THE FLINT RIVER OBSERVER

Newsletter of the FLINT RIVER ASTRONOMY CLUB, an Astronomical League affiliate

Vol. 13, No. 4 June, 2009

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

Board of Directors: **Tom Moore; Tom Danei; Felix Luciano;** and **Joel Simmons.**

AlCor/Webmaster, **Tom Moore;** Ga. Sky View Coordinator, **Steve Bentley;** Observing Chairman/Public Observing Coordinator, **Larry Higgins;** Program Co-Chairmen, **Larry Higgins** and **Bill Warren;** NASA Contact, **Felix Luciano;** Event Photographer, **Tom Danei;** and Newsletter Editor, **Bill Warren.**

Club mailing address: 1212 Everee Inn Road, Griffin, GA 30224. Web page: www.flintriverastronomy.org ; discussion group at FRAC@yahoogroups.com.

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

* * *

Club Calendar. Thurs., June 11: FRAC meeting (7:30 p.m., UGa-Griffin campus); **Fri.-Sat., June 19-20:** Cox Field observings (at dark); and **Fri.-Sat., June 26-27:** Cox Field observings (at dark).

* * *

President's Message. The responsibilities and pressures of adulthood are enormous, and growing rapidly in our present economic situation. For those who are fortunate enough to still have jobs, day-to-day living consists of two phases, *working* and *everything else.*

"Working" consists of doing whatever we have to do to keep the paychecks rolling in. "Everything else" consists of finding time and ways to blend the other aspects of our lives, i.e., what we *want* to do to enjoy life when we're not working, and what we *need* to do to meet other, non-work-related responsibilities such as family obligations. Sometimes those aspects overlap, and sometimes they don't. In the latter case, it boils down to priorities.

As often as I invite your attendance and participation at our club meetings, observings, public observings and other activities, it may appear that I want FRAC to be a major priority in your life. But that's not the case, never has been and never will be.

While it's true that, whenever you're with us, we have more fun and FRAC is a better club than it is in your absence, we also understand that other, more important priorities are at work in your life. No one expects you to forego those responsibilities for FRAC's sake. All we want is for you to enjoy whatever time you are able to spend with us.

Astronomy is somewhat unique among hobbies, in that much of what we do is dependent on the weather. Unlike other hobbies such as stamp collecting or model railroading, we need clear skies to use our telescopes. That's why we try to offer four club observings every month: to give you four chances to fit FRAC into your schedule at least once if the weather permits.

Sometimes the weather doesn't cooperate. When that happens over a prolonged period (as was the case in May and during the recent wet, cold winter months as well), it may seem as if we're not doing much as a club. But what's the alternative?

We could, I suppose, offer two meetings per month, but that's hardly practical. Many smaller clubs don't hold monthly meetings, or even provide a monthly newsletter for members. It's not easy to get 10-12 speakers per year, either, and family members doubtless would object to 24 meetings per year.

Or, we could offer 6-8 weekend observing nights per month. Beyond being another unwelcome intrusion into family time, however, the **Moon's** bright presence at those other times would severely limit what might be observed besides the Moon and a few other very bright objects.

The solution, of course, lies within ourselves, to decide what we want to get out of FRAC and what we want (or are able) to put into it. FRAC is only one small priority amid many in your life, and that's as it should be.

Whenever I miss a FRAC function – and I try hard to keep those absences to a minimum – I always feel guilty of letting down friends who depend on me. But like you, I have other priorities, too. None of us should have to explain or apologize when those priorities take precedence over FRAC.

My hope is that FRAC will remain a priority in your life, however large or small you want or can afford for it to be. As president and newsletter editor, I often remind you of what FRAC has to offer – such things as lifetime learning experiences in astronomy, improved observing skills, friendships and the opportunity to show, up close and personal, the wonders of the night sky to those who otherwise would never experience such joys.

In the end, though, it all boils down to each of us and where our priorities lie. The things that brought us into FRAC, combined with our willingness or ability to take advantage of what FRAC has to offer, ultimately will determine how long we stay in FRAC.

Hopefully, that will be a very long time for all of us.

-Bill Warren

*** * ***

Last Month's Meeting/Activities. One visitor – **Cynthia Armstrong,** of Sun City in Griffin – and 16 members -- **Larry Higgins, Steve & Betty Bentley, Charles Turner** (our speaker), **Jessie Dasher, Joel Simmons, Jerry & Bev Williams, Patsy Lwowski, Dwight & Laura Harness, Kevin Murdock, Felix Luciano, Steve Knight, Doug Maxwell** and **yr. editor –** attended our May meeting. The indoor portion of Charles's presentation on Meade's hand-held MySky and Unihedron's Sky Quality Meter was outstanding, and when we went outside he showed us how MySky could be hooked up with a Meade GoTo telescope. Great program, Charles!

The club also presented Steve & Betty with a plaque that read:

Georgia Sky View 2009
Steve & Betty Bentley
"A Job Well Done"
Your Many Friends in FRAC.

As if to underscore **yr. president's** statements on p. 1, all four of our May Cox Field observing were clouded or rained out – but *not* our cookout, which was conducted under yr. editor's spacious carport on May 23rd. Attendees included: **Brit & Tom Danei; Betty, Laura & Dwight Harness** and Laura's friend **Evelyn Clark; Kevin Murdock; Joe Auriemma; Betty & Steve Bentley; Olga & Carlos Flores; Tom Moore; Felix Luciano;** and **yr. editor.** We promised not to mention in the *Observer* that Dwight tried to burn down yr. editor's carport with a grease fire, and we intend to keep that promise. Instead, we'll mention that Laura's new hairdo was very attractive, the food was great and the conversations would have done justice to *Oprah* or *Ellen* (the women) or *Jerry Springer* (the men).

* * *

This 'n That. Well, it's official: at our board meeting of May 21st, the five officers and board members present voted unanimously to hold **Georgia Sky View 2010** with the above-mentioned **Steve Bentley** as its coordinator. The board also approved, with minor modifications, the proposed Bylaws amendments that were sent out to the members last January, paving the way for a ratification vote at the June meeting.

*****As if to answer a question posed at our May meeting, author **Emily Ladkawalla** ("Ice Worlds of the Ringed Planet," *Sky & Tel*, June '09, p. 27) writes that "The ringed planet has 61 known moons, most of which are only a few kilometers apart."

Both NASA and Wikipedia say that **Jupiter** has even more moons than Saturn, weighing in with 63 moons with "reasonably stable" orbits.

*****Here's a hearty "Thank You!" to **Dwight Harness,** who donated a dozen little flashlights with his "Dishtec" logo on them for distribution to members. We painted the lenses red with fingernail polish, gave some of them out at our April Cox Field observing, and gave out the rest at our May meeting.

Thanks, too, to Dwight for bringing his gas grill and cooking the burgers and hot dogs at our May cookout. (Two little-known facts about Dwight: His favorite movie is *Grease* and his two favorite songs are "Ring of Fire" and "Smoke Gets In Your Eyes.")

*****Belated congratulations are in order, too, to **Ken Walburn** and **Steve Bentley** for collaborating to produce the best-looking tee shirt in the history of star parties. Steve designed the shirt (and the equally attractive program handout as well) for GSV '09, both of them based on original designs created by Ken.

*Congratulations, too, to **Larry Higgins's** daughter **Randi** on her marriage to **John Byrom** of Luella on May 24th. The rehearsal dinner was held on May 23rd in Peachtree City, so Larry was unable to attend our cookout and gorge himself to the point of collapsing his chair as he usually does. The happy couple plans to live in Luella.

*After GSV, **Steve & Betty** took the leftover packets of cookies, crackers, etc., to a nursing home in Forsyth, Ga. A few days later, we received the following Thank-You note: "On behalf of the residents of Forsyth Healthcare, thank you for the 'goodies' you gave us. We have enjoyed them. We had parties and we used them for bingo prizes. Thanks again for thinking of us. **Darlene Pritchett,** Acting Director."

***An Open Letter from Kevin Murdock.** "I just want to say again how much I appreciate the telescope that FRAC has entrusted to my care. I had a great time at GSV getting acquainted with it. Since then, I have spent time observing with it and studying the owner's manual. I can't wait till I can get another observing night."

The 'scope, a 4-1/2" Meade reflector with GoTo, was donated to the club a few years ago by someone who thought it wasn't working properly. It sat around collecting dust until recently when **Larry H.** & **Steve B.** checked it out, found that it was in good working order, and presented it to Kevin on behalf of FRAC at GSV.

***George Ellery Hale** designed and built four of the largest telescopes in the world before 1950. All of them are still in use and fully operational. (You can read about them in the Dec. '08 issue of *S&T* (**Todd & Robin Mason,** "Palomar's Big Eye," pp. 36-41). Here are thumbnail sketches of those four giant telescopes:

1. **The 40-in. refractor at Yerkes Observatory.** Completed in 1897, this telescope, featuring a 40-in. lens and an optical tube that is 62 ft. long, remains the largest working refractor ever built. Owned by the Univ. of Chicago, it is located on Geneva Lake in Williams Bay, Wisconsin.

2. **The 60-in. Mt. Wilson reflector.** Featuring a massive mirror that weighed 1,900 lbs. and took 4 years to grind and polish, Hale's 60-in. reflector has been in operation since 1908. There's an excellent article about this telescope in the Nov. '08 issue of *S&T* (**Anthony Misch & William Sheehan,** "Pioneering Telescope Turns 100," pp. 38-41).

3. **The 100-in. Mt. Wilson reflector.** Grinding and polishing the 8.3-ft., 9,000-lb. mirror for this behemoth took 5 yrs. The telescope opened for business on Mt. Wilson in California in 1917.

4. **The 200-in. Hale Telescope on Mt. Palomar.** The 17-ft.-wide mirror of pyrex glass in the "Big Eye," as it was known, weighs 14-1/2 tons, is coated with aluminum 1,000 times thinner than a piece of paper, and its surface is smooth to within 1-1,000,000th of an inch. According to the authors, "If you were to enlarge (the 200-in. mirror) to the size of the United States, there would be no dimple or bump larger than a molehill." (p. 37)

The Hale Telescope took 17 years to build, including a year for the mirror to cool down after being cast. It began operating in 1948.

The Russians built a larger reflector with a 236-in. primary mirror in 1976, but it never worked very well.

There are, of course, larger optical telescopes in use or in the planning stages today, but all of them feature clusters of computer-controlled mirror cells working together to produce a single image.

*****Finally, in case you thought we were in danger of becoming a serious astronomy newsletter, there is this:

A Sunday School teacher wanted to warn his class of 8-year-old boys about the perils of drinking, so he devised an experiment. He set up two glasses, one filled with water and the other one filled with alcohol. He showed the boys a wriggling earthworm, and dropped it into the glass of water. It swam around happily.

Then he took the earthworm and dropped it into the glass of alcohol. It died immediately.

"What does that tell us?," he asked.

"I know!," said one of the boys. "If you drink, you won't get worms!"

*** * ***

Upcoming Meetings/Activities. Our club meeting will be held at 7:30 p.m. on **June 11th** in the Stuckey Bldg. on the UGa-Griffin campus. Our program will feature a splendid dvd, "The Journey to Palomar," about the planning and construction of the massive 200-in. Hale Telescope on California's Mt. Palomar in the 1930s-40s. (See p. 3) We'll also vote on the Bylaws amendments that were sent out to the members last January.

Our Cox Field observings will be held on **Fri.-Sat., June 19th-20th,** and on **Fri.-Sat., June 26th-27th.**

* * *

People You Should Know: Ken Walburn. Unlike FRAC's other co-founders, **Larry Higgins & yr. editor,** Ken is quiet, soft-spoken and unobtrusive, almost to the point of shyness. (Actually, we are too, but we hide it by being loud and obnoxious.) Ken has graciously and uncomplainingly allowed yr. editor to make him the butt of jokes in these pages for a dozen years now, and for that alone he'll always be special to us. He understands – as you should – that the real **Ken Walburn** bears absolutely no resemblance to the Ken that yr. editor pokes fun at from time to time. That fictitious Ken was, like **Prof. Stargazer,** invented by yr. editor to keep the *Observer* from reading like a chatty social column that tells readers whose cat had kittens in the past month. Frankly, we'd rather read a telephone book.

So here's the skinny on the *real* Ken Walburn (or maybe we should re-phrase the first part of that sentence):

Ken is a good person, and a very good friend to have. *Loyal* and *trustworthy* are words that leap to mind in describing him. Besides being a co-founder of FRAC, Ken was the club's first secretary-treasurer, and he held that role for the first six years of FRAC's existence.

Ken is also an extremely gifted amateur artist, as witness the designs he produced for our FRAC '09 tee shirts. The one on the front of the shirt showing a man observing through a Schmidt-Cassegrain telescope was designed and drawn – *not* computer-generated – by Ken, and it also serves as FRAC's official logo.

Ken is a retired "cheese peddler for Kraft Foods" – his description of himself, not ours – who had hip replacement surgery last year and foot surgery this year. He and his lovely wife **Doris**, a long-time swimming instructor, live in McDonough. They have two grown daughters, **Torrie** and **Cheree',** six grandchildren and a home-made 10" reflecting telescope that you'd have to see to believe.

* * *

The Sky in June. Saturn (mag. 1.0) owns the night sky in June during the early evening hours. Residing in the constellation *Leo,* Saturn is up until after midnight. The other planets and poor **Pluto** rise between midnight and dawn, and thus are early morning targets.

So what else is up in June?

Well, the month of June straddles spring and summer, so the galaxies of spring and globular clusters of summer are abundant.

What we're recommending, though, is that you home in on two spectacular globulars, **NGC 5139** in *Centaurus* and **M13** in *Hercules.* Only two other globular clusters in the entire sky are even remotely comparable to 5139 and M13: **47 Tucanae,** too far S to be seen from Cox Field, and **M22** in *Sagittarius.*

Start with NGC 5139. It was so bright that the ancients thought it was a star and called it **Omega Centauri**. It is now thought to have once been a dwarf galaxy that was torn apart by the tidal forces of our **Milky Way** galaxy. (And thanks, **Larry,** for reminding us of that fact.)

Because *Centaurus* is a southern constellation, you'll find 5139 perched low above the treetops at the S end of Mr. Cox's property. Use a star map and binoculars (or a GoTo or PushTo telescope) to find it initially: it'll be a pinky-width blur in binocs, and a larger, partially resolved, hazy circle in a 6" telescope. It won't look like the finest of all globular clusters in your field of view – but you're seeing it through countless layers of atmosphere. If you want to see what the fuss is all about, Google "Omega Centauri," hit Go and be prepared for a stunner. Well, *yes,* it <u>is</u> that good, after all!

After visiting NGC 5139, turn your 'scope to the constellation *Hercules* and position your Telrad or finderscope 1/3 of the way from **Eta** to **Zeta Herculis.** (They're the two stars on the W side of the **Keystone,** the 4-star trapezoid that form Hercules's shoulders and waist.) That's where you'll find M13, one of the most impressive objects in the night sky. Even if you've never seen it before, you'll recognize it when you see it – instant *déjà vu*!

Take your time in studying M13: as **Larry Higgins** has often pointed out, the longer you look at M13, the more stars you'll see – literally thousands in a 10" 'scope!

Remember, too, that star clusters (globular and open) benefit greatly from high magnification. That's not always the case with galaxies or nebulae, where the light may be spread out and thus diffused – but with clusters, increasing the magnification brings out fainter stars as individual points of light.

*** * ***

It is surely harmful to souls to make it a heresy to believe what is proved.

-Galileo Galilei (1564-1642)

* * *

<u>Prof. Stargazer Talks About Galileo</u>

*(Editor's Note: To celebrate the 400th anniversary of **Galileo** becoming the first person to use a telescope, a group of FRAC members recently interviewed **Prof. Theophilus Stargazer,** the world's foremost expert on Galileo, telescopes and Jokes You Wouldn't Want to Tell Your Preacher. When we caught up with the professor at home, he tried to hide the magazine he was reading. **David Mitchusson** picked it up.)*

David, shocked: "Lusty Teenage Vixens," Professor?

Prof. Stargazer: Oh, is that what it says? I didn't have my reading glasses on when I bought it. I thought it was a catalog of lunar telescopes from Vixen.

Alan Pryor: Yeah, right. That explains the fingerprint smudges all over it. What can you tell us about Galileo's earliest experiences with the telescope, Professor?

Prof. Stargazer: In December, 1609, Galileo aimed his little telescope at the night sky for the first time. Prior to that, he had used it to watch *The Letterman Show* on his neighbor's TV – at least, that's what he told the cops he was doing.

Galileo's first celestial target was the Moon, probably because it was the easiest thing to find.

Incidentally, Alan, Galileo wasn't the one who discovered the Moon – although he would have been if everyone else who ever lived since the dawn of man had been born blind.

Jessie Dasher: What was his first discovery, sir?

Prof. Stargazer: Upon seeing the mountains, craters and other lunar features for the first time in his

1-1/2" telescope, Galileo shouted, "*Mairzy doats and dozy doats, and bibbidy bobbidy boo!"*

Joe Morris: What does that mean, Professor?

Prof. Stargazer: It's Latin for "Godfrey Daniel, I need a bigger telescope!"

Robert McCarty: Didn't Galileo have trouble with the Roman Inquisition?

Prof. Stargazer: Yes, he did, Bob, but his problems started long before that. First, there were his redneck neighbors, saying things like "It ain't natural, a guy spending every night outside in the dark by hisself!" and "Whaddaya, some kinda pree-vert or something?"

Then there was his wife – by all accounts she was a gentle, soft-spoken soul -- poking her head out the window to ask sweetly, "Hey, jerkweed, are you gonna stay out there all night, or what? C'mon to bed, my feet are cold!"

But what his wife didn't know was, *Galileo wasn't alone in the dark!* In fact, he was spending his evenings with a bevy of buxom babes. We even know their names: **Io, Callisto, Ganymede** and **Europa.** And now, 400 years later, they're known as the Galilean Moons of Jupiter. Galileo once remarked to a friend, "E pluribus unum, et tu, Brute!"

David O'Keeffe: And what does *that* mean, Professor?

Prof. Stargazer: "If I'd known I was gonna get mooned four times a night, I'd have invented the telescope years ago!"

Tim Astin: What about Galileo and the Inquisition, sir? You never answered that question.

Prof. Stargazer: Galileo's observations showed that Copernicus was right after all: the Sun, and not the Earth, is the center of the solar system. But the Church didn't like him saying that, so they gave him a choice: either take it back, or suffer a fate worse than death.

Charles Boils: What fate was that, Professor? What could be worse than being put to death?

Prof. Stargazer: Being forced to watch The Golf Channel for the rest of his life.

Beverly Williams: Wasn't Galileo the first person to observe sunspots?

Prof. Stargazer: Yes, he was, Bev. And that probably explains why he spent his latter years blind.

Richard Bragg: Didn't he use a solar filter?

Prof. Stargazer: Not at first, Richard. He couldn't afford a Lumicon h-alpha filter, and Coronado's shipping charges to Italy were too high.

Eventually, Galileo developed a solar filter of sorts. But because it didn't work very well, he used it only on cloudy days.

I have time to answer one more question, so make it a good one.

Jim Roberts: Okay, Professor: If, as you say, the Moon is the easiest thing to find, what's the hardest thing to find?

Prof. Stargazer: A plumber on a Saturday night.

(*Editor's p.s.: As we were leaving, the professor stopped us.)*

Prof. Stargazer: You folks have been asking me questions; do you mind if I ask you one?

Patsy Lwowski: Certainly not, Professor. What's your question?

Prof. Stargazer: Is there any truth to the rumor that **Dwight Harness** tried to burn down **Bill Warren's** house?

Joe Auriemma: Of course not, sir. Where on earth would you get an idea like that?

##

Space Place Partner's Article – June 2009

Scoring More Energy from Less Sunlight

For spacecraft, power is everything. Without electrical power, satellites and robotic probes might as well be chunks of cold rock tumbling through space. Hundreds to millions of miles from the nearest power outlet, these spacecraft must somehow eke enough power from ambient sunlight to stay alive.

That's no problem for large satellites that can carry immense solar panels and heavy batteries. But in recent years, NASA has been developing technologies for much smaller microsatellites, which are lighter and far less expensive to launch. Often less than 10 feet across, these small spacecraft have little room to spare for solar panels or batteries, yet must still somehow power their onboard computers, scientific instruments, and navigation and communication systems.

Space Technology 5 was a mission that proved, among other technologies, new concepts of power generation and storage for spacecraft.

"We tested high efficiency solar cells on ST-5 that produce almost 60 percent more power than typical solar cells. We also tested batteries that hold three times the energy of standard spacecraft batteries of the same size," says Christopher Stevens, manager of NASA's New Millennium Program. This program flight tests cutting-edge spacecraft technologies so that they can be used safely on mission-critical satellites and probes.

"This more efficient power supply allows you to build a science-grade spacecraft on a miniature scale," Stevens says.

Solar cells typically used on satellites can convert only about 18 percent of the available energy in sunlight into electrical current. ST-5 tested experimental cells that capture up to 29 percent of this solar energy. These new solar cells, developed in collaboration with the Air Force Research Laboratory in Ohio, performed flawlessly on ST-5, and they've already been swooped up and used on NASA's svelte MESSENGER probe, which will make a flyby of Mercury later this year.

Like modern laptop batteries, the high-capacity batteries on ST-5 use lithium-ion technology. As a string of exploding laptop batteries in recent years shows, fire safety can be an issue with this battery type.

"The challenge was to take these batteries and put in a power management circuit that protects against internal overcharge," Stevens explains. So NASA contracted with ABSL Power Solutions to develop spacecraft batteries with design control circuits to prevent power spikes that can lead to fires. "It worked like a charm."

Now that ST-5 has demonstrated the safety of this battery design, it is flying on NASA's THEMIS mission (for Time History of Events and Macroscale Interactions during Substorms) and is slated to fly aboard the Lunar Reconnaissance Orbiter and the Solar Dynamics Observatory, both of which are scheduled to launch later this year.

Thanks to ST-5, a little sunlight can go a really long way.

Find out about other advanced technologies validated in space and now being used on new missions of exploration at nmp.nasa.gov/TECHNOLOGY/scorecard. Kids can calculate out how old they would be before having to replace lithium-ion batteries in a handheld game at spaceplace.nasa.gov/en/kids/st5_bats.shtml.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Caption:
Helen Johnson, a spacecraft technician at NASA's Goddard Space Flight Center, works on one of the three tiny Space Technology 5 spacecraft in preparation for its technology validation mission.