

THE FLINT RIVER OBSERVER

NEWSLETTER OF THE FLINT
RIVER ASTRONOMY CLUB

An Affiliate of the Astronomical League

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Officers: President, **Sean Neckel**; Vice President, **Bill Warren**; Secretary, **Aaron Calhoun**; Board of Directors: **Larry Higgins**; **Cindy Barton**; and **Felix Luciano**.

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Club Calendar. Fri.-Sat., April 5-6: JKWMA observings (at dark); **Thurs., April 11:** FRAC meeting (7:30 p.m., The Garden in Griffin); **Fri., April 12:** Lake Horton public observing (7:30 p.m., rainout date **Sat., April 13**, same time).

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Vice President's Message. Spring has finally sprung. Birds are singing in the trees, and green colors are beginning to replace the brown-and-gray landscape of winter.

That same sense of rebirth was evidenced in FRAC with the election of **Sean Neckel** as president at our Feb. meeting. Sean is the 7th person to lead FRAC; he was an excellent choice to replace outgoing president **Dwight Harness**, who served admirably for six years.

One of Sean's goals is to increase attendance at our observings. This month we're focusing on public observings. If you aren't already a regular participant, I hope you'll read closely the article by

Sean, **Felix Luciano** and me. Regardless of your experience level or equipment, there is much you can do at those events to spread the word about astronomy and FRAC. If you give it a try you'll find out, as many of our members have, that nothing you'll ever do in astronomy is more satisfying and fulfilling than participating in public outreach.

-**Bill Warren**

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Last Month's Meeting/Activities. Our March JKWMA observings were clouded out.

Nineteen members – **Sean & Gianna Neckel**; **Dwight Harness**; **Truman Boyle**; **Dawn Chappell & David Clay**; **Carlos Flores**; **Dennis Nelson**; **Erik Erikson**; **Ken & Marjorie Olson**; **Mark Grizzaffi**; **Joseph Auriemma**; **Felix Luciano**; **Steve Benton**; **Marla Smith**; **Steve Hollander**; **Aaron Calhoun**; **Alan Pryor**; and visitor **Keith Blackmon** --attended our March meeting.

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This 'n That. In the April, 2019 issue of *Astronomy*, the photo of Apollo 9 astronaut **Jim McDivitt** on p. 34 looks very much like FRAC founder **Larry Higgins**.

***From our "Things You Don't Need to Know But We'll Tell You Anyway" Dept.:** 1. *What is the brightest known source of light in the universe?* (Ans.: The galaxy **W2246** has the highest energy output of any known galaxy, emitting light equivalent to 350 trillion **Suns**. [We can't see that light because the galaxy lies far beyond the reach of our telescopes, i.e., 12.4 billion light-years away.]

2. *How much light have all the stars and galaxies emitted in the entire history of the universe?* (Ans.: Four thousand octillion octillion octillion – that's a 4 with 84 zeros after it, each one representing 10 times the previous total – photons of light have been emitted since the first stars and galaxies appeared. [Photons are the basic units of light, the way that atoms are the basic units of matter.]

*Judging by its name alone, you'd think that the constellation *Camelopardalis* represents an animal that is part camel and part leopard. But that's not

what it is. It's a *giraffe*. The brightest stars in this faint northern circumpolar constellation do in fact resemble the stilt-like legs, body and long neck of a giraffe.

Camelopardalis – a northern constellation that contains only four stars as bright as mag. 4.5 – can be difficult to recognize except under dark, clear skies. It first appeared in a star atlas produced by the Danish astrocartographer **Petrus Kaerius** in 1613.

The most noteworthy deep-sky object in Camelopardalis is **Kemble's Cascade**, a lovely 2-1/2°-long stream of thirteen 7th- to 9th-mag. stars. The asterism was identified by the Canadian amateur astronomer **Father Lucien Kemble**. The Cascade is best observed in binoculars or rich-field telescopes, but the beautiful little compact open cluster **NGC 1502** at the SE end of the cascade is best viewed in a 3-in. telescope or larger. It resolves nicely into two dozen or more closely-packed stars at high magnification.

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Upcoming Meetings/Activities. Our club observings at Joe Kurz Wildlife Management Area will be on **Fri.-Sat., April 5th-6th**.

Our club meeting will be held at The Garden in Griffin at 7:30 p.m. on **Thurs., April 11th**. Our program will be **Alex Filippenko's** "Black Holes: Abandon Hope, All Ye Who Enter Here."

We'll return to Lake Horton for a public observing on **Fri., April 12th**. (Rainout date: Sat., Apr. 12th.) The event will begin at 7:30 p.m., and a large crowd is anticipated. Please join us if you can, we'll need all the help we can get.

To get to Lake Horton from, say, Griffin, go 10.6 mi. toward Fayetteville on Ga. 92 from the stoplight at U. S. 19/41 and turn left at Woolsey Rd. (It's just past a gas station on the right.) Go 0.7 mi., and turn left at the stop sign at Antioch Rd. Go 0.4 mi., and continue straight toward Lake Horton at the stop sign where the main road curves to the right.

The park entrance is 1.0 mi. ahead. After passing through the gates, turn right at the black asphalt road about 50-100 yds. beyond the entrance. That winding road through the woods leads to a large parking lot; that's where we'll meet. We'll set up our 'scopes on the grassy hill between the

parking lot and the main road, then drive our cars back to the parking lot.

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Finally, we shall place the **Sun** himself at the center of the universe. All this is suggested by the systematic procession of events and the harmony of the whole Universe, if only we face the facts, as they say, "with both eyes open."

-Nicolas Copernicus, 1543

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The Planets in April. Although five planets – **Mercury, Venus & Neptune** in the E, **Saturn** in the SE and **Jupiter** in the S – are visible in the pre-dawn April sky, the only one available for evening viewing is mag. 1.5 **Mars** in the W Sky.

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How to Be a Dyne-O-Mite Participant at FRAC's Public Observings

by **Bill Warren, Sean Neckel & Felix Luciano**

***Introduction.** You don't need to be an experienced astronomer or observer to be a super salesman for astronomy, FRAC and the night sky. (For that matter, you don't need a telescope, or even binoculars. There are many fascinating naked-eye objects in the night sky that you can show and tell our visitors about. We can show you where they are and tell you what to say about them.) All you need is the desire to let people know what an incredible universe we live in. This article will tell you how to do it, and why you should be a part of our FRAC outreach team.*

-Bill, Sean & Felix

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Bill

Over the years, many FRAC members have been extremely effective at showing the night sky to visitors at our public observings; **Felix Luciano** and **Sean Neckel** are two of the best. You could find out why they are so effective by watching them in action, but I can tell you the secret of their success in two words: *excitement* and *confidence*.

Excitement. Listen to Sean or Felix talking about something – *anything* -- in the night sky, and they'll have you believing that your life won't be worthwhile until you've seen what they're going to show you. They know that you're going to see something you've never seen before (and probably never will see again), and they can't wait to show it to you. They want you to feel the same excitement they felt the first time they saw it.

Confidence. Sean and Felix are confident because they're *prepared*. They know what they are going to say about a given object before they show it to their visitors. (And you will, too. See below.) Even if you've never participated in a public observing before, your performance will improve that evening through repetition, as long as you stick to just one or two interesting facts about what you're showing your visitors and leave it at that. You'll continue to improve as you participate in other outreach evenings.

Re the previous paragraph:

1. If you don't know what to say about a given object, we'll tell you. It won't be more than one or two things, though, because visitors won't understand anything more complex than that. Our task is to tell them in a sentence or two what they'll be seeing and why it's important.

2. Even if you wanted to talk at length about an object or topic, though, you shouldn't do it. There are too many other people waiting in line, not just at your station but all the others as well. You can't spend more than a minute or two with each person, or the observing lines will stall like traffic behind a wreck on I-75.

Give Your Listeners a K. I. S. S. Okay, you already know (or will be told) what to say about what you'll be showing. But there are even more basic reasons for being confident.

First, you're part of FRAC's outreach team, and everyone on that team wants you to be successful and have a good time. We'll support you, give you whatever help you need and answer any questions you might have.

Second, you need to be aware that, even if you joined FRAC yesterday, *You know more about astronomy than the people you'll be talking with.* To them, you're part of an astronomy club, and that

makes you an expert astronomer. And you will be, too, as long as you remember the K. I. S. S. Principle: *Keep It Simple, Stupid.* Stick to the basics, and no one will know or care how much or how little you know beyond what you tell them.

As **Larry Higgins** has often said, "Public observings aren't about us, they are about the night sky and what we show people and tell them about it."

Problem Questions and Problem Visitors.

What happens if someone asks a question that you can't answer? As noted earlier, the people who attend our observings consider you an expert. But if someone asks you a question you can't answer, just say *I don't know* – *but if you ask our other members when you visit their telescopes, maybe one of them knows.* (And maybe they won't know the answer, either. But no one can reasonably expect us to know everything there is to know about astronomy. We don't need to apologize for what we don't know.)

We seldom have problems with our guests. The vast majority of visitors you'll ever encounter simply want to see fascinating things in the night sky. They aren't interested in starting arguments or showing everyone that they know more about astronomy than we do.

Since such problems normally arise only when conversations stray into controversial subjects, the best policy is to avoid talking about politics, religion or other opinion-based topics. That's not what we're there to talk about, and it's not what we do best.

The way **Dwight Harness** handles such problems is to tell the visitor, "We don't have time to talk about that now. But if you'll see me after we're done, we can discuss it then." By then, they usually have forgotten about it. (If they haven't, you should listen but not disagree with what they have to say. You aren't going to win an argument with someone who believes that there are extraterrestrial aliens walking among us.

The only time we correct visitors is when they refer to astronomy as "astrology.")

Under normal circumstances, the only problem we're likely to have with visitors is children running around and playing in the dark near our telescopes.

If that happens, don't try to handle it yourself. Report it immediately to whoever is in charge of the observing.

FRAC members participate in outreach for various reasons. For some, it's the opportunity to spread the word about astronomy and FRAC. Others want to enjoy an evening under the stars showing people what the night sky has to offer. For me, it's those things and the thrill of hearing a child say, "Hey, Dad, c'mere! You've gotta see this!" Sean calls it the "WOW!" factor.

When I can inspire someone, whether a child or an adult, to see the universe in exciting ways they've never seen it before, I know that, for a brief moment in time in my little corner of the world, I've made it a better place. And for me, at least, that's a natural high that no drug could ever produce.

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Sean: Observing Tips

Before the Observing:

*Have a plan. Know what is high in the sky (for best viewing) on that night that will be interesting for first-time observers. Make a list of bright objects that will give people that "WOW!" moment – things like Saturn, Andromeda Galaxy, the Hercules Cluster, Orion Nebula, Albireo, etc. (We'll do this for beginners.)

*Research a few basic facts about what you plan to observe, so you can talk about them. (Wikipedia is a great source for this, but so are we. We'll do it for you if you want us to.)

During the Observing:

*Early in the evening when the group is large, focus on just one of those "WOW!" objects, using a low power eyepiece rather than switching to higher magnifications. (If you don't have a GoTo telescope that finds things for you electronically, select an object that is easy to find.) Be ready to repeat your brief comments about it many times, directing them not just to the viewer but also to the next half-dozen guests in line.

Once the crowd has thinned out later in the evening, the guests who remain will be the ones who are interested in seeing other objects under different magnifications.

*When someone is at your scope, point out a couple of interesting things in what they are seeing – the moons of Jupiter or Saturn's moon Titan, etc. If you have a phone app like *Sky Guide* that will show their locations, have the picture ready when you're showing them.

If you're going to use your phone, apply the red filter to the screen to preserve your night vision. (It is usually in the phone's settings.)

*If you are showing a faint object, explain how to see it by using averted vision. ("Don't look straight at it, look about half an inch away from it. You'll see it better that way.")

*If you're using a GoTo scope, perfect alignment is not required if you know how to find the familiar WOW! objects. Align the scope for GoTo tracking before dark on something easy like a bright star, a planet, etc. (Guests are not going to want to wait while you align your scope after the observing has begun.) If you need to refine your alignment later, do it when there is less of a crowd at your scope.

If you're using a Dobsonian reflector (or any other telescope that doesn't track objects across the sky), re-center the object in your field of view after each person visits your scope. They won't see what you're showing them if it has drifted out of view.

*Have your red-beam flashlight and laser pointer ready. The red light is useful when someone can't see where the eyepiece is located in the dark; the laser pointer helps when someone asks where the object is in the sky.

Don't let children use your laser pointer. They think it's a toy, not a tool, and they may point it at someone's eyes.

Questions. Here are some commonly asked questions (and their answers):

**How far away is it?* (If you don't know, be vague. The Moon is 240,000 mi. away, but everything else in the solar system is "millions of

miles away.” If you’re showing a star, tell them it’s “light-years away.” If you’re showing anything else except a galaxy, it’s “thousands of light-years away.” And if it’s a galaxy, it’s “millions of light-years away.” Those statements aren’t entirely accurate, but they’ll do. You don’t need to be more specific than that.)

**Why doesn’t it look like the pictures on the internet? (Photographs collect and store light and color. Our eyes can’t do that.)*

**Why do you use a red flashlight? (White light causes us to lose our ability to see in the dark, but red light doesn’t affect our night vision.)*

**What (star/constellation/planet) is that? (If you don’t know, tell them “Ask me later and we’ll find out.” If they ask me later, I’ll look it up on *Sky Guide* or ask another member.)*

**How do you know how to find the things you’re showing us? (This one is easy: I always say that I learn by studying, then I recommend the *Sky Guide* phone app.)*

**How much did your telescope cost? (This one is tricky. When someone asks, I always answer honestly. But since I’ve invested a lot in my scope, I always follow up with an example of a less expensive purchase – say my daughter’s telescope, one of my smaller scopes, or binoculars. Outreach is a great opportunity to get astronomy in front of people, but you don’t want your guests thinking that they have to be well-off financially to be an astronomer.)*

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Felix: Observing Tips

1. If you’re using a telescope, it helps to have a two-step ladder so the smaller kids can see through the eyepiece. (You can buy one at WalMart for a few bucks.)

Since some adults may object to a stranger touching their children, I ask parents to hold onto their kids until they are back on firm ground.

2. Unless you’ve been in astronomy as long as some of us have, it’s easy to forget that the people

we talk to know very little about astronomy or the sky. So whatever I’m talking about, I try to keep it simple and easy, and to avoid complicated topics.

Here’s an example: If I mention that a star is variable, I have to tell them what a variable star is. If I do that, they’ll ask why it changes in brightness. Even if I had time to explain it to them – which I don’t – they wouldn’t understand what I’m saying. It’s easier to avoid the subject by showing them something that’s easier to talk about – say, a colorful double star like Albireo or Gamma Andromeda. All you need to tell them is that it looks like one star when you look up at it, but in a telescope you’ll see that it’s actually two stars. Then ask them what colors they see.

3. Bill and Sean talked about showing our visitors things in the sky. But there are two times when you can’t (or shouldn’t) show them things. One is when the sky is cloudy and we’re waiting for it to clear up. The other is when people arrive early and come over to talk to us and see what we have to show them. We don’t like to show things before the observing starts because they’ll already have seen it when we line them up at our telescopes later.

(Actually, there is a third reason why you might not be able to show visitors objects in your telescope, namely, if you don’t own one. But that shouldn’t stop you from participating in our public observings. You don’t have to be in our line of telescopes, just walk around and talk to visitors waiting in line. As you’ll see below, there are several important topics you can talk with our visitors about that don’t require a telescope or binoculars.)

Here are some of the things you can talk about when it’s cloudy, before the observing begins, or if you don’t have a telescope. (Which one you choose is entirely up to you.) You can:

**Talk about FRAC. Tell them things like what we do and where we hold our meetings and club observings. (They can find directions on our website at www.flintriverastronomy.org.) Our club dues are \$15 a year, but visitors can attend free and they don’t need a telescope to attend an observing (although they can bring it if they have one).*

*Show them your telescope and explain how starlight enters the tube and travels through it to reach the eyepiece and then our eye.

*If the sky is clear shortly after sundown but the observing hasn't started yet, you can tell them how to determine where north, south, east and west are. I like to start in the east, but since the Sun sets in the west you can use that just as well. (Tell them to spread their arms to the sides and point toward the setting Sun with their left hand. That's west, so their other hand is pointing east. North is straight ahead of them, and south is behind them.)

Of course, you could do the same thing using the North Star (Polaris) to orient them to the other directions. If you do that, you'll need to show them how to find Polaris, using your laser pointer and two stars in the bowl of the Big Dipper.

*Tell them how the Sun, Moon, planets and stars move across the sky from east to west. Then ask them why they move that way. (The answer, of course, is that they aren't moving at all, but Earth's rotation from west to east makes it look like they are.)

*Talk about interesting things in the sky that are up now, or tell them about the kinds of things we see in our telescopes – the Sun, Moon, planets, comets, star clusters, nebulae and galaxies.

I enjoy outreach events for the simple reason that we are able to share and show folks things that professional astronomers study from their mountaintop observatories, but that we also see and study with our much simpler instruments.

The night sky is open every clear evening. It's the very same night sky that has been studied by many civilizations the world over for thousands of years. It belongs to all of us, we just need to go out and direct our eyes toward the skies. There are many wonders we can show and share with the public, and provide information at some basic level about what they see in the eyepiece.

At the end of an outreach event, it's exciting to think that, of the kids who stopped by my telescope, the one who had so many questions might be the next **Einstein** in the making. If that happens, it's because you and I took the time and effort to show them how exciting looking at the sky really is.



Above: A. L. Outreach pin, awarded to FRAC members who attend five public outreach activities.

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Above: NGC 247, a spiral galaxy in *Cetus*. (Photo by Alan Pryor.) NGC 247 appears in two A. L. observing programs: Caldwell (it's #2, or C2, on Sir Patrick Caldwell-Moore's list of 110 deep-sky objects that do not appear on the Messier list but rival them in beauty or interest), and Herschel 400. Re his photo Alan writes: "NGC 247 has an unusual dark void on one side of it. At first I thought I had made a mistake when imaging it, but the void is real. And if you look closely, you can see at least 4 small galaxies in the background." (*Editor's Note: You won't see the dark void as such in your telescopic view because the spiral arm is too faint to outline it – and you won't see the other galaxies because they're too faint.*)

Alan also notes that "Although located in the constellation *Cetus*, NGC 247 is part of the **Sculptor Galaxy Group**, which is one of the closest galaxy groups to the Milky Way."

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