

# THE FLINT RIVER OBSERVER

NEWSLETTER OF THE FLINT RIVER  
ASTRONOMY CLUB

An Affiliate of the Astronomical League

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

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**Club Calendar. Thurs., Sept. 10:** Club meeting (7:30 p.m. in the Stuckey Bldg. on the UGa-Griffin campus; **Fri.-Sat., Sept. 11-12:** Cox Field observings (at dark); **Fri.-Sat., Sept. 18-19:** Cox Field observings (at dark); and **Sat., Sept. 26:** Club trip to U. S. Space & Rocket Center, Huntsville, AL.

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**President's Message.** Here's the kind of club you're in, ladies and gentlemen:

When **Reese Forshee** joined FRAC at our July meeting, he insisted on paying \$40 for his membership and refused to accept change.

Flash forward to August.

When I learned that an area astronomer, **Stephen Ramsden**, visits schools to conduct daytime solar observings and talks, I suggested to **Steve Bentley** that he contact Mr. Ramsden about a solar observing and presentation at **Georgia Sky View 2010.** He did, and in that conversation Stephen offered to bring his telescopes, solar filters and powerpoint program for our August meeting. (See pp. 2-3). I quickly accepted his offer.

After the meeting, Stephen joined FRAC. He gave me a \$20 bill for his dues, and refused his \$5 in change. Essentially, then, he was paying FRAC to speak at our club meeting. And *that's* something you don't see very often in *any* club. Certainly it hasn't happened before in FRAC.

Then, at our Aug. 22<sup>nd</sup> Cox Field observing, **Smitty** – and gosh, it was good seeing him again at an observing! – said that he has been donating his copies of *Sky & Telescope* and *Astronomy* to Newnan-area soldiers in Iraq as part of that city's "Adopt A Soldier" program.

"There are about a hundred soldiers from the Newnan area stationed in Iraq," he said. "I write 'Flint River Astronomy Club' on every issue, so they'll know that FRAC cares about them.

"Who knows, maybe when they come back they'll look us up."

That's typical of Smitty, to divert the attention away from himself and toward others.

Folks, we need Smitty at every meeting and observing. With the possible exception of **Larry Higgins**, nobody in FRAC knows more about more different aspects of astronomy than Steven Smith does. (That's Smitty's a.k.a., although he also answers to "Saratoga Smitty.") I've said it before, and it's true: *I've never been around Smitty for more than five minutes that I didn't learn something.*

So how does FRAC attract such thoughtful, caring individuals as Smitty and Messrs. Forshee and Ramsden? I have no idea, but whatever we're doing, we need to keep on doing it. FRAC is stronger for the presence of such gentlemen.

At last month's meeting, I briefly discussed a possible club trip to the **U. S. Space and Rocket**

**Center** in Huntsville, Ala. Well, it's more than a possibility now: we're going on **Sat., Sept. 26.** (See p. 5 for details.)

In the early days of the U. S. space program, NASA conducted its activities at three sites: Cape Canaveral, Fla. (the launch site); Houston, Tex. (mission control); and the Marshall Space Center at Redstone Arsenal near Huntsville, Ala. (rocket testing and astronaut training).

Today, the U. S. Space and Rocket Center at Huntsville houses more than 1,500 rocketry and space exploration artifacts, attractions (read: rides) and exhibits. Some of the features include: a WWII German V-2 rocket, the first rocket capable of traveling beyond Earth's atmosphere (although that wasn't what Hitler was planning to do with it); an original Saturn V rocket test vehicle; a Saturn I rocket; a fragment of Skylab, the U. S.'s first space station; a Pathfinder Mars orbiter mockup; the Apollo 16 command module; an A-12 Oxcart "Blackbird" spy plane (sometimes incorrectly called the SR-71); a simulated firing of an F-1 rocket engine; and many, many other exhibits and artifacts. Rides include the "Space Shot" simulator (that sends you 140 ft. into the air in 2.5 seconds at 4 G's of force, leaves you weightless for 2-3 seconds, then drops you at 1G); a 3 G "G-Force Accelerator" similar to the centrifuges the astronaut trainees experienced; a "Mars Rover" simulator; a Mars Climbing Wall for those who want to scale Olympus Mons; and an "Apollo Cockpit Trainer" that simulates what it's like to be inside the Command Service Module on an Apollo mission to the Moon.

Beyond all that, for a little extra you can watch an IMAX movie at the "Spacedome," or another movie at the 3D Theatre. Plus, there are 2-hr. and all-day tours available, those tours taking you to the Marshall Space Center to see things like a mockup of the International Space Station (ISS), which was designed and constructed there.

The free admission tickets for two that you'll be getting (see p. 5) are good for the exhibits, rides and the movie at the Discovery Theater. Tours and the IMAX Spacedome and Davidson 3D Theater movies cost extra, as do any additional individual tickets.

-Bill Warren

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**Last Month's Meeting/Activities. Betty & Steve Bentley** went out to Cox Field on Sat., July 25<sup>th</sup>. No one else showed up because the skies clouded over. So Steve & Betty proceeded to do what couples have done by themselves in the dark ever since the first Neanderthal wife showed hubby what she'd just bought at Victoria's Secret Cave.

They packed up and went home.

We were going to suggest that Betty might have had a headache, but it's probably closer to the truth to say that she *married* a headache. (Just kidding, Steve: as you know, everyone likes you a lot and has a great deal of respect for you. Except **Larry** and **yr. editor**. And **Tom Moore**. And **Tom Danei**. And **Felix** and **Joel**. And everyone else in FRAC. And everyone in Forsyth Co., and the state of Georgia, and the southeastern U. S., and – well, as Chief Sitting Bull said to Gen. Custer at the Battle of Little Bighorn, "You get the point.")

We had 24 in attendance at our Aug. solar observing/meeting: **Irene & Curt Cole, Sally & Alan Bolton, Olga & Carlos Flores, Laura & Dwight Harness, Jessie Dasher, Tom Danei, Tom Moore, Tim Astin, Steve Knight, Charles Turner, Dr. Schmude, Mike Stuart, Ken Walburn, Joe Auriemma, Doug Maxwell, Larry Higgins, Felix Luciano, Patsy Lwowski, speaker Stephen Ramsden** and **yr. editor**.

Why so many? Because everyone was eager to see Stephen's array of telescopes and solar filters aimed at the **Sun**, and to hear what he had to say about our nearest star.

He didn't disappoint, either. The Sun did its part by staying out that afternoon, and Stephen's solar presentation was one of the best programs we've ever had.

He set up six or seven telescopes equipped with calcium K, white light and H-alpha filters. Of course, there were no sunspots – the "solar minimum" strikes again! – but there was a pretty prominence along the Sun's limb (edge), horseshoe-shaped as it arced ever so slowly back into the photosphere.

We don't know what everyone learned from Stephen's powerpoint presentation – there was, after all, a great deal of information to be transmitted in a very short time. But here are a few of the things you might have gleaned from it:

\*The **photosphere** is the Sun's visible surface. Its true colors are black-and-white. Whatever colors we see are due either to the color of the filter or to the spectra of the elements involved. The filters block out all but specific wavelengths of light.

\***Sunspots** are dark patches on the Sun's surface. They aren't really dark, they just look that way because they are slightly cooler than the surrounding area. Sunspots are associated with massive solar magnetic disturbances that normally last no more than a day or two.

\*The Sun's grainy appearance, as seen in an H-alpha filter, is due to rising bubbles of gases called *cells*, or *granules*. Those cells are typically as large as the state of Texas. They burst when they reach the surface, only to be replaced by other rising cells beneath them.

\*Occasionally, brief but intensely violent eruptions of energy called **solar flares** send bursts of high-energy atomic particles hurtling throughout the solar system. When that happens, the result on Earth is colorful auroras at the poles, disturbances of electrical grids and disruption of satellite communications and functions.

\***Prominences** are jets of gas shooting out many thousands of miles from the limb before dissipating or looping back into the surface. **Filaments** are the same thing when seen within the Sun's disk.

**Dwight & Laura Harness** and **yr. editor** were the only ones who ventured out to Cox Field on Fri., Aug. 19<sup>th</sup> – and that's a shame, too, because we had mag. 5.5 skies and good seeing. Laura, who is 12, found her first seven Messiers. (Dad has 14.) She wants to be the youngest person in FRAC to earn a Messier pin. She'll do it, too.

Our Cox Field observations on Aug. 15<sup>th</sup> and 21<sup>st</sup> were clouded out. It's a recurring pattern that we've seen often lately: clear days early in the week, with clouds gathering like Shriners at a convention as the weekend approaches.

However, Sat., Aug. 22<sup>nd</sup> was about as perfect as Cox Field ever gets: crystal-clear skies, cool (but not cold) weather, zero humidity, and still air that provided razor-sharp images at the eyepiece.

Attendees included: **Larry Higgins, Carlos Flores, Tom Danei, Joe Auriemma, Mike Stuart, Smitty, Dwight & Laura Harness** and **yr. editor**.

Laura found 17 more Messiers to take a commanding lead over her dad in that category. Carlos found two mysterious blips that took 5-10 min. to cross his computer screen. They were moving too fast to have been asteroids or normal satellites, and too slow to have been conventional aircraft.

Yr. editor suggested that they might have been weather balloons drifting in the wind – but No, the rock-solid seeing conditions indicated that the air in the upper atmosphere was hardly moving. So yr. editor, not to be denied his moment of brilliant insight, offered an alternative solution: *It was the alien invasion force that a religious sect said was hiding behind Comet Hale-Bopp, finally arrived at Earth 13 years later!* Nobody seemed to like that suggestion.

Best guess as to the true identity of the mysterious blip came, naturally, from Smitty: it was, he said, probably a geosynchronous earth-orbiting satellite.

“But if it's in a fixed position above us and traveling at the same speed as Earth's rotation, why is it moving on the screen?,” someone asked.

“Elementary, my dear Watson,” Smitty replied. “The computer program is geared to the *stars*' movement, not the Earth's.”

Brilliant.

Instead of fixing Harley-Davidsons for a living, Smitty oughta be solving astronomical mysteries.

(Incidentally, no one reported seeing any lingering traces of the scar on **Jupiter** that was created by its Close Encounter of the Third Kind with an asteroid or comet. [See pp. 5-6.]

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**This 'n That.** Naturally, we were shocked when we saw **Dan Pillatzki** with his shoes and socks off during our July meeting, apparently playing with his toes.

After the meeting, we asked him what he had been doing.

"I was counting the change in my pockets," he explained. "Two quarters, a dime, three nickels and four pennies. Sixty-nine cents."

Yr. editor gently corrected him. "You'd never make a Certified Public Accountant, Dan. First, CPAs don't count with their fingers and toes. And second, your adding was wrong. Two quarters, 1 dime, 3 nickels and 4 pennies is eighty-nine cents."

*(None of that actually happened, of course – but it could have, given the level of intelligence of the two participants. –Ed.)*

\*FRAC has ordered an Outreach Award certificate and pin for **Stephen Ramsden**.

When **yr. editor** contacted Outreach Club coordinator and founder **Mike Reynolds** last year about **Richard Schmude** getting an Outreach pin, Dr. Reynolds replied, "By all means send in Dr. Schmude's name along with the others. If there's anybody, anywhere who deserves an Outreach award, it's Richard Schmude."

The same goes for Stephen. Nobody works harder to educate the public about astronomy than our own Dr. Schmude and Mr. Ramsden.

Stephen's pin will be the 17<sup>th</sup> Outreach Award pin earned by FRAC members.

\*From **Steve Bentley**: "Just a reminder for those who may have forgotten: Anyone in FRAC can access the International Dark Sky Assn. (IDA) site by using the username "flintriverastronomy" and the password "orion". This will give you full access to all areas of the site."

\***Larry Higgins** is teaching a high school astronomy class at The Campus, a private school in Peachtree City. Ten students signed up for the course, which meets for 3 hrs. every Fri. for 16 weeks.

\*Here's a trivia question for you: **Comet Shoemaker-Levy 9**, torn to pieces by a close encounter with Jupiter in 2003, plowed into the planet a year later in a succession of 21 impacts between July 16-21, 2004.

Exactly 15 years later, on July 19, 2009, a comet or asteroid crashed into Jupiter. (See pp. 5-6.)

So here's your trivia question:

*What other noteworthy extraterrestrial event occurred on a July 20<sup>th</sup>? (Answer on p. 6.)*

\***Catching Up With Katie**. Okay, so now we know what **Katie Moore** is up to, and what to call her: she's the new Director of the Smithsonian National Air & Space Museum Public Observatory in Washington, D. C.

The observatory, located on the Mall, hasn't officially opened yet. It was the brainchild of Katie's boss, **Dr. David DeVorkin**, curator of the Smithsonian's Space History Division. According to a Smithsonian circular, "DeVorkin decided to take advantage of the power that the Mall has in drawing mass amounts of people, and essentially stick a big telescope in their way."

And it *is* big. The 16-in. 1967 Boller & Chivens refractor, on two-year loan from Harvard University, weighs a ton and a half. That's more than **Larry Higgins, Ken Walburn** and **yr. editor** altogether on the same scale. (Ugh, what a disgusting thought!)

Inside its own specially-built observatory on Independence Ave. beside the Museum, the telescope rests on a 4,000-lb. cement support, which in turn sits atop a 1-1/2" layer of a gelatinous substance to reduce vibrations from nearby traffic. And it's Katie's baby. She'll be in charge of a staff of volunteer helpers working six days a week, with occasional night programs thrown in for good measure.

According to the circular, although "the middle of light-polluted, smoggy D. C. isn't an optimal viewing location, (the telescope), with its high magnification and long focal length, is perfect for viewing the Sun (with solar filters), the **Moon**, and most of the planets even from the Mall." They'll use GoTo technology to find and show the planets during the daytime.

Now, *that* would be a great road trip for the club, wouldn't it?

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**Upcoming Meetings/Activities.** Most of our Sept. schedule is crowded into five days around the middle of the month.

On **Thurs., Sept. 10<sup>th</sup>**, we'll hold our Sept. club meeting at **7:30 p.m.** in the Stuckey Bldg. on the UGa-Griffin campus. The speaker will be **yr. editor**, his topic "The Best Star Atlases in Print." It's an important topic for any beginning stargazer who wants to learn how to navigate the night sky or find things in it manually, or any intermediate or advanced observer who needs more than a basic set of star charts.

At that meeting, we'll also discuss our upcoming club trip to the **U. S. Space and Rocket Center** (USS&RC) in Huntsville, AL. We've set the date for our road trip at **Sat., Sept. 26<sup>th</sup>**, for a very good reason:

The USS&RC is part of the Smithsonian Museum system. On Sept. 26<sup>th</sup> all Smithsonian Museums across the U. S. (including USS&RC) are celebrating "Museum Day" by offering free admission for up to two persons per coupon, only one coupon allowed per family. And since admissions are normally \$24.95, that's a savings of \$50.

**Yr. editor** has already prepared tickets for every individual or family unit in FRAC. If you're going, you can get your ticket either at our Sept. meeting or on the 26<sup>th</sup>.

Huntsville is about a 4-hr. drive from Griffin. Some of you may want to drive over on Fri., spend the night at a Huntsville motel and meet us at the front gate on Sat. morning. Others may want to make it a day trip and carpool to Huntsville and back on Sat., or join the caravan on Sat. morning but stay overnight in Huntsville and either re-visit the facility on Sun. or just drive home then.

Whichever way you want to do it is fine. Those who want to carpool or caravan over on Sat. morning will meet at the Waffle House on Hwy. 16 on the west side of Griffin at 5 p.m. (We'll send directions via e-mail closer to the event.) The Space Center's hours are from 9 to 5.)

To find out more about the U. S. Space & Rocket Center, just Google that term and follow the links.

On **Fri.-Sat., Sept. 11<sup>th</sup>-12<sup>th</sup>**, we'll have our Cox Field observings. The 3<sup>rd</sup> Quarter Moon will be

Thurs., so we'll have unobstructed viewing until the Moon rises around 1:30 a.m.

On our other Cox Field observing weekend, **Fri.-Sat., Sept. 18<sup>th</sup>-19<sup>th</sup>**, we'll benefit from a New Moon that Thursday.

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## **THE JUPITER OBJECT**

**article by Bill Warren**

At 11:30 p.m. on the evening of July 19, 2009, an Australian amateur astronomer, **Anthony Wesley**, discovered a black spot in **Jupiter's** south polar region. He was using a 14-in. refractor at his home in New South Wales.

Wesley quickly notified the NASA Jet Propulsion Laboratory in Pasadena, CA, and his sighting was soon confirmed. The spot, unquestionably an impact site and not a storm in Jupiter's upper atmosphere, was identical in appearance to the succession of impacts produced by the shattered **Comet Shoemaker-Levy 9** in July, 1994.

By comparing the July '09 impact scar with those of the 1994 impacts, astronomers estimate that the Jupiter object – probably a comet but possibly an asteroid – was roughly ½ mi. in diameter. The scar, when fresh, was about the size of the Pacific Ocean (i.e., 65 million sq. mi.), and visible in telescopes of all sizes.

So why wasn't the object observed prior to impact? There are two reasons, the first and most obvious being that *no one was looking at the time*. And since literally hundreds of thousands of amateur astronomers worldwide observe Jupiter when conditions are favorable on any given night, it's a safe bet that the impact occurred just before Mr. Wesley aimed his telescope at Jupiter shortly before midnight. (The earliest he could have seen it was about 32 min. after impact: that's the average length of time it takes light to reach us from Jupiter.)

Second (and more importantly), there is Jupiter's immense distance from the **Earth**, averaging about 4 a.u.'s (370 million miles). From that distance, an object ½ mi. in dia. would have been no brighter than

mag. 25. (That's nearly 24,000 times fainter than **Pluto**, which itself is a faint dot in telescopes.) Organizations such as NEAR and LINEAR that search the skies for potential Earth-bound comets and asteroids cannot identify objects fainter than mag. 22. The Jupiter object was 16 times – three magnitudes of brightness – fainter than that.

What does all this have to do with us? Well...

*What if it had been Earth in the object's path instead of Jupiter?*

The meteor that crashed into the sea 80 million years ago in what is now Wetumpka, AL, is thought to have been 1,100 ft in dia. – a little more than 1/5 mi. wide. The blast created a crater measuring 4-1/2 mi. across.

The Jupiter object, whatever it was, was 150% larger than the Wetumpka meteor (i.e., about five city blocks in diameter), so the effects of such an impact would have been correspondingly greater. But an object 1/2 mi. wide wouldn't produce a global extinction on Earth. The 6-mi.-wide Chixulub meteor 65 million years ago killed off the dinosaurs, half of the animal species on Earth and all of the creatures larger than a lizard.

Anyway, here's how often large objects are likely to strike the Earth:

\*If you believe, as many astronomers do, that the **Moon** resulted from an ancient collision with Earth – well, that's one Moon-sized impact in 4-1/2 billion years;

\*Objects 6 mi. in diameter or larger (e.g., the Chixulub meteor): such objects capable of producing global extinctions occur once in 100 million years. Scientists have identified five previous extinctions, but only one of them – Chixulub – has been definitely linked to a comet or asteroid impact;

\*Objects 3 mi. in diameter: once in 10 million years;

\*Objects 1/2 mi. in diameter (e.g., the Jupiter object): once in 500,000 years;

\*Objects 100 yds. in diameter: once in 10,000 years;

\*Objects 50 yds. in diameter: once in 1,000 years. (The 4,180-ft.-wide, 570-ft. deep **Barringer Crater** in Arizona was created 49,000 years ago by a meteor measuring about 50 yds. across.);

\*Objects 5-10 yds. in diameter: once a year. (Don't worry, they explode in the upper atmosphere, vaporizing most of the object and scattering the remaining fragments. Such was the case with the small asteroid **2008 TC3** that exploded over the Nubian Desert in northern Sudan on Oct. 7, 2008. Only 8 lbs. of fragments have been recovered.);

\*Objects 1 mm. in diameter (micrometeorites): every 30 seconds. (**Larry Higgins** will have more to say about micrometeorites at our Sept. meeting.)

**The Recent Past:** On Jan. 29, 2008, an asteroid measuring 270 yds. in diameter, designated **2007 Tu24**, missed the Earth by just 344,370 miles. At its brightest, it shone at magnitude 10.3.

**The Near Future:** On Apr. 13, 2028, a 300-yr.-wide asteroid, **99942 Apophis**, will miss the Earth by a margin of only 41,000 miles – less than 20% of the distance from the Earth to the Moon.

Stay tuned.

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**Answer to Trivia Question on p. 4:** On July 20, 1969, **Neil Armstrong** and **Edwin "Buzz" Aldrin** became the first humans to walk on the **Moon**, while fellow astronaut **Michael Collins** continued to orbit the Moon in the command module.

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**Errata.** The Perseids meteor shower peaked in the early morning hours of Aug. 12<sup>th</sup>, not July 13<sup>th</sup> as stated in the Aug. newsletter. (Oops!)

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