

THE FLINT RIVER OBSERVER

NEWSLETTER OF THE FLINT
RIVER ASTRONOMY CLUB

An Affiliate of the Astronomical League

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Officers: President, **Dwight Harness** (1770 Hollonville Rd., Brooks, Ga. 30205, 770-227-9321, rdharness@yahoo.com); Vice President, **Bill Warren** (1212 Everee Inn Rd., Griffin, Ga. 30224, warren7804@bellsouth.net); Secretary, **Carlos Flores**; and Treasurer, **Truman Boyle**.

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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., Jan. 8-9: JKWMA observings (at dark); **Thurs., Jan. 14:** FRAC meeting/lunar & planetary observings (7:30 p.m., The Garden in Griffin).

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Vice President's Message. Make a note on your calendar to set aside the weekend of **Fri.-Sun., Mar. 4th-6th** for **GEORGIA SKY VIEW 2016: A STELLAR EXPERIENCE**, FRAC's star party. It will be "a stellar experience" in every sense of the phrase.

This will be FRAC's tenth **GSV**. Like last year, it will be held at The Rock Ranch near Barnesville. Admission to the Rock Ranch will be free, but you need to pre-register in order to be put on their pass list. (You can use the registration form on our website or get one at our Jan. or Feb. meeting.)

The arrangements are basically the same as last year. Our camping/observing site will be at the covered wagons area, and Port-O-Lets will be available at that site. **Dwight** will go over the other arrangements and answer any questions you may have at the January meeting. That information will appear in the Feb. and March issues of the *Observer*, and on our website. For now, though, all you need to do is set aside the weekend of **March 4th-6th** for our star party and make plans to attend.

Here are three reasons why you should attend **GSV 2016**:

First, star parties are always a lot of fun, rain or shine. Even **Scrooge**, the **Grinch** or **Oscar the Grouch** would like **Ga. Sky View**. As somebody (probably me) once said, "**Georgia Sky View** is more fun than a barrel of **Larry Higginses!**"

Second, you'll get to know your fellow club members better than you will through brief conversations before or after our club meetings. You'll spend two days and nights of quality time in a relaxed atmosphere with some of the nicest, funniest, most interesting, helpful and knowledgeable people you'll ever know in astronomy.

Third, whether you're new to astronomy or observing; having trouble with your telescope or equipment; or simply want to learn more than you ever thought you could in such a short time -- **GSV** is exactly what you're looking for.

If, like me, you consider FRAC to be your second family, **Ga. Sky View** is our annual homecoming weekend. Our star parties are always very good, but this one will be even more delightful with you there to share the weekend with us.

Finally, I'm pleased to recognize FRAC's newest members, **Fred & Patty Rossi** of Griffin. I've known the Rossis for three decades now, and my life has been greatly enriched by their friendship.

-Bill Warren

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Last Month's Meeting/Activities. Twenty-four FRACsters and their guests attended our Christmas party at Ryan's on Dec. 5th: **Dwight & Betty**

Harness; Truman & Denise Boyle; Steve Bentley & Patty McMillan; Erik Erikson; Dan Pillatzki; Aaron Calhoun; Vicky Walters; Phil Sacco & Courtney Seabolt; Larry & Linda Higgins; Jeremy, Sarah, Emily & Delilah Milligan; Smitty & Deborah Smith; Tom Moore; Dawn Chappell; Alison Rudzinski; and yr. editor. Thanks to the hard work of Truman and Dwight (coupled with additional prizes donated by Tom, Dan & yrs. truly), we gave out doorprizes valued at more than \$500. Truman's "white elephant" distribution system was a spirited affair and an instant success. We hope he'll do it again next year.

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This 'n That. If you're interested in running for office in FRAC in 2016, contact **Dwight Harness** at rdharness@yahoo.com so your name can be added to the ballot. Officer elections will be held at our February meeting.

*The most popular object that we show people at our public observings is **Saturn**. Next on the hit parade are the Moon and the other planets. But they aren't always available on those nights, and most people have never heard of the other things we show them. We have to explain to them what they're seeing.

There is, however, one object in the night sky that always excites people even if all they know about it is its name: the *International Space Station*.

Everyone has heard of the I.S.S. -- a space lab that orbits the Earth every 93 min. (i.e., 15 times a day). Even without binoculars or a telescope you can watch it gliding silently across the sky more than 200 miles above us. All you need to know is when it's scheduled to cross, what direction it's coming from, and what direction it's heading.

You can download an app, "I.S.S. Detector Satellite Tracker," that will give you that information. Once you've downloaded it from The Play Store at play.google.com you can see the I.S.S. for yourself or show it to your family, relatives, friends or neighbors. (That site also will tell you when the next iridium flare will be, and where to look for it.)

*Ex-FRAC member **Rick Jakiel** has an article, "Monsters in the Dark," in the Jan. issue of *Sky & Telescope* (pp. 62-66). (The "monsters" are giant

elliptical galaxies. See below for a different kind of monster in the dark.)

*As a way of thanking **Dr. Maynard Pittendreigh**, the A. L.'s Outreach Program coordinator, for all his help, **yr. editor** sent him the story about **Prof. Stargazer's** observing trip to the Okefenokee Swamp. Dr. Pittendreigh, who once lived in south Fla., responded:

I reminds me of the time I was observing in the Everglades on a dirt road off Alligator Alley. I was all alone -- at least, I thought I was -- on a very dark night, when suddenly I heard something coming out of the bushes nearby. Something big. Was it an alligator? A bear? Or maybe a Florida panther?

I dashed to the safety of my car, leaving my telescope behind to fend for itself. Not caring about my dark-adapted vision, I switched on my white-beam flashlight, searched the darkness for the creature, and --

And there it was, as big as day (or, in my case, as big as night) --

A cow.

It had probably strayed from the nearest farm -- and who knows how far away that was?

I went home that night thinking how fortunate I was to have survived a nocturnal encounter with Elsie, the Everglades cow.

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Upcoming Meetings/Activities. Our Jan. Joe Kurz observings will be held on **Fri.-Sat., Jan. 8th-9th**. (The site will be announced prior to the observing date.)

Our FRAC meeting and lunar & planetary observings for visitors will be on **Thurs., Jan. 14th** from 7-10 p.m. at The Garden in Griffin, with the meeting at 7:30 and observing before and afterward. The program will be the spectacular 1977 short documentary film *Powers of Ten*, written and directed by **Charles & Ray Eames** and narrated by **Philip Morrison**. If you've never seen it before, you owe it to yourself to correct that oversight. In 1998, the Library of Congress selected *Powers of Ten* to be preserved as "a culturally, historically and aesthetically significant film achievement."

The film is a visually stunning voyage that takes you through time and space to the farthest reaches of the universe, then back again to the innermost portion of a proton of a carbon atom within a DNA molecule in a white blood cell.

Since *Powers of Ten* is only 9 min. long, we'll also watch the original 1968 version, which is just 8 min. long and served as a prototype of the 1997 version. For two yrs., the 1968 film was featured in the Smithsonian Institution's "Life in the Universe" gallery in the National Air & Space Museum.

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Above: Earth (circled) as seen from Voyager in 1996 from four billion miles away. The late **Carl Sagan** wrote eloquently about that NASA photo:

"From this distant vantage point, the Earth might not seem of any particular interest. But for us, it's different. Consider again that dust. That's home. That's us. On it everyone you love, everyone you know, everyone you ever heard of, every human being who ever was, lived out their lives. The aggregate of our joy and suffering, thousands of confident religions, ideologies and economic doctrines, every hunter and forager, every hero and coward, every creator and destroyer of civilization, every king and every peasant, every young couple in love, every mother and father, hopeful child, inventor and explorer, every teacher of morals, every corrupt politician, every "superstar," every "supreme leader," every saint and sinner in the history of our species lived there – on a mote of dust suspended in a sunbeam."

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People You Should Know: Truman Boyle.

Truman personifies the term *success story* as it relates to FRAC. He joined the club in Jan., 2014, and just 14 months later he was elected club treasurer. But that's typical of Truman: he doesn't go into things half-heartedly. He's likeable and

outgoing, a willing worker who is always ready to help out in any way he can.

When **Dr. Schmude's** rigorous schedule no longer permitted him to conduct observings for overnight guests at The Rock Ranch, Truman stepped in to take his place. When **yr. editor** recently took his faulty laptop to a local computer repairman, he was told that it was beyond repair. Truman said, "Let me take a look at it, Bill" – and five minutes later it was working perfectly. And after Camera Bug owner **Tim Nix** died, Truman and **Dwight** helped Tim's sister organize and inventory the telescopes and astronomy accessories. It took several weeks for them to complete the task, which was done without pay and made more difficult by their having to work in the dark.

Truman also was a speaker at **GSV 2014**.

Beyond all that, Truman served as a collision investigator with the Ga. State Patrol for 32 years. He retired in 2013, but he hasn't slowed down: he is still a consultant for the GSP, teaching crash investigation methodology to police officers and state troopers. He and his wife **Denise** operate a Barnesville-based company, Collision Consulting and Analysis, in which he assists clients in civil cases involving personal injury or death in vehicle crashes.

Truman and Denise have been married for 33 years, and they have two children and two grandchildren. He is a deacon in the Barnesville First Baptist Church, and his leisure-time interests include photography, ham radio and astronomy.

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Calhoun's Corner: A Comet's Tale

by Aaron Calhoun

Imagine what it would be like being a comet.

You live in a place called the **Oort Cloud**, a vast sphere composed of trillions of other comets located almost halfway from the **Sun** to the next-nearest star. You have plenty of neighbors out there – but the neighborhood is so large, and so far away from everything else, that the Sun is just a bright speck and your nearest neighbor is about as far away as **Saturn** is from the Sun.

It's dark out here, and you're alone and cold. But the cold doesn't bother you because you're a "dirty snowball" composed of ice and dust. You don't know your name – and you may never have

one, most comets don't – but you know what you're doing out there: you're *waiting*. You just don't know what you're waiting for.

Suddenly, you feel a push. You don't know what's pushing you – it could be the radiation pressure from a passing star, or the **Milky Way's** tidal effect on the Oort Cloud – but none of that matters. What matters is that suddenly you're moving toward that tiny, bright speck in the sky.

Maybe, you think, this is what I've been waiting for!

Three million years later, you're still moving toward that speck, which has grown considerably in size, brightness and warmth. You're in the realm of the planets now, and their gravitational effects will change your life forever. (As if it hasn't already been changed!)

Eventually, people living on planet **Earth** notice you, and they give you a name and a nickname: your name is **Comet C/2013 US 10**, and your nickname **Catalina**. You were nicknamed after the group that discovered you in 2013, the Catalina Sky Survey.

When you reached your closest point to the Sun – 76 million miles – on Nov. 15th, you were traveling 104,000 mph. And that was fine with you: it was a very hot time. You sweated off a lot of weight.

Your original path to the Sun would have put you in a solar orbit that would bring you back every few million years, but the planets changed all that. Due to their gravitational tugs as you passed them, you're now on an "ejection trajectory," which means that you won't be back. Ever. You're destined to spend the rest of time as a lonely little snowball wandering around the vastness of space. So anybody who wants to see you needs to do it now. You'll move out of their view after January. It's now or never.

The closest you'll ever come to Earth will be 67 million miles on Jan. 17th. You'll be a fuzzy little 5th-magnitude ball of light in binoculars or a small telescope in the pre-dawn eastern sky until Jan. 7th. After that, you'll rise after midnight until the end of January, growing ever dimmer with each passing night.

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Lunar Questions and Answers

by Bill Warren

1. Where did the Moon get its name?

The word *moon* comes from the old Anglo-Saxon word moneth (which also gave us the word month.) The ancient Greeks called the Moon **Selene**; the Romans called it **Luna**, which is seen today in words like lunar and lunatic.

American Indians used the word moon to describe the length of time between one Full Moon and the next.

2. What are "the Old Moon in the New Moon's arms" and "the New Moon in the Old Moon's Arms?"

Lovers have always linked the Moon with romance. These phrases, which are seldom seen any more, describe the Moon's appearance in lovers' terms.

The Moon cannot be seen at all during New Moon. Two or three days after New Moon, however, the Moon reappears, low in the western sky, as a slender, sunlit crescent. The crescent is "the New Moon's arms;" the "Old Moon" is the rest of it.

Later, after Full Moon, the sunlit portion of the Moon grows smaller every day, until only a thin crescent Moon remains in the eastern sky – "the New Moon in the Old Moon's arms." This time, the crescent is "the Old Moon's arms."

If you go outside on a clear evening a few days before and after New Moon, you'll have no trouble identifying these two lunar features. (You don't need a telescope or binoculars, of course, and the information provided here will tell you which one you're looking at.) Both are included in the A. L.'s Lunar Program; just check them off the list, add the date, time and instrument used (naked eye, binoculars or a telescope), and you'll have an easy start toward earning a Lunar pin.

3. Why do we see the same side of the Moon all the time?

It's due to *gravity*. **Earth** and the Moon exert gravitational influence on each other. We can see the Moon's gravity at work in the rising and falling of the ocean tides as Earth's rotation turns them toward and away from the Moon.

While Earth's gravity is six times greater than the Moon's, its effects are far more subtle. The Moon is gradually being drawn closer to the Earth at the rate of 1-1/2 inches per year. But the most obvious influence of Earth's gravity is that, over the past 4.5 billion years, the Moon's rotation has

slowed to the point where it matches the speed at which it orbits the Earth. So the Moon rotates, but we always see the same side because it is rotating at the same speed that it revolves.

Still...although we see at most 50% of the lunar surface at any one time, it's not always the same 50%. Due to the Moon's elliptical orbit, it appears to wobble slightly east and west around its axis in a process called *libration*. This slow rocking back and forth in its orbit permits us to see about 59% of the lunar surface every month. The other 41% cannot be seen from Earth, but has been seen and photographed on lunar missions.

4. Why is the far side of the Moon so much more heavily cratered than the near side?

For reasons that are presently unknown, the Moon's outer layer, or crust, is thicker on the far side. One theory is that early in its existence the Moon had a little companion moonlet that nose-dived into the near side, thinning and weakening the crust on that side. As a result, volcanic activity was largely confined to the near side while the Moon was geologically active three billion years ago. So while the near side contains numerous lava plains (maria) that lend the surface a smooth appearance in many areas, the far side is littered with large and small craters that were not subsequently filled with lava from the Moon's once-fiery interior.

5. What can I do to reduce the Moon's brightness while observing it?

Orion Telescopes sells a Moon filter for \$19.99, but if you don't have one, there's a cheaper way of observing the Moon when its phase is large enough to create an uncomfortable glare: *wear sunglasses*. (Don't try it when observing the **Sun**, however: regular sunglasses offer NO protection for your eyes.)

Another way to observe the Moon without being bothered by its glare is to observe it through a thin layer of clouds, which will serve as a filter. It won't work under heavily overcast skies, of course, but if you can see the Moon through a veil of clouds your view will actually be better than an unfiltered view marred by glare.

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Observing Report: Felix Luciano

Hello, folks. Something I have not done in a while: enjoyed star-hopping and finding objects manually under a nice, cool evening sky.

Date: Nov. 27, 2015

Location: Jonesboro, Ga.

Time: 8:10-9:15 p.m.

Temperature: 55° F

Instruments: Orion XT8 Dob (1000 mm f.l.), 8x50 finderscope

Eyepieces: 16mm Nagler, 14mm & 8mm Radians

Cassiopeia, the Queen

***M103**. This "Christmas tree" open cluster is shaped by three bright stars, the northernmost of which shows a close companion. Fainter stars make up the tree's lights.

***Trumpler 1**, the "**Six of Dominoes**" cluster, as I like to call it. A faint patch of light in my 16mm eyepiece, but showed better definition in the 8mm. The western row of stars was brighter than the eastern row.

***NGC 659**. A large, irregular cluster with many bright members.

***NGC 654**, an open cluster sometimes referred to as the "**Horseshoe Cluster**." A small, faint patch of light with two very bright stars at the southern end, a semicircle of six stars above them forming the horseshoe, and a smaller, fainter group of stars at the center.

Andromeda, the Princess

***M31**. In my 14mm eyepiece, **Andromeda Galaxy** was a large, bright oval patch of light with a very bright core. The outer region was fainter, but bright nevertheless.

***M110**. This satellite galaxy on the northwest side of M31 was a roundish patch of light, larger and farther away from Andromeda Galaxy than **M32**, another satellite galaxy on the southeast side.

Perseus, the Hero (and slayer of Medusa)

I used my 8x50 finderscope with a 5° field of view to observe the following clusters:

***NGCs 869 & 884**. The **Double Cluster** was two small but distinct and bright patches of light in a rich star field.

***Melotte 20**, the **Alpha Persei Moving Group**. More than three dozen bright stars in a 3° area.

At this point, the **Moon** was rising above the treeline, making the sky too bright for me to continue observing.

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An Unbearable Interview with Prof. Stargazer

As everyone in FRAC knows, **Prof. Stargazer** is the world's greatest living authority on astronomy, astrophysics, cosmology and Dirty Scrabble. And as every law enforcement officer from here to Hoboken knows, the professor is as hard to find as a doctor who makes house calls.

When **yr. editor** and a group of newcomers to FRAC caught up with the kindly old gentleman recently, he was perched high in a towering oak tree. **Joel Cox** asked him what he was doing up there. He shouted down to us, "*Why don't you ask the bear on the other side of the tree?*"

Needless to say, our interview was conducted at a high rate of speed, with the bear in hot pursuit.

Bill Warren: What's the heaviest element in the universe?

Prof. Stargazer, laughing: Judging by the way you're huffing and puffing, Bill, I'd say it's poundcakeium.

Alison Rudzinski: How did you become a cosmologist, Professor?

Prof. Stargazer: I studied to become a hairdresser, but when I got my diploma they left out the "e-t" in cosmetologist. I guess that's what happens when you get your degree from a place called "Helen's Heavenly House of Hair."

Incidentally, Alison, my first job in astronomy was renovating and cleaning a 72-in. reflecting telescope at an observatory in Michigan. It ended two hours later when I was standing on a 16-ft. ladder and dropped my toolbox onto the mirror.

I was upset when they fired me, of course – but they were upset, too, when I sued them for the damage their mirror did to my toolbox.

Vicky Walters: I've always wondered, Sir: why is **Vega** such a bright star?

Prof. Stargazer: You could ask the same thing about **Kim Kardashian**.

Jeremy Milligan: During a meteor shower, where is the best place to observe *bolides*, or fireballs?

Prof. Stargazer: You need to find a dark observing site, Jeremy – preferably, one that is far away from city lights and the impact site.

Fred Rossi: Aside from sitting in a tree, Professor, what have you been doing lately?

Prof. Stargazer: I recently interviewed the lunar feature **The Woman On the Moon**. I asked her what, if anything, she would change about the Moon. She replied, "First, I'd make myself more attractive than that Wal-Mart weirdo that's supposed to be me. And second, I'd change the term astronomers use to describe the Moon's wobbling: I'd call it *women's libration*."

Ken Olson: Is it true that, due to the Coriolis effect, water swirls down drains counter-clockwise in the northern hemisphere and clockwise in the southern hemisphere?

Prof. Stargazer: No, that's just a myth.

Phyllis Bell: What's a myth?

Prof. Stargazer: As good as a mile.

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Below: IC 1396A, Elephant's Trunk Nebula in Cygnus. (Photo by **Felix Luciano**.) **IC 1396A** is a region of ionized gas within the larger emission nebula and open cluster **IC 1396**.



Located to the right of center in Felix's photo, the **Elephant's Trunk** is a dense, darkly elongated globule that is brightly outlined along its SE edge by the star at the center of the photo.

1396A is the site of some rather intense star formation: the brightest pair of stars in the globule are only 1-2 million years old; the others – including some that are still forming within the dense globule and therefore cannot be seen -- are less than 100,000 years old.