

THE FLINT RIVER OBSERVER

NEWSLETTER OF THE FLINT
RIVER ASTRONOMY CLUB

An Affiliate of the Astronomical League

Vol. 22, No. 1 **March, 2018**

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**; Treasurer, **Jeremy Milligan**.

Board of Directors: **Larry Higgins; Aaron Calhoun; and Alan Rutter**.

Facebook Coordinators: **Steven "Smitty" Smith & Laura Harness**; Alcor: **Carlos Flores**; Webmaster: **Tom Moore**; Program Coordinator/Newsletter Editor: **Bill Warren**; Observing Coordinator: **Sean Neckel**; NASA Contact: **Felix Luciano**.

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. Thurs., Mar. 8: FRAC meeting (7:30 p.m. at The Garden in Griffin; **Fri.-Sat., Mar. 16-17:** JKWMA observings (at dark).

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Vice President's Message. Our Feb. election meeting went pretty much as expected, aside from a last-minute sidetrack. (*See "Last Month's Meeting/Activities"*.) **Dwight Harness** and the **Six Dwarfs (Bill Warren, Carlos Flores, Jeremy Milligan,**

Larry Higgins, Aaron Calhoun and Alan Rutter) were re-elected to serve as your officers in 2018.

This will be Dwight's sixth year as president -- the longest uninterrupted term of office for any president in FRAC's history. He enters 2018 with 49 members on board; it's the 2nd-highest membership total the club has ever enjoyed, and a fitting tribute to his leadership skills.

Finally, Dwight and I want to give a huge "WELCOME TO FRAC!" to our newest members, **Chester & Rosie Ivey** of McDonough and **Alfred McClure** of Griffin. Rosie was unable to attend the Feb. meeting, but Chet and Alfred quickly proved to be exactly the kind of new members we enjoy getting: friendly, outgoing and eager to see what astronomy and FRAC have to offer them. Folks, we'll try very hard to ensure that you won't be disappointed.

-Bill Warren

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The stars in a globular cluster are 50 times closer to each other than the stars in our solar neighborhood...If you were flying through the core of a globular cluster...(you would see) nearly 1,000 stars brighter than the planet **Venus**...Their combined light would add up to roughly the light of the **Full Moon**.

-Brian Murphy

Astronomy (Mar. 2018), p. 44

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Last Month's Meeting/Activities. An eager crowd of about 40 residents at Sun City Peachtree in Griffin attended FRAC's indoor presentation at that site on Jan. 22nd. FRAC members attending the event included: **Dwight Harness; Cindy Barton; Eva Schmidler; Marla Smith; Chuck Davis; Tricia Lopez; Carlos Flores; and yr. editor**.

Three days later, five FRACsters – **Steve Benton; Dwight Harness; Truman Boyle; Felix Luciano; and yr. editor** – conducted an observing at Sun City Peachtree that was attended by about 35 residents.

On both occasions, the SCP attendees were highly interested in what we had to show and tell them, and we were impressed at the high quality of their questions. As they say, "A good time was had

by all.” (And thanks, **Steve Benton**, for all your work in arranging the events.)

In a flurry of last-minute ballot-box stuffing at the Feb. election, **Dwight Harness** and the rest of FRAC’s officers were re-elected unanimously to serve in 2018. Not wanting to be left out of the proceedings, **Dan Pillatzki** insisted on being elected as club dogcatcher, even though there is no such position and even if there were it would be a committee appointment, not an officer position. He was voted in unanimously anyway, though, because Dan’s elevator stops a few stories short of the penthouse and he would have demanded a recount and gone to the press with accusations of fraud if he had been voted down.

A p.s. to the above: Dan’s next move probably will be to ask FRAC to buy a dog for him to catch. (Sorry about the zingers, Dan, but yr. editor looks for laughs wherever he can find them.)

Leaving Dan aside (which is always a good idea) and returning to reality, **Tom Moore** couldn’t attend the Feb. meeting, so **Felix Luciano** stepped in and gave Tom’s website report:

Dwight: Tom isn’t here tonight, so --

Felix: I’ll say it for him: ”www.flintriver-astronomy.org!”

Our brief program consisted of the splendid little 1977 film *Powers of Ten*, after which **Erik Erikson** gave an equally brief and splendid report on a newly released book, *The Zoomable Universe* by **Caleb Scharf**. (See p. 3.) The program concluded with refreshments to celebrate FRAC’s birthday – and thanks, Dwight, for putting it all together.

Aside from those mentioned above, other meeting attendees included: **Chuck & Neila Davis; Elaine Stachowiak; Carlos Flores; Aaron Calhoun; Truman Boyle; Cindy Barton; Sean Neckel; Jeremy, Sarah, Emily & Delilah Milligan; Dawn Chappell; Steve Hollander; Larry Higgins;** and visitors **Alfred McClure** and **Chester Ivey**, both of whom joined FRAC that night.

After the meeting, several of the members assembled outside for a prolonged, impromptu look at the night sky. It was a fitting close to a very enjoyable evening for FRAC.

On Feb. 23rd, six FRACsters – **Truman Boyle, Elaine Stachowiak, Felix Luciano, Sean & Gianna Neckel** and **Dwight Harness** – conducted

an observing for about 25 visitors at High Falls State Park.

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This ‘n That. It won’t matter to **Larry Higgins**, but yr. editor committed a huge blunder by not acknowledging Larry’s presence at the March meeting (which, not coincidentally, was FRAC’s 21st birthday).

Whenever the subject of FRAC’s founding comes up, Larry is usually referred to as “one of the club’s three co-founders, along with **Ken Walburn** and **Bill Warren**.” But Larry is more than that. *Much* more.

Without Larry, there would have been no FRAC. It was Larry’s idea to form an astronomy club in the middle Ga. area between Atlanta and Macon. Ken and Bill, both of whom knew next to nothing about astronomy at the time, went along grudgingly.

Without Larry’s leadership and guidance during FRAC’s infancy, the club would have folded long ago. Even today, 21 yrs. later, his vision of what FRAC could become is what guides us.

Larry is one of those rare individuals who makes an immediate, positive impact on everyone he meets. To talk with him is to learn what astronomy is all about. Without trying to be, Larry is a naturally gifted leader with a magnetic personality that draws people to him like a bee to honey. It has been said many times before, but it bears repeating: *It’s impossible to talk with Larry on any subject in astronomy without learning things you didn’t already know.* Whether talking about astronomy or singing and playing a guitar, nobody does it better than Larry Higgins.

Unfortunately, health problems prevent Larry from participating in FRAC activities more often than occasionally. And that makes yr. editor’s oversight in not recognizing him for his massive contributions to FRAC on its 21st birthday even more unpardonable.

*A portion of **Dr. Richard Schmude’s** talk at our March meeting will be devoted to the 2018 **Mars** apparition. While we certainly do not intend to upstage that portion of Richard’s talk by revealing what he might say, it should be helpful to FRAC’s beginning astronomers to define a few of the terms he will be using:

Apparition. The appearance or reappearance of a comet or planet – in this case, Mars – that periodically enters and leaves our view.

Opposition. The point in a planet's solar orbit at which it is opposite the **Sun** as seen from Earth.

Perihelion. The point in a planet's orbit where it is as close to the Earth as it will get during that particular orbit.

*Discovering new asteroids has become rather commonplace nowadays. However, on Oct. 16, 2017 an asteroid was discovered that turned out to be the first object known to have entered our solar system from somewhere else in the **Milky Way**. The cigar-shaped rock, designated as **1I2017 U1**, came from the direction of **Vega** and measured ¼ mi. long x 150 yds. wide. It was visible for just 10 days before it rounded the **Sun** and headed off for parts unknown elsewhere in our galaxy.

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Upcoming Meetings/Activities. Our March FRAC meeting will be held at 7:30 p.m. at The Garden in Griffin. Our speaker, **Dr. Richard Schmude** of Gordon State College, will talk about “North and South Polar Hoods on Mars,” and he will give us information about the upcoming spectacular apparition of Mars in 2018.

Our club observings at Joe Kurz Wildlife Management Area (JKWMA) will be held on **Fri.-Sat., Mar. 16th-17th**. Since hunting season will be over by then, here are the guidelines for entering and leaving the facility between March and August; it's very important that you follow them. Failure to do so likely will result in FRAC being denied use of the facility in the future.

**If the gate is open or unlocked when you arrive, close it behind you but don't lock it when you enter.*

If the gate is locked, unlock it and close it behind you -- but don't lock it -- when you enter. (If you don't know the combination, call **Dwight at 770-227-9321.)*

When you leave, close the gate. If you're the last to leave, be sure to close and lock the combination lock **to the other lock before you drive away. (Do **not** lock the combination lock to the chain.)*

A final important point: *Due to state regulations that took effect last year, you will need to bring with you a current state fishing or hunting*

license. If you don't have one, you can buy one at Walmart. (Buy the fishing license. You'll need to pass a hunter safety course to buy a hunting license.)

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The Sky in March. As the month begins, **Venus** (mag. -3.8) and **Mercury** (mag. -1.3) will be 10° and 14°, respectively, above the W horizon 30 min. after sunset. They will be bright and easily visible without binoculars, with Venus (the lower of the two) nearly fully lit in binoculars and Mercury less so. They will be about a thumb-width apart on Mar. 5th; Venus will be up practically all month, and Mercury throughout the first half of March.

Another celestial phenomenon, *zodiacal light*, will be visible shortly after sunset on clear, moonless evenings between Mar. 3-18. It's a cool thing to see, and you should look for it if you get a chance.

If you look to the W where the **Sun** set earlier, you'll see a pyramid-shaped glow in the sky extending upward from the horizon. It's sunlight reflected off dust particles – debris from passing comets.

Debris that enters our atmosphere becomes meteors, but the rest of it is gathered along the ecliptic (i.e., the planets' orbital paths across the sky). Every March, the ecliptic dips toward the W horizon, revealing those dust particles as a cone of soft light if you're at JKWMA or anywhere else that is far from city lights on a moonless evening.

It's called zodiacal light because the ecliptic passes through the constellations of the zodiac. (You can also see the zodiacal light in Sept., when the ecliptic rises sharply from the E horizon.)

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Book Review by Bill Warren

THE ZOOMABLE UNIVERSE: An Epic Tour Through Cosmic Scale, From Almost Everything to Nearly Nothing, by **Caleb Scharf** (New York: Scientific American/Farrar, Straus & Giroux, 2017, available at amazon.com for \$16.95 +\$3.99 s&h).

From the first sentence of the preface through ten chapters encompassing 10⁶³ powers of ten to the last sentence of “Notes” (the author's personal p.s. to the text), you'll be blown away by everything that science writer **Caleb Scharf** has to say.

As you know, astronomy is an extremely complex science. But Scharf guides us through the farthest reaches of outer and inner space with such ease, simplicity and obvious love for his subject that one can only wonder how he did it. Like the short film *Powers of Ten* (which has nothing to do with the book but parallels visually what Scharf describes in greater length in words), every step along the way will leave you amazed at what you're reading and eager to find out what comes next. And like **Carl Sagan's** *Cosmos*, this book is a personal voyage through time and space, not an astronomy text that ties readers in verbal knots via terminology that only professional astronomers can understand. For example, here are a few topics that the author addresses:

*How long would it take you to walk across the universe? (See p. 3)

*How many humans have ever lived on Planet Earth? (See p. 4.)

*How much matter is there in the universe, including subatomic particles? (See p. 6. And as he points out, "This atomic and subatomic stuff is barely 16% of what we think is the total matter content of space. It's the part that our eyes and instruments can see.")

*The author writes briefly about the "multiverse" that may exist beyond our universe – but because it may *not* exist, he describes anything outside our universe as "not universe." (p. 7)

Those tidbits and many others are found in Ch. 1, "Almost Everything," which begins at 10^{27} meters away, i.e., 93 billion light-years or the diameter of the known universe.

If pressed to select the book's overriding theme, I'd say it would be the overwhelming emptiness of space on all levels from the distance between galaxy clusters, galaxies, stars and planets all the way down to the subatomic particle level. For example, in Ch. 2 he points out that, if you removed all the empty space between and inside the 200 billion stars in the **Milky Way**, you'd wind up with a single mass that would fit inside **Neptune's** orbit. And in Ch. 9 he notes that "Atoms are 99.999999999999% empty space (and) you could crush all 7+ billion humans into a single mass the size of a sugar cube simply by squeezing out all that empty atomic space." (He also points out elsewhere that that's what creates black holes and neutron stars: the compression of space caused by gravity

when a star goes supernova, collapses and squeezes out all of the space inside atoms at its core. That's why a neutron star that was hundreds of millions of mi. in diameter can shrink to the size of a small city.)

Finally, I would be remiss if I didn't point out the remarkable artwork of **Ron Miller**: it's so realistic that at first I wondered why the author didn't cite the photographers, until I realized that they weren't photos. Miller's 100+ paintings underscore and add considerably to the book's remarkable appeal.

Admittedly, this has been a long review – but astronomy aside, *THE ZOOMABLE UNIVERSE* is one of the best books I've ever read! If I thought otherwise, I wouldn't have devoted so much newsletter space to singing its praises.

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Mystery and Fright in the Night article by **Bill Warren**

Everyone who goes out regularly to observe the night sky has moments that are mystifying, beyond explanation or just downright creepy. Here are five occasions that left observers shaking their heads, or just shaking:

1. **Larry Higgins** used to observe in his backyard on every clear evening. On one occasion he noticed a small, hazy, circular glow in the northern sky. It was too small to be a cloud, and although it was bright its glow was too large and diffuse to be a star or a planet, both of which are seen as points of light. And it wasn't an airplane, because they have blinking lights. The object was stationary, and Larry's 20x80 binoculars showed that it wasn't a hot-air balloon or weather balloon. It was just a hazy, indistinct *something* that wasn't supposed to be there. After studying it for 15 min. or more Larry called me to say that he might have discovered a new comet.

I stayed on the phone with him – this was back when my hearing wasn't quite as bad as it is now – grabbed my binoculars, went outside and quickly found it. The object was a gray, round patch of nebulosity brighter than anything else in the moonless sky. Except for the absence of a nucleus or a tail, it looked exactly like a comet. I told Larry that we should report the sighting to the

International Astronomical Union and suggest that they call it **Comet Warren-Higgins**; he preferred it the other way around. (Neither of us knew what it was, but we knew it wasn't a comet. Naked-eye comets linger in the night sky for weeks or months; they don't show up suddenly one night when they weren't there the previous evening.)

So what was it?

We eventually learned that it was the outgassing of a NASA rocket that had been launched that day.

2. Then there was the night at JKWMA that **Felix Luciano** and **Dwight Harness** saw a light acting very strangely in the SE and S sky. After watching it for 10 min. or more, they called everyone else over and we watched it for another 15-20 min.

In binoculars and telescopes, the light appeared stellar. But stars move in unison as the Earth rotates. Sometimes this object remained stationary, and at other times it moved up or down, or to the left or right, or else it reversed direction. Finally, after 25-30 min. of such random course changes, it just blinked off and never reappeared.

Discussing the enigmatic sighting, we ran through the usual list of suspects – stars, planets, aircrafts, weather balloons, flocks of birds, automobile headlights reflecting off low-lying clouds – and we added a few of our own, including nocturnal helicopter training flights and balloonists flying at night. We discarded all of those explanations for one reason or another, leaving us with the question: *What did we just see?* It wasn't an optical illusion, and we certainly weren't making it up.

We were (and are) reluctant to call it an unidentified flying object lest we be lumped with the uninformed masses who see a UFO every time **Venus** appears in the sky. But to this day, none of us has any idea what that mysterious object might have been, so we simply think of it as an unexplained event.

3. Did I say that sometimes observings can be creepy? At both Cox Field (our previous club observing site) and JKWMA, members have thrilled to the sing-song howling of coyotes on their nightly hunts. But that doesn't compare to A. L. Outreach Coordinator **Maynard Pittendreigh's** adventure in the wilds of south Florida.

Maynard had gone to a remote site that was far from the beaten path on a dirt road off the Tamiami Trail, forty miles from nowhere. He set up his telescope to enjoy the dark, pristine skies. After about half an hour of observing he heard loud crashing sounds in the brush about 50 yds. away. His first thought was: *Bear!*

The crashing sounds grew louder as the animal gradually came closer...and closer...until finally Maynard leaped into his car and locked the door, leaving his telescope to fend for itself.

Fortunately, he had his flashlight with him. He switched to white-beam light and shone it in the direction the sounds were coming from – and saw a cow ambling out of the underbrush. It looked at the light briefly, then continued on its way to wherever stray cows go in the Everglades at night.

4. I was in my outdoor office one afternoon, working on an article for the newsletter. I was writing a sentence that eventually would read, "*You won't have anything to worry about unless an asteroid suddenly appears that will explode and destroy all life on Earth,*" when I looked up and saw a smoky white plume carving a rapid path across the blue sky. It was a jet contrail, of course – but for a scary second or two I thought that what I was writing was about to come true.

5. Our newer members may not have heard this story before. Here's how I described the incident in the July, 1997 issue of the *Observer*. I called it "The Case of the Lonely Observer":

"Sure is lonely out here.

"It's May 30th, and I'm waiting at the entrance to Cox Field in case anyone shows up for tonight's observing. The weather hasn't cooperated today: as late as 9:00 p.m. the sky was overcast and threatening to rain, but now, at 9:30, it's crystal clear. I brought along my 3-1/2" refractor, and to pass the time I'm looking at double stars and Messiers.

"It's getting dark now, the sky a gray shroud with diamonds scattered across it. Observing **M13, the Great Cluster** in *Hercules*, reminds me of how far I've come in four years.

"As a beginning stargazer, my observing technique was like **Chevy Chase's** sightseeing in the movie *National Lampoon's Vacation*: find something worth seeing, take a quick peek at it, and

hurry on to something else. In those early days, I pretty much took it for granted that all dim objects in the sky look alike.

“In my little refractor, M13 was a fairly bright, raggedy-edged ball of light with no individual stars resolved. What I didn’t understand back then was that a vast difference exists between looking at something in the sky and actually *seeing* it. I blamed my difficulties in observing deep-sky objects on my small telescope, not on my unwillingness to stay with them long enough to see everything that careful observing might reveal.

“I’d always heard that, like the telescope itself (but unlike photographic film), the human eye gathers but doesn’t store light. So I didn’t believe **Larry Higgins** when he said that *The longer you look at an object, the more you see of it*. Well, I was wrong and he was right, and I wasted a lot of valuable observing time by giving up on faint fuzzies if they were not instantly clear to me. My 3-1/2” refractor started resolving globular clusters like M13 when I started giving them the attention they deserve, staying with them and using different eyepieces to find out which one gave me the best view.

“Still...It’s a quarter to eleven now, and the only sign of life I’ve seen out here is Mr. Cox’s dog. Came up out of the darkness a few minutes ago and nosed me in the behind while I was leaning over the eyepiece. Didn’t scare *me*, though. In the dark, you’d think it was grass stains on my pants.

“It’s a good thing I had a set of jumper cables in the car, or I’d never have gotten my heart started again. A little Tide should clear up the other problem.

“(Note: No one else showed up, so I had the entire night sky all to myself on the evening of the 30th. I spent half an hour with an old friend, the little globular cluster **M80** in *Scorpius*, and never resolved any of its stars. But this time, at least, it wasn’t because I was in too big a hurry to see what I was looking at.”)

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Upper Right Corner: NGC 7793, a spiral galaxy in *Sculptor*. (Photo by **Alan Pryor**, who long-distance imaged it via a 17-in. telescope in Australia.) **NGC 7793** is a member of the **Sculptor Galaxy Group**, which also contains the

magnificent spiral galaxy **NGC 257 (Sculptor Galaxy)**.



NGC 7793 was discovered in 1826 by the Scottish astronomer **James Dunlop**. The little galaxy is ¼ the size of the **Milky Way**, and one of its spiral arms contains a *microquasar* – a black hole that is drawing material from a small nearby star. (This is a rarity because most quasars are larger and found at galaxies’ centers, not on their spiral arms.)

On Mar. 25, 2008, supernova **SN 2008bk** was discovered in NGC 7793. It was the 2nd-brightest supernova discovered that year.

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Errata. In yr. editor’s recent “Multiverse” Special Edition of the *Observer* (Feb., 2018), he wrote that subatomic particles such as protons, neutrons and others “are thought to be composed of yet smaller theoretical particles called *quarks*, which in turn are thought to be composed of even smaller particles called *strings*.” That statement is true if you take out the first thought to be and theoretical. As **Erik Erikson** correctly points out, two kinds of quarks have been discovered, one in 1977 and the other in 1994. The latter, called the *top quark*, was considered theoretical until its discovery, which scientists verified with a statistical probability of less than one chance in 500,000 that its presence could be explained by background noise. So while quarks are known to exist, strings still presently exist only in theory.

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