THE FLINT RIVER OBSERVER

NEWSLETTER OF THE FLINT RIVER ASTRONOMY CLUB

An Affiliate of the Astronomical League

Vol. 15, No. 7 September, 2011

Officers: President/Newsletter Editor, **Bill Warren:** (770)229-6108, warren7804@bellsouth.net; Vice President, **Larry Higgins;** Secretary-Treasurer, **Steve Bentley**.

Board of Directors: **Dwight Harness; Tom Moore; Mike Stuart;** and **Jessie Dasher.**

Facebook/Scouting/Ga. Sky View Coordinator, **Steve Knight;** Alcor/Webmaster, **Tom Moore;** Observing Coordinator, **Dwight Harness;** NASA Contact, **Felix Luciano;** Event Photographer, **Tom Danei.**

Club mailing address: 1212 Everee Inn Rd., Griffin, GA 30224. Web page: www.flintriverastronomy.org.

Please notify **Bill Warren** if you have a change of home address, telephone no. or e-mail address.

* * *

Club Calendar: **Fri.-Sat., Aug. 26-27:** Cox Field observings (at dark); **Fri., Sept. 2:** UGa-Griffin lunar observings (7-10 p.m.); **Thurs., Sept. 8:** Club meeting (7:30 p.m., Rm. 305 of the Flint Bldg., UGa-Griffin campus); **Fri.-Sat., Sept. 23-24:** Cox Field observings (at dark).

* * *

President's Message. It's my distinct pleasure to welcome a good friend and former club member, **Robert Hall** of Warner Robins, Ga., back to FRAC. Rob was a member 7-8 years ago, but had to drop out when his work hours changed. He came back to us bearing gifts, 8-10 items for us to use as we see fit (e.g., as Christmas party/GSV '12/club meeting door prizes). He showed up at our Aug. pool party, joined the club and promised that he'd be back for more. We're holding you to that promise, Robert.

-Bill Warren

* * *

Last Month's Meeting/Activities. Clear skies and temps in the 70s after sundown lured five FRACsters to Cox Field on July 29th: **Dwight Harness, Sam Harrell & Julie Avery, Steve Knight** and **yrs. truly.** Dwight took advantage of the pristine sky to look for Messier globulars in *Sagittarius* (including elusive **M55**), and Steve showed off both sides of **Veil Nebula (NGCs 6960** and **6992-5)** in *Cygnus.*

Eight members and 2 guests – **Carlos & Olga Flores** and their guest, **Valya Lomakina** of Tambov, Russia; **Steve & Betty Bentley; Dwight & Laura Harness; Jessie Dasher; Charles Turner;** and prospective member **Woody Jones** -- attended our July UGa-Griffin lunar observing.

A festive crowd of 23 attended our Aug. pool party: **Steve & Betty Bentley** and grandchildren **Erin & Brianna Mills; Dwight, Betty & Laura Harness; Carlos & Olga Flores** and their guest, **Valya Lomakina; Art & Maria Zorka; Steve & Angela Knight; Phil Sacco & Courtney Seabolt; Tom Moore; Charles Turner; Erik Erikson; Larry Higgins; Robert Hall;** and hosts **Bill & Louise Warren.** The water was deliciously cool, the food great—thanks to the superlative culinary skills of Master Chef Le Harnesse – and the camaraderie reminiscent of a family reunion or a church "dinner on the grounds." It was a splendid evening, and everyone went away well fed, happy and armed with FRAC bumper stickers and 2011 lunar phase calendars courtesy of **Smitty** and **Charles Turner,** respectively.

* * *

This 'n That. If you haven't already seen it, you need to beg, borrow or steal a copy of the Sept. '11 issue of *Sky & Telescope.* In it you'll find on pp. 50-51 an article, "Probing the Nearest Star," by FRAC's own **Stephen Ramsden.** It's a splendid piece of work, by far the best article you'll ever read in terms of describing and explaining the **Sun's** visible features, all in just two pp. The article also contains four solar astrophotos, one of them by Stephen.

If you want to congratulate Stephen on his achievement, you can reach him at sramsden@natca.net .

*As you know, the A. L.'s Basic Outreach award includes a certificate and lapel pin; to earn it, you have to participate in five outreach activities such as our UGa-Griffin lunar observings.

A Stellar Outreach certificate is given for 50 hrs. of outreach beyond the Basic level, plus some paperwork that **yr. president** does for you. (He's also keeping up with your hours toward your next award.)

What you may not know, however, is that *a separate pin (and certificate, of course) is given for achieving Master Outreach level.* To receive a Master Outreach certificate and pin, you have to participate in 100 hrs. of outreach beyond the Stellar Outreach level (plus additional paperwork.)

We presently have six members working toward Master level. **Yr. editor** is closest with 89.5 hrs. followed by **Larry Higgins** (67), **Steve Bentley** (34), **Betty Bentley (**19), **Tom Moore** (18.5), and **Dwight Harness** (7.5).

Stephen Ramsden already has a Master Outreach pin, although not through FRAC.

And oh!, by the way: three members – **Mike Stuart, Doug Maxwell & Jessie Dasher –** have four events and need just one more (say, this month's UGa-Griffin observing, hint, hint!) to qualify for an Outreach pin.

* * *

Upcoming Meetings/Activities. We'll close August with Cox Field observings on **Fri.-Sat., Aug. 26th-27th.**

Our UGa-Griffin public lunar observings will be held on **Fri., Sept. 2nd** from 7-10 p.m. on the lawn in front of the Flint Bldg.

Our club meeting will be held on **Thurs., Sept. 8th,** at 7:30 p.m. in Room 305 of the Flint Bldg. on the UGa-Griffin campus. Our speaker will be **Art Zorka,** the A. L.'s newest Master Observer. Art's topic will be "Worlds of Wonder: Sharing the WOW Factor."

Our Sept. Cox Field observings will be held on **Fri.-Sat., Sept. 23rd-24th.**

*** * ***

The night sky is the hunting ground of the mystic and the philosopher, the scientist and the theologian.

-Chet Raymo
The Soul of the Night (1985)

* * *

<u>My Favorite Astronomy Books, Part 2:</u>

<u>Bill Warren</u>

Writing a book about astronomy – or any part of it, for that matter – isn't easy. The subject matter and terminology are complex, and you're seldom more than a stone's throw away from an ocean of numbers and statistics that can render a book as dull as reading a phonebook. It takes exceptional writing skills to produce an astronomy book that is (a) simple enough for a beginner to understand, (b) complex enough to satisfy the reader who already understands the basics and wants to learn more; and (c) readable enough to hold the interest of both groups and everyone in between.

All of the books I've chosen for this month's installment of "My Favorite Astronomy Books" satisfy those three requirements. Some are oriented toward observing, because observing is an integral part of what astronomy is all about; others are suitable for "armchair astronomers" who prefer simply to read

about astronomy; and *all* of them are extremely well written, interesting books that will teach you more about astronomy than you knew before.

*__TURN LEFT AT ORION: A Hundred Night Sky Objects to See in a Small Telescope,__ by **Guy Consolmagno** and **Dan Davis** (Cambridge Univ. Press, 1995), 224 pp. In the early 1990s, Consolmagno – a Jesuit brother and astronomer at the Vatican City observatory – took his 3.5-in. telescope with him on a trip to Kenya. To his dismay, he couldn't find a book devoted to objects suitable for observing in a small 'scope. Thus was born *Turn Left at Orion.* It has since become a classic, revised and updated to include objects in the Southern Hemisphere and other information. I've bought two copies and given both away – not because they were bad, but because they were so very, very good for beginning astronomers.

TLAO includes four seasons' worth of interesting and popular galaxies, nebulae, clusters, double and variable stars plus the **Moon** and planets. Each object contains a description, elementary finder chart, finderscope view and drawing of the object. The drawings showed me what the objects look like in the eyepiece, and therefore were more valuable than photos that tend to show more than the eye sees.

Most important, though, the text gave me basic information about the objects that I could use at public observings. At that point in my astronomy experience, I knew very little about those objects. But I quickly learned that all I needed was two or three interesting facts about the objects I showed, since the folks I was showing them to knew absolutely nothing about them. *TLAO* gave me those facts, and they served me very well while I was learning about the sky and what to tell people about what I was showing them.

*__BAD ASTRONOMY: Misconceptions and Misuses Revealed from Astrology to the Moon Landing "Hoax,"__ by **Phil Plait** (NY: Wiley, 2002), 288 pp. A fun read from cover to cover: funny, informative, entertaining and doesn't require an extensive background in astronomy or science.

Nearly 1/3 of all Americans regard astrology as a science. Many of them also believe that UFOs exist; that the Apollo **Moon** landings of the 1960s-'70s were staged on a Hollywood sound stage; and that intelligent beings carved an enormous human-like face on the surface of **Mars.**

These and 21 other astronomy-related urban myths are convincingly debunked in *Bad Astronomy.* Only Phil Plait would devote a chapter in an astronomy book to the way water swirls down toilets (the coriolis effect).

My favorite chapter was "Bad Astronomy Goes Hollywood," which also appeared under a different title in the April, 2008 issue of *Astronomy.* In it, he lists the Top Ten mistakes common to sci-fi movies. (An example: the rumble and roar of starship engines and zapping sounds of weapons fired in the soundless vacuum of space.)

Alas, Plait's book was written before the 2012 "end-of-the-world" controversy began, but his website, www.badastronomy.com , will help you to sort fact from fiction in that area and many others.

*__NIGHTWATCH: A Practical Guide to Viewing the Universe, 4th ed.,__ by **Terence Dickinson** (Richmond Hill, Ontario: Firefly Books, 1998), 176 pp. Dickinson, a Canadian, is one of the best astronomy writers anywhere. *Nightwatch* takes you through the process of selecting a 'scope, learning to use it and learning the night sky and how to observe it. Contains useful, uncluttered star charts for the entire year. I've never known anyone who has read *Nightwatch* who doesn't consider it one of the very best introductory astronomy books ever written.

*__STARLIGHT NIGHTS: The Adventures of a Star-Gazer, 2nd ed.,__ by **Leslie Peltier** (Cambridge, MA: Sky Publishing, 2007), 256 pp. In the Introduction to *Starlight Nights* **David Levy** wrote, "Other books will tell you *how* to observe; this one will tell you *why.*" As finely crafted and beautifully written as a best-selling novel, *Starlight Nights* is the late comet hunter's very personal account of his lifelong love affair with the wonders of the night sky. If you love astronomy and reading, you'll love this book. **Larry Higgins** has read it eight times.

*__ASTRONOMY FOR DUMMIES,__ by **Stephen P. Maran** (NY: Wiley, 1999), 356 pp.; and **THE COMPLETE IDIOT'S GUIDE TO ASTRONOMY,** by **Christopher DePree & Alan Axelrod** (NY: Alpha Books, 2001), 456 pp. If you've never read any of the "Dummies" or "Idiots" books, don't be put off by their condescending titles. Both the reader and the subject matter – in this case, astronomy – are treated with the respect they deserve.

Written informally in easy-to-understand terms – which isn't always easy in astronomy – both books are jam-packed from cover to cover with basic information about the universe and everything in it.

Incidentally, *The Complete Idiot's Guide to Astronomy* was co-authored by Agnes Scott College astronomy professor Chris DePree.

*__HOW TO USE AN ASTRONOMICAL TELESCOPE,__ by **James Muirden** (NY: Simon & Schuster, 1988), 400 pp. Muirden's book – out of print but available at amazon.com – explains in detail how telescopes work and describes the strengths and weaknesses of the various types of telescopes, mounts and eyepieces. He also covers the basics of observing – setting up your 'scope, collimating the mirrors, etc. – and tells how to observe the **Sun,** Moon, planets and deep-sky objects. He describes, in simple terms, his own views of 100 selected deep-sky objects. One of my earliest observing projects as a beginning astronomer was to find and observe them.

The book contains no star charts, but I still use some of his comments (e.g., the one about **M31 [Andromeda Galaxy]** being a big disappointment if you've never seen a galaxy in a telescope before and wonder what 300 billion stars look like in the eyepiece).

This book has been – and still is -- my main source of information about telescopes and how they work. Its only shortcoming is that, written, 23 years ago, it has nothing about GoTo telescopes and little about website links. But if you want to learn about telescopes and how to use them, this is the book for you.

*__COSMOS__, by **Carl Sagan** (NY: Random House, 1980), 324 pp. The late Carl Sagan was, by any standard, one of the 20th century's most elegant spokesmen for astronomy. Sagan was able to communicate equally well with professional astronomers and the non-scientific public. *Cosmos* was an international best-seller, with sales of 900,000 copies during its 70-week tenure at the top of the NY Times Best Seller list in 1980-81. The book contains coffee-table quality astrophotos as well as Sagan's incomparable writing, which captured the mystery and beauty of the universe in conversational terms that everyone could understand and appreciate.

Cosmos: A Personal Journey was also a highly successful 13-part PBS-TV series (with Sagan as co-author and host) in 1980; by the time of his death in 1996, it had been shown in 60 countries and seen by half a billion people.

*__URANUS, NEPTUNE, AND PLUTO and How to Observe them;__ and **COMETS and How to Observe them,** by **Richard W. Schmude, Jr.** (NY: Springer, 2008 and 2010, 244 and 266 pp.) **Dr. Schmude.** FRAC. Need I say more? Okay, how about this?: The books contain chapters on how to observe Uranus, Neptune, Pluto and comets with telescopes of various sizes. These are not beginners' books, but they contain a vast amount of information about those celestial bodies for dedicated planetary and cometary observers.

##

Previous page, lower right: **Alan Pryor's** stunning astrophoto of the **Draco Triplet.** From left to right: **NGCs 5985** (a barred spiral galaxy), **NGC 5982** (an elliptical galaxy [i.e., globular cluster-like, but with billions more stars], and **NGC 5981** (an edge-on spiral galaxy).

Upper left-hand photo: **Stephen "Smitty" Smith** presenting **Bill Warren** with a stack of 30 FRAC bumper stickers. (Photo by **Tom Danei**)

Previous page, lower left: **Charles Turner** presenting **Bill Warren** two stacks of Moon phase calendars. (Photo by **Tom Danei**)

Previous page, upper right: **Bill Warren** presenting **Art Zorka** his Globular Cluster certificate and pin. (Photo by **Tom Danei**)

Previous page, lower right: **Art Zorka's** collection of 11 A. L. observing pins, which qualify him for Master Observer status. Art has applied for, but has not yet received, his Master Observer pin. It will be his 12th A. L. pin. (Photo by **Tom Danei**)

The pins are, by row from left to right: Top row, Herschel 400 Club and Globular Cluster Club; 2nd row, Messier Club, Double Star Club and Universe Sampler Club; 3rd row, Binocular Messier Club, Constellation Hunter Club and Deep Sky Binocular Club; and 4th row, Lunar Club, Urban Club and Outreach Club. The pin at the bottom is not an A. L. pin. (Photo by **Tom Danei**)

* * *

We are the local embodiment of a Cosmos grown to self-awareness. We have begun to contemplate our origin: starstuff pondering the stars; organized assemblages of ten billion billion billion atoms considering the evolution of atoms; tracing their long journey by which, here at least, consciousness arose. We speak for Earth. Our obligation to survive is owed not just to ourselves but also to that Cosmos, ancient and vast, from which we sprung.

-**Carl Sagan,** *Cosmos* (1980)

* * *

Random Thoughts.

*****If there's no sound in space, why do they call it the "Big Bang"? How can there be a bang without sound? Isn't "bang!" the sound that something makes when it goes bang?

(Answer: They had to call it something. Calling it the "Big Soundless Explosion That Started It All" would have been awkward – and it probably would have generated more questions than answers.)

*All matter in the universe was created in the Big Bang, but most of it was quickly destroyed in collisions between matter and antimatter. The present universe consists of empty space and the remnants of those collisions. (That's what **Carl Sagan** meant by calling us "starstuff pondering the stars": we, like galaxies and everything else, are part of those remnants.)

*When the Big Bang occurred, space was created and the universe expanded from infinitely smaller than an atom to the size of a golf ball in just 1,000,000,000,000,000,000,000,000th of a second. (That's a septillionth of a second, or 5.38^{16} times faster than the speed of light. It's by far the fastest rate of acceleration that the universe has ever experienced – faster even than the speed at which a hungry horde of FRACsters can devour one of **Betty Bentley's** mouth-watering red velvet cakes!)

*The **Sun** is nearly a million miles in diameter, yet it is considered an average-sized star. Wanta talk big? The largest known star, **BY Canis Majoris,** is a billion miles in diameter.

*Here's how to envision the immense gravitational attraction of a black hole: Think of a force powerful enough to suck in and compress the Earth to the size of a pea without losing any of its mass, and then keep on compressing it. And then imagine that black hole doing the same thing to an entire galaxy, or even galaxies.

(The moral: Think carefully before inviting a black hole for dinner. Or **yr. editor,** for that matter.)

##

Space Place Partners' Article -- September 2011

Solar System Size Surprise

by Dr. Tony Phillips

News flash: You may be closer to interstellar space than you previously thought.

A team of researchers led by Tom Krimigis of the Johns Hopkins University Applied Physics Laboratory announced the finding in the June 2011 issue of *Nature*. The complicated title of their article, "Zero outward flow velocity for plasma in a heliosheath transition layer," belies a simple conclusion: The solar system appears to be a billion or more kilometers smaller than earlier estimates.

The recalculation is prompted by data from NASA's Voyager 1 probe, now 18 billion kilometers from Earth. Voyagers 1 and 2 were designed and built and are managed by NASA's Jet Propulsion Laboratory. Aging but active, the spacecraft have been traveling toward the stars since 1977 on a heroic mission to leave the solar system and find out what lies beyond.

To accomplish their task, the Voyagers must penetrate the outer walls of the heliosphere, a great bubble of plasma and magnetism blown in space by the solar wind. The heliosphere is so big, it contains all the planets, comets, and asteroids that orbit the sun. Indeed many astronomers hold that the heliosphere defines the boundaries of the solar system. Inside it is "home." Outside lies the Milky Way. For 30+ years, the spacecraft have been hurtling toward the transition zone. Voyager 1 is closing in.

Much of Voyager 1's long journey has been uneventful. Last year, however, things began to change. In June 2010, Voyager 1 beamed back a startling number: zero. That's the outward velocity of the solar wind where the probe is now.

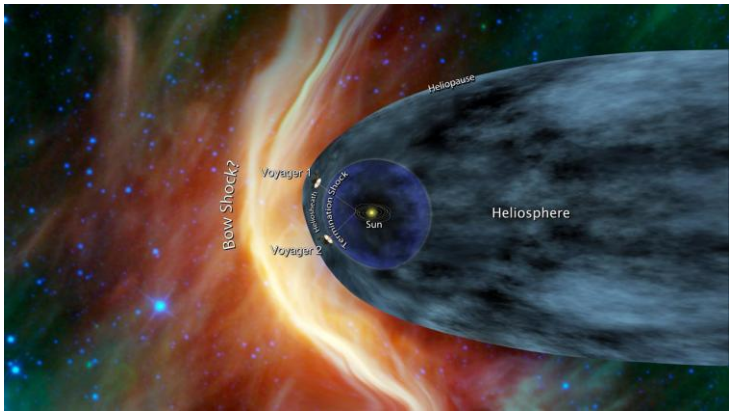
"This is the first sign that the frontier is upon us," says Krimigis.

Previously, researchers thought the crossing was still years and billions of kilometers away, but a new analysis gave them second thoughts. Krimigis and colleagues combined Voyager data with previously unpublished measurements from the Cassini spacecraft. Cassini, on a mission to study Saturn, is nowhere near the edge of the solar system, but one of its instruments can detect atoms streaming into our solar system from the outside. Comparing data from the two locations, the team concluded that the edge of the heliosphere lies somewhere between16 to 23 billion kilometers from the sun, with a best estimate of approximately 18 billion kilometers.

Because Voyager 1 is already nearly 18 billion kilometers out, it could cross into interstellar space at any time—maybe even as you are reading this article. "How close are we?" wonders Ed Stone, Caltech professor and principal investigator of the Voyager project since the beginning. "We don't know, but Voyager 1 speeds outward a billion miles every three years, so we may not have long to wait."

Stay tuned for the crossing.

For more about the missions of Voyager 1 and 2, see http://voyager.jpl.nasa.gov/. Another Voyager project scientist, Merav Opher, is the guest on the newest Space Place Live cartoon interview show for kids at http://spaceplace.nasa.gov/space-place-live.



Caption:

This artist's concept shows NASA's two Voyager spacecraft exploring a turbulent region of space known as the heliosheath, the outer shell of the bubble of charged particles around our sun. Image credit: NASA/JPL-Caltech.