 degrees apart on the mornings of **Aug. 31-Sept. 1**). Three other planets will be in the S sky in late evening: **Pluto**, **Neptune** and **Uranus**. Both Uranus and Neptune will be easy binocular targets, appearing as tiny, colorful disks like small planetary nebulas. Neptune will be near 4th-mag. *Theta Cap*, and Uranus near mag. 4.8 *Sigma Aqr*.

Pluto is up there somewhere, but you couldn't prove it by those of us who would rather watch paint dry than look for Pluto.

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Observing Report: JUPITER, Low in the West

by Felix Luciano

Date/Time: Aug. 1, 2004, 8:55 – 9:31 p.m. EDT

Equipment: Orion XT8 (f.l. 1200mm, f/5.9)

Eyepieces: 20mm & 32mm Plossls with 5x

Powermate and 2x Barlow (187x and 300x with Powermate, 75x and 120x with Barlow)

Conditions: Seeing 3-4/10, clouds to the S and E, the W sky completely clear with a band of very dark clouds hugging the WNW horizon.

8:55 to 9:10 p.m.: **Jupiter** 25-30 degrees above the W horizon, images blurry with moments of steady seeing. The moons' lineup was as follows from W-E: **Ganymede, Callisto, Io, Jupiter, Europa**. The Great Red Spot, crossing Jupiter, was unseen. There was a large oval feature, past the Central Meridian, on the S side of the North Equatorial Belt. Other visible features were, from S-N: a very faint trace of the South Southern Temperate Belt; the South Equatorial Belt with the S and N components easily seen toward the eastern part of Jupiter past the Central Meridian; and the North Polar Region seen as a huge, faint patch.

9:20 p.m.: Io closing in on the W edge of Jupiter, with a bit of black sky still seen between the moon and the planet.

9:24 p.m.: Io at the W edge.

9:26 p.m.: Io a dimple at the very edge of Jupiter.

9:31 p.m.: Io occults Jupiter.

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Things You May Not Have Known About the Sun

(Editor's Note: Next time we conduct a daytime solar observing, you may find some of the following information useful either in answering questions about the Sun or in shedding light – no pun intended – on interesting and little-known facts about the Sun

and the people and instruments involved in studying it.

*The material in this article was drawn largely from the text of **Curt Suplee's** excellent National Geographic article, "The Sun: Living With a Stormy Star" [July, 2004, pp. 2-33]. The article did not appear in Q&A form.)*

Question: What is the greatest resolution of solar features ever achieved?

The 1-meter Swedish Solar Telescope in the Canary Islands has resolved features as small as 50 miles in diameter. (p. 15) Considering that the **Sun** is 93,000,000 miles away and 865,000 miles in diameter, that's like looking down at the surface of the **Moon** from 681 feet above it.

Question: How deep into the Sun's interior has modern technology permitted man to probe?

*"(Using) a technique called *helioseismology*, Doppler instruments in SOHO (the Solar and Heliospheric Observatory satellite) and on Earth measure sound waves moving through the sun ... (and) can even detect sunspots on the other side of the Sun. (p. 18)*

Who'da thunk that scientists would ever be able to "see" all the way through a star, especially our Sun with its apparent brightness of magnitude -27? (That's nearly 6 million times brighter than the full moon.)

Question: How hot is the Sun's surface?

The Sun, composed entirely of gases and trace elements under intense gravitational pressure, has no surface, but the visible layer, or *photosphere*, "is about 5700 degrees C, the *chromosphere* (a thin layer above it) averages 10,000 degrees C, and temperatures in the *corona* (the outer layer that we see only during total eclipses) regularly top two million (degrees)." (p. 29)

Question: How can the corona be 350 times hotter than the photosphere that lies closer to the

Sun's core?

“Magnetism made visible: that describes virtually every feature on the sun, from sunspots (in the photosphere) to soaring structures (in the corona) called loops (*or, more familiarly, prominences*. – *Ed.*). Loops easily reach the height of ten Earths. Energy generated by the dynamics of smaller loops (as they reconnect broken magnetic field lines) is likely the source of the corona's mysterious heat.” (p. 9)

But that's nothing. The Sun's core burns at about 15 million degrees, and solar flares can reach “tens of millions of degrees.” (pp. 14-15)

Question: What causes sunspots and solar flares?

“The magnetic field drives virtually everything on the sun.” (p. 19) “Everything we see as solar activity,’ says **Stephen Keil**, director of the ... National Solar Observatory ... ‘is a magnetic field being acted on by *plasma* (ionized gases composed of positively charged nuclei and free negative electrons) and vice versa.” (p. 17)

“Sunspots form when monstrous bundles of magnetic field lines (penetrate the photosphere from within; they – sunspots --) mark where the magnetic field is strongest.” (p. 20) “They can range in diameter from 1,500 miles to several times the size of the Earth.” (p. 21)

Solar flares occur when energy buildups in the corona break those magnetic field lines in massive explosions “that hurl x-ray radiation at the speed of light ... Earth's magnetosphere, the shield created by our own magnetic field, protects us from being physically harmed by these solar broadsides, but their effect on (our technology, especially radio communications and satellites) ... can be dire.” (p. 25)

Question: When was the earliest recorded sunspot observation?

“Reliable references to sunspots date from 1st-century China.” (p. 21)

Question: Why do sunspots undergo 11-year cycles of increased activity?

“Every 11 years, the sun reverses its overall magnetic polarity: Its north magnetic pole becomes a south pole, and vice versa. So a complete magnetic solar cycle ... actually lasts an average of 22 years.” (p. 21) Every reversal creates intense sunspot activity.

In two extended periods, from 1460 A.D.-1550 A.D. and again from 1640 A.D.-1715 A.D., almost no sunspot activity occurred, and no one knows why. During the earlier 90-year period, temperatures plummeted in Europe and elsewhere, to the extent that it is commonly referred to as the “Little Ice Age.”

The other, later period, called the “Maunder Minimum,” was named for England's **Walter Maunder**, the first person to associate the effects of sunspot activity on global weather. Maunder noted global cooling during the period that now bears his name, but the extent of that cooling was nowhere near as severe as during the “Little Ice Age” when London's Thames River regularly froze over every winter. And no one knows why one period was colder than the other.

Even with our modern technological advances, what we *don't* know about the Sun and how it works far outweighs what we *do* know about it.

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