

THE FLINT RIVER OBSERVER

NEWSLETTER OF THE FLINT
RIVER ASTRONOMY CLUB

An Affiliate of the
Astronomical League

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Club mailing address: 1212 Everee Inn Rd., Griffin, GA 30224. FRAC web site: www.flintriverastronomy.org.

Please notify **Bill Warren** promptly if you have a change of home address, telephone no. or e-mail address, or if you fail to receive your monthly *Observer* or quarterly *Reflector* from the A. L.

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Club Calendar. Fri-Sat., Sept. 26-27: Joe Kurz observings (Site #3, at dark); **Wed., Oct. 1:** Southern Crescent Technical College observing (8:30 p.m.); **Thurs., Oct. 9:** FRAC meeting/lunar observing at The Garden in Griffin (7-10 p.m.); **Fri., Oct. 24th:** Nash Farm father-son campout observing (Henry Co., time TBA) **AND** JKWMA

club observing (Site #1, at dark); **Sat., Oct. 25th:** JKWMA observing (Site #1, at dark).

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President's Message. As you'll see in this month's *Observer*, FRAC's astrophotographers have been busy.

First, there's **Stephen Ramsden**, who probably takes as many solar photos every month as scientists at the National Solar Observatory. One of Stephen's photos (shown on p. 2) recently was named one of the best astronomy photographs of 2014 in an international competition. It's a fitting tribute to a man who has devoted a large chunk of his life over the past 6-8 years to solar astronomy.

Then there are **Alan Pryor** and **Felix Luciano**, who specialize in deep-sky astrophotography. They took advantage of unusually clear skies recently to produce six photos of galaxies and nebulas – some of them old favorites, others that are less well known, and all of them beautiful.

FRAC is extremely fortunate to have talented and dedicated people like Stephen, Alan and Felix; I hope they know how much we appreciate them.

I also want to thank **Aaron Calhoun** for his clever article, "A Little Stroll Through Space," which appears on pp. 4-5. I know you'll enjoy reading it.

Finally, I know you'll want to join me in welcoming FRAC's newest family, **Russell, Cheryl, Heather and Katie Payne**, of McDonough. We're happy to have you in our club, folks, and we're looking forward to getting to know you.

-Dwight Harness

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Last Month's Meeting/Activities. Late afternoon rain couldn't deter a dozen FRACsters from attending our Sept. pool party/eatin' meetin': **Betty, Laura & Dwight Harness; Larry Higgins; Aaron Calhoun; Erik Erikson; Jane Barreski & Roger Brackett; Carlos Flores; Felix Luciano;** and **Louise & Bill Warren.** The rain was gone long before the party began, but no one swam; instead, we chatted as FRACsters always do whenever we get together informally: gossiping about members who weren't there, solving the world's problems, talking about astronomy – and

Bill challenging anyone present to talk continuously for 60 seconds without using any words containing the letter **a**. There were no takers. (The answer is on p. 6.)

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This ‘n That. At our Sept. pool party, **Carlos Flores** suggested that we ought to schedule a one-night observing road trip in October to the mountains of north Ga., Tenn. or N. C. – probably to Brasstown Bald, the highest mountain in Georgia. If you’re interested and would like more information, contact Carlos at 404-215-4493 or cflores111@hotmail.com.

***Below:** “Calcium K Eruption,” a prize-winning 2014 astrophotograph by **Stephen Ramsden**.

There were hundreds of entries from 51 countries in this year’s “Astronomy Photographer of the Year” competition, which is sponsored by England’s Royal Observatory and BBC’s *Sky At Night* magazine.

Seventeen finalists were announced in advance of the awards ceremony, which was held at the



Royal Observatory in Greenwich, England, on Sept. 18th. Stephen’s stunning photo of a solar prominence in Calcium K light was one of only two solar photos to reach the finals: it won “Highly Commended” honors in the Solar System category.

(Calcium K solar filters block out light at all wavelengths except the very narrow Calcium K portion of the spectrum. They reveal features that are otherwise difficult to see, such as emissions from the chromospheres that are created when calcium ions are swept through the **Sun**’s intense magnetic fields.)

*As we all know, Stephen is much more than a talented solar photographer. His life is so far from ordinary that attempting to describe it is like describing another universe: whatever you say, it won’t be enough.

Stephen is the founder and director of the world’s largest solar astronomy education and outreach program. Working essentially alone and largely at his own expense, he takes his array of solar telescopes and cameras to schools in and around the Atlanta area to teach children about the **Sun** and its many wonderful features.

Stephen began the **Charlie Bates Solar Astronomy Project** in 2008 as a way of honoring the memory of a recently deceased close friend and co-worker for more than two decades. Since then, the Project’s growth has been phenomenal: every year, Stephen shows the Sun to about 80,000 students, each of whom receives a pair of solar sunglasses in addition to viewing the Sun through his observatory-quality solar telescopes. He allows students to take solar photos with his telescopes and cameras.

Stephen’s solar observings and presentations mirror his personality: sometimes in cool weather he wears a bright yellow “Sun suit” costume that has to be seen to be believed. It isn’t a “clown suit”, but a teaching device: before he says a single word, he has the children’s undivided attention.

In his presentations, Stephen interacts easily with children, talking *with* them as their friend, not *to* them as a teacher. He wants them to understand that he, the Sun and science are their friends. At the telescope, he makes viewing the Sun a highly personal experience for the children, bringing it down to their level of understanding without talking down to them or lecturing.

He has a waiting list of six months for schools that request a visit.

Like Superman, Stephen Ramsden leads two lives. His solar outreach – an unpaid, full-time job in itself – is performed outside his regular job as an air traffic controller for Atlanta’s Hartsfield-Jackson Airport. He used to swap shifts with co-workers to enable him to visit schools during the day, but now he uses his vacation allotment days for that purpose.

Stephen lives in Atlanta with his wife, **Natalie Anderson**, and their dog, a Boston terrier named Biggie.

If you’d like to see for yourself what Stephen and the Charlie Bates Solar Astronomy Project are all about, go to www.solarastronomy.org.

The Project is a non-profit organization and survives solely on public and private support. If you'd like to make a tax-deductible contribution to the Charlie Bates Solar Astronomy Project to help defray Stephen's expenses – hey, the solar sunglasses alone cost \$0.50 a pair, and he buys 80,000 pairs a year! -- you can (a) Paypal your donation to info@charliebates.org ; (b) send your pledge via that e-mail address; or (c) send your personal check (made out to the Charlie Bates Solar Astronomy Project) to Stephen at: **Stephen Ramsden, 735 Ponce de Leon Place, Atlanta, GA 30306.**

*Hey, gang, what time is it?

Why, it's time to remind you that, as the weather cools and September slides into October, you need to go to the [Articles](#) link on our website, www.flintriverastronomy.org, and read (or re-read) **Smitty's** awesome article on cool- and cold-weather observing, "Of Mukluks and Messiers." In it, he tells you everything you need to know in order to stay roasty-toasty warm outdoors when the temperature drops below what you normally think of as comfortable.

We won't be giving away any of Smitty's secrets by telling you that it all starts out by planning for weather that is at least 15-20° cooler than it is when you leave the house. You don't need to wear warm clothing in warm or mild temperatures – but it's better to take along something warm to put on when the temps drop after sundown than to need extra clothing and not have it.

Smitty's common-sense approach to staying warm starts at the ground level and works up. Over the years, we've found that the greatest single cause of visitors leaving our observings early is cold feet, followed by cold arms, cold hands and cold ears, in that order. All of those problems are preventable, with a little forethought.

Read Smitty's article. Follow his advice. Start out warm, and stay warm.

*The Atlanta Astronomy Club's **Peach State Star Gaze** star party will be held at Deerlick Astronomy Village, a very dark site near Sharon, Ga. (which in turn is near Thomson, Ga., which is in the same general part of the state as Augusta). The event will run from **Sun., Oct 19th-Sun., Oct. 26th.** **Stephen Ramsden** will be one of this year's speakers. For more information or to register

online, just Google Peach State Star Gaze and follow the links.

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Upcoming Meeting/Activities. On **Fri.-Sat., Sept. 26th-27th**, we'll have Joe Kurz observings at dark at Site #3, the one that's a mile from the gate. We'll set out cones along the way to guide you.

On **Wed., Oct. 1st**, FRAC will conduct a public observing at Southern Crescent Technical College in Griffin at 8:30 p.m. on **Tues., Sept. 2nd**.

To get to the site from N or S of Griffin, get on 4-lane US 19/41 and stay on it until you reach the Ga. 16 (Newnan-Griffin) exit. Turn east toward Griffin, go to the 2nd stoplight and turn left at Spalding Drive.

Go past the 4-way stop at Flynt St., and turn right at the next corner (Water Works St.) A large student parking lot will be on your left after you turn. Turn left into student parking, and make your way to the far right end of the parking lot beside a 3-story bldg. Unload your 'scope on the large sidewalk area at the NW end of the 3-story bldg, then go back and park in student parking.

The GPS coordinates for Southern Crescent are: 33° 15' 15.75" N, 84° 17' 23.9" W. (Thanks, **Tom Moore.**)

On **Thurs., Oct. 9th**, we'll hold our monthly FRAC meeting and lunar observings from 7-10 p.m. at The Garden in Griffin.

On **Fri., Oct. 24th**, we'll conduct an observing at a father-son overnight campout at Nash Farm in Henry Co. The starting time will be announced later.

To get to Nash Farm from, say, Griffin, go N on the U.S. 19/41 4-lane. Go through Hampton, and when you get to Lovejoy turn right at the stoplight at McDonough Rd. Go over the bridge, and 0.1 mi. ahead turn left to stay on McDonough Rd. (The other road – the one you *don't* want – is Hastings Bridge Rd.)

After 1.7 mi., McDonough Rd. becomes Jonesboro Rd. Go 0.2 mi. farther, and turn right onto Babbs Mill Rd. Go 0.7 mi., and Nash Farm is on the right. Tell them you're with the Flint River Astronomy Club, and they'll tell you how to get to the campout site.

*Note: Since **Oct. 24th** is also part of our regularly scheduled JKWMA observing weekend, anyone who prefers to observe there on the 24th is*

free to do so. The gate will be unlocked. Set up at Site #1.

On **Sat., Oct. 25th**, we'll hold the 2nd half of our October weekend observing at Joe Kurz. It too will be at Site #1.

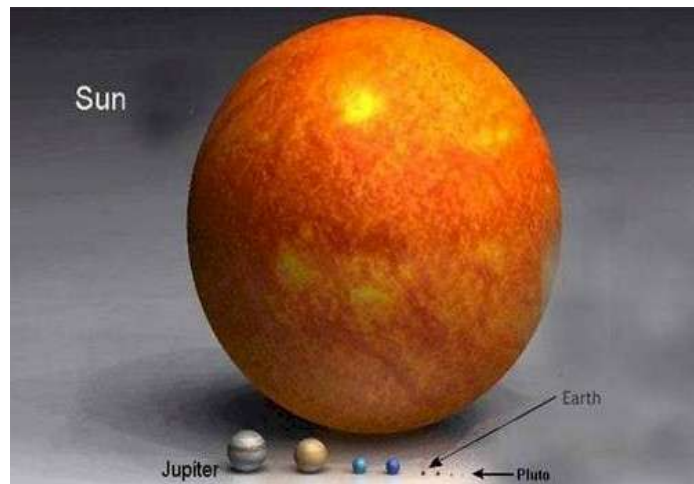
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Eclipses in October. In a practically unheard-of scenario, we'll get not one, but two eclipses this month: a *total lunar eclipse* during the pre-dawn hours of **Wed, Oct. 8th**, and a *partial solar eclipse* at sundown on **Thurs., Oct. 23rd**.

The visible phase of the lunar eclipse will begin at 5:15 a.m. on Oct. 8th when the Moon's surface begins to darken from Earth's main shadow, or umbra. The darkening will continue to spread across the Moon's face until, at 6:30, the entire Moon will be cast in a dark reddish hue referred to as a *blood Moon*. Totality will end as the **Sun** rises in the east and the Moon sets in the west.

Later in the month, on Thurs., Oct. 23rd, the partial solar eclipse will see the Moon covering somewhere between 10-15% of the Sun's face just before sunset.

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A Little Stroll Through Space

article by **Aaron Calhoun**

There were giants in the earth in those days.
-Genesis 6:4

Imagine, if you will, that you and I are giants. Not just ordinary giants, but giants so large that,

compared to us, the Earth is a blue ping pong ball about 1-1/2 inches in diameter.

If you can imagine that, let's take a walk. (Even giants need exercise.)

When we begin, we may appear to be walking very slowly. But appearances can be deceiving: as super-sized giants, we'll be moving extremely fast. Consider:

We'll assume (for the sake of convenience) that both of us are 6 feet tall. That's 48 times larger than a ping pong ball. Since the Earth is 8,000 miles in diameter, as supergiants we'll be 384,000 miles tall.

If we also assume that our normal walking strides are half our height, or 3 feet, each super-giant step we take will cover 192,000 miles. At a walking pace of 2 mph, we'd be moving faster than the speed of light, so we'll slow down a bit. The speed of light is 186,000 miles per second; I don't know about you, but that's plenty fast enough for me! At that speed, we could circle the Earth nearly 7-1/2 times in one second!

So lace up your Air Jordans and let's begin.

*In a little more than a second we pass the bb-sized **Moon**. It looks like a roly-poly bug curled up.

*In 8.3 minutes we pass the **Sun**, which is as large as a 12.5-ft. water tower compared to our ping pong ball Earth. (See the photo, opposite. -Ed.)

*Three minutes later we pass sun-baked **Mercury**, the size of a marble.

*Three minutes after that we pass **Venus**. It looks like a cloudy crystal ball shrunk down to the size of a golf ball.

*About 20 minutes into our speed-of-light walk we pass tiny **Mars**, about half as big as our pint-sized Earth.

*An hour and a half beyond the Sun we stroll past **Jupiter**, the size of a washing machine.

***Saturn** is next, 37 walking minutes beyond Jupiter. The rings are lovely; we'd like to stop and examine them, but we still have a long way to go.

*Next comes **Uranus**, nearly an hour and a half beyond Saturn.

*Finally, after more than 4-1/2 hours of walking at the speed of light, we pass **Neptune**.

Are you tired? I am, so, let's stop walking and ride the rest of the way. We aren't finished yet; in fact, we've just begun. Our destination is **Alpha Centauri**, the 6th-brightest star in the night sky.

At a distance of 4.3 light-years from Earth, Alpha Centauri is the second-closest star to the Earth besides our Sun. (Its companion star, **Proxima Centauri**, is slightly closer at 4.2 l.y. from us.) But on the scale we're using in our fantasy walk, Alpha Centauri is just 75,300 miles from Earth.

Of course, we'll need a vehicle large enough to carry a pair of super-sized giants. When that vehicle reaches 60 mph, we will be traveling at 28 times the speed of light.

For safety's sake, let's hope there are no other cars nearby when we accelerate to 134 mph, or 64 times the speed of light. (If you're a *Star Trek* fan, that would be Warp 4.) We may as well take a nap and get plenty of rest, because at Warp 4 speed the trip to Alpha Centauri will take us 23 days.

What's that you say? You can't afford to stay away that long? Okay, let's floorboard it and accelerate to Warp 8, the fastest speed that **Captain Kirk's Enterprise** could go. It's 512 times the speed of light. At that rate – which at our scale translates to 1,075 mph -- we'll reach Alpha Centauri in three days.

If you want to get there faster than that – well, you're out of luck.

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Above: M13, the Great Cluster in Hercules. Photo by Alan Pryor. M13 is neither the largest globular cluster in the night sky – that honor goes to **Omega Centauri (NGC 5139)** – nor the brightest (at our mid-northern latitude both **M22** in *Sagittarius* and **M5** in *Serpens* are brighter). But M13 conveys a sense of power and majesty befitting **Hercules, the Strong Man**. Most (if not all) of FRAC's veteran observers regard M13 as the

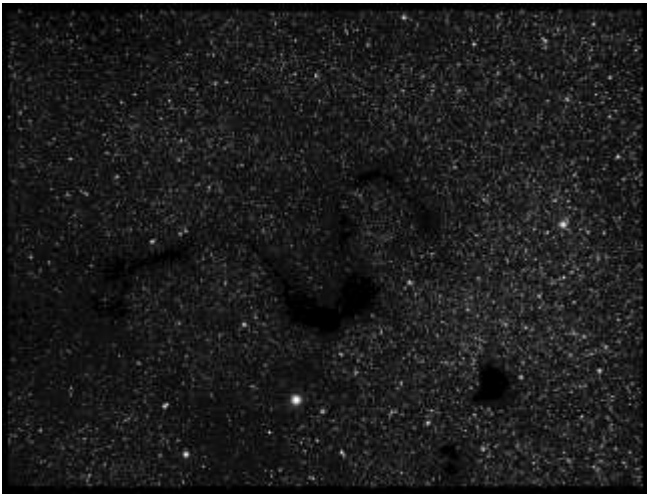
finest globular in the northern skies. Alan's photo shows you why.



Above: M57 (Ring Nebula), a planetary nebula in *Lyra*. The lovely little gray doughnut comes alive with color in **Alan Pryor's** photo. Easy to find -- located halfway between **Lambda** and **Beta Lyrae** -- the Ring is small, but shows well in small telescopes. Use high power, and see if you can spot the mag. 12 star at the center. It's the star that cast off its outer shell of helium to create the bipolar planetary nebula that we see through its major axis like looking down a telescope tube.



Above: Vorontsev-Velyaminov 254, an interacting galaxy pair in *Pegasus*. Photo by **Alan Pryor**. Actually, they've already interacted, having collided head-on about 20 million years ago. By the looks of the two galaxies, it must have been a good battle: **VV254b**, the smaller and more bruised of the two, put up a good fight but **VV254a**, to its lower right, got the better of it.



Above: Barnards 72 and 68, dark nebulae in *Ophiuchus*. Photo by **Felix Luciano**. It's easy to see why **B72** is called **Snake Nebula**: it looks like the S-shaped Snake has enjoyed two good meals recently and is considering a third, the mouse-sized **B68** to its lower right. (And to the lower left of B68 lies a fourth potential meal, the smaller **B70**.)



Above: IC 5076, a reflection nebula in *Cygnus*. Photo by **Felix Luciano**. **IC 5076** is located between a mag. 6 star to its right and a poorly defined group of stars (**NGC 6991**) to its upper left that may or may not actually be an open cluster. North is at the bottom of Felix's photo.



Above: IC 5146 (Cocoon Nebula, a.k.a. Caldwell 19 and Sharpless 2-125) and Barnard 168, a dark nebula in *Cygnus*. Photo by **Felix Luciano**. Here's a rarity: a nebula within a nebula. **B168** is a 2°-long dark lane in the Milky Way, and located 3° NE of 4th-mag. **Rho Cygni**. At (and within) its ESE end lies **Cocoon Nebula (IC 5146)**, resembling either cotton candy or pink popcorn. The Cocoon is an extremely faint stellar nursery that functions as an emission, reflection and absorption nebula rolled up into one. As befits a nursery, the Cocoon contains a number of young stars, including a prominent pair of N-S oriented mag. 9 stars at the center and top of the nebula in Felix's photo.

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***Answer to Bill Warren's challenge on p. 1:** The problem is to talk continuously for a full minute without using any words containing the letter **a**. Bill stipulated that you can't simply repeat the same word over and over, as in "The, the, the, the..." but to use normal, complete sentences.

Here's how it's done. Just say, "I think I'll count to one hundred: one, two, three, four, five..." Unless you're a speed talker, it will take more than 60 seconds for you to count all the way to one hundred *and* one.

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