

THE FLINT RIVER OBSERVER

NEWSLETTER OF THE FLINT RIVER ASTRONOMY CLUB

An Affiliate of the Astronomical League

Vol. 14, No. 12 February, 2011

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

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

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

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Club Calendar. Fri.-Sat., Feb. 4-5: Cox Field observing (at dark); **Thurs., Feb. 10:** FRAC meeting: 7:30 p.m., Rm. 305 of the Flint Bldg. on the UGa-Griffin campus.

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President's Message. In reading through an early draft of this month's *Observer*, I noticed that – *horror!* – there was nothing funny in it. And that, to

me, is an unpardonable offense. I'd rather have a kidney stone removed with a Roto-Rooter than put out a newsletter that reads like the phone book.

While humor isn't the reason for the newsletter, it's an important part of who we are in FRAC and why we enjoy each other's company so much. Our club has been blessed with individuals who are both funny and fun to be around. Humor defines us, and I'm always on the lookout for ways that the *Observer* can reflect that collective personality.

So it decidedly *wasn't* funny when I couldn't find a gut-buster, or even a chuckle, in this issue.

Enter **Larry Higgins.**

Larry recently sent me an article, "50 Cloudy Nights Signatures," compiled from that website's contributors by **Terrance D. Hannon.** The "signatures" refers to phrases that some contributors have included below their names. Not all of them are funny – but they *are* thought-provoking. Here are some of the 50, followed by two from me and five from FRAC's favorite philosopher, **Prof. Stargazer:**

#3: "Aperture will get you through times of no money better than money will get you through times of no aperture."

#5: "Time spent looking at the stars is added to your life."

#10: "Stimulating the economy, one piece of equipment at a time."

#12: "My equipment philosophy: If it ain't broke, fix it anyway."

#13: "Astrology is science for ignorant people. Astronomy is for people who feel ignorant."

#15: "Sometimes I think we're alone in the universe, and sometimes I think we're not. In either case, the idea is quite staggering." (That one is from the science fiction writer **Arthur C Clarke.**)

#16: "A Bad Night With a Telescope Beats a Good Night Doing Anything Else."

#19: "Gravity: It's not just a good idea, it's the law!"

#23: "The heavens declare the glory of God, and the firmament sheweth his handiwork." (Psalms 19:1.)

#26 (And this one, along with the one above, has always been my favorite astronomy quote): "Though my soul shall set in darkness, it will rise in perfect

light; I have loved the stars too fondly to be fearful of the night.” (From an 1868 poem, “The Old Astronomer to His Pupil,” by **Sarah Williams**.)

#27: “When You Wish Upon a Star, Your Dreams Come True – unless, of course, the ‘star’ is actually a rogue asteroid on a collision course with Earth, and will soon destroy us, the planet and all life as we know it.”

#31: “I’ll admit, I’m addicted to telescopes, but I’m getting help. Every time I look at the heavens, it helps.”

#35: “If you keep stacks of old Orion catalogs in your bathroom, you’re definitely an astro-redneck.”

#41: “Weather forecast for tonight: dark. Continued dark overnight, with widely scattered light by morning.”

#42: “A light-polluted sky is still better than what’s on TV.”

#43: “Some people have skeletons in their closets. I have telescopes.”

#45: “So many galaxies, so little time!”
And finally,

#48: “Man is still the best computer that we can put aboard a spacecraft – and the only one that can be mass produced with unskilled labor.” (From rocket pioneer **Wernher von Braun**.)

From me:

*”The difference between seeing and observing is involvement.”

*”Small minds discuss people. Average minds discuss events. Great minds discuss astronomy.”

And from Prof. Stargazer:

*”If **Galileo** were alive today, he’d roll over in his grave at the light pollution we’ve created on our planet. From space, the Earth must look like an electronic pinball game at night.”

*(With apologies to the poetess and wit **Dorothy Parker**): “Men seldom make passes/At girls with field glasses.”

*”You want dark skies at Cox Field? Drop something tiny but important in the grass.”

*”You don’t have to be rich to enjoy astronomy. All you need is a credit card that’s not maxxed out.”

*”The difference between a philanderer and a philanthropist is what’s being given away.”

-**Bill Warren (and Prof. Stargazer)**

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Last Month’s Meeting/Activities. The brutally cold weather that shut down schools and cost the state millions of dollars just to keep the roads open played havoc with our FRAC activities in January.

Just five members braved the cold to visit Cox Field on Jan. 7th-8th: **Rick Staylor** (Fri. night), **Larry Higgins** and **Dwight Harness** (Sat. night) and **yr. editor** (both nights).

The weather was so bad that, for the first and only time in FRAC’s history, we had to postpone our club meeting, from Jan. 13th to the following Thursday. (As it turned out, the temps were low but the roads generally were passable by the 13th. Since UGa-Griffin was closed from Mon.-Wed. of that week, though, we had no way of knowing in advance whether the campus would be open and a room available on our meeting date. Rather than risk members’ driving potentially hazardous roads just to find out that we had nowhere to meet, we decided to postpone the meeting for a week until the area had time to thaw out a bit.

(As **Charles Turner** sagely observed at our Jan. meeting, “Whatever happened to global warming?”)

Fifteen members – **Steve & Betty Bentley, Brianna & Erin Mills, Sam Harrell & Robert Wix, Tom Moore, Erik Erikson, Charles Turner, Steve Knight, Dwight & Laura Harness, Larry Higgins, Dr. Richard Schmude** and **yr. editor** – enjoyed the wonderful dvd “Seeing in the Dark” at our Feb. meeting on the 20th. Based on the best-selling book of the same title by **Timothy Ferris**, it’s a feature-length movie about stargazers, what they do and how they do it. (You can go to amazon.com and buy a dvd for \$12.32, a Blu-ray for \$14.85, or a paperback for \$0.01 [+ \$3.99 in shipping in all cases]. Incidentally, the subtitle of the book is *How Amateur Astronomers Are Discovering the Wonders of the Universe*. And while we’re at it: the book is even better than the movie!)

Also at the meeting, Dr. Schmude was selling and autographing copies of his new book, *COMETS and How to Observe Them*. **Betty Bentley** prepared brownies, peanut butter cookies and carrot cake, thereby ensuring that everyone present went home at least two pounds heavier than when they arrived. As **Andy Griffith** would have put it, it was **GOOOOooooooooOOD!**

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This ‘n That. Our heartfelt condolences to **Carlos Flores** regarding the untimely demise of his daughter **Debbie**, a Las Vegas resident and performer in the “Fantasy” show at the Luxor Hotel and Casino. We cannot fathom the depths of your grief or bear the pain of your loss for you, Carlos, but we love you and we pray that you will find peace of mind to carry you through this tragedy.

*With sixteen members sporting Outreach Club observing pins; with **Dr. Richard Schmude** having delivered at least 500 astronomy presentations and talks to schools and astronomy groups; and with **Stephen Ramsden** having shown the **Sun** to more than 100,000 people in the past three years – it’s unlikely that any astronomy club in the world can boast such an active outreach program as FRAC.

It may not seem that we’re doing much lately. The arctic air has kept us in hibernation for months, and the schools have been too busy to schedule extracurricular activities outside anyway. But that’s been true everywhere, not just in FRAC. Over the long haul, when it comes to astronomy outreach nobody does it better than FRAC.

FRAC recently nominated Stephen and his **Charlie Bates Solar Astronomy Project** to win *Astronomy Magazine’s* “2010 Out-of-this-world Award” for outstanding astronomical outreach activities. The award carries a \$2,500 check for the winner. The results will be announced in April -- but regardless of whether Stephen wins or not, he deserves the recognition and prize.

*We recently received the following e-mail that might be of interest to you:

“Hi, **Bill & Tom (Moore)**, I’m **Dick Shimmin** with Bridgeway Training Services, a not-for-profit agency that provides a variety of services for disabled persons. The sale of our American-made products helps fund those programs.

“I have attached a portion of our brochure that includes one of our product lines that could help decorate any home of those associated with the Flint River Astronomy Club. The Night Skies may also be worthy of a mention in “The Flint River *Observer*” or on your website.

“The Night Skies stencils can create accurate displays of the sky at night in most any darkened room with the luminous paint that is included. They are produced in two sizes featuring either the winter or summer night time displays over the Northern Hemisphere. A corresponding star map is also included. More information about the Night Skies is available at www.ursamajorstencils.com. The 8-foot Night Skies are priced at \$25.00 and the 12-foot model at \$30.00 each.

“They are also featured on the Edmund Scientifics website under “Fun With Astronomy.”

“For freight, we ask only that you pay the exact shipping costs from our manufacturing facility in Macomb, Illinois (61455). Either size weighs 2 pounds each to ship and we will “DROP SHIP” any number to any address.”

If you’re interested, here’s the contact information: Dick Shimmin, Bridgeway Training Services (BTS), 2323 Widnish Drive, Galesburg, IL 61401; e-mail: dshimmin@bway.org; factory phone: 800-798-4327; Direct Office Line: (309)344-4291; cell: (309)221-5283; FAX (for orders): (309-836-4149; and e-mail for orders: Suzanne@bway.org.

Yr. editor has visited their online site, and found it to be an interesting concept, especially as a way of decorating and personalizing a child’s bedroom wall.

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Upcoming Meetings/Activities. Our Cox Field observings will be held on **Fri.-Sat., Feb. 4th-5th**. Maybe the weather will be a bit more accommodating this time around than it was in January. Here’s hoping, anyway.

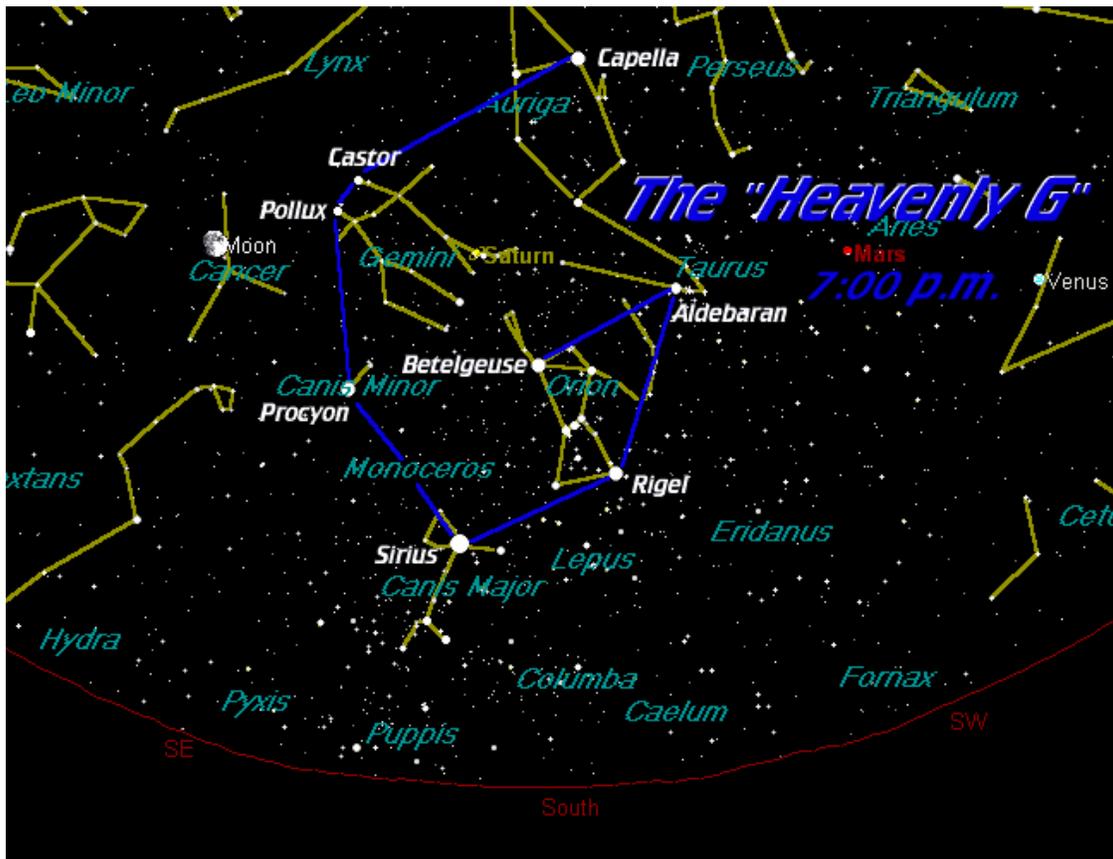
Our club meeting will be at 7:30 p.m. on **Thurs., Feb. 10th**, in Room 305 of the Flint Bldg. on the UGa-Griffin campus. We'll elect officers and board members for 2011, and then we'll celebrate FRAC's 14th birthday. **Betty Bentley** will prepare a carrot cake and/or other mouth-watering delights for the occasion.

(Here's a thought: besides voting for officers and board members at the Feb. meeting, let's also vote on a "fair weather" resolution to ban freezing temperatures, cloudy and rainy nights, and mosquitos from FRAC observings in the future.)

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The Sky in February: A "Cool" Sight On a Winter Night. Have you ever heard of (or seen) the "Heavenly G"? If not, you're in for a treat, because it's one of the easiest and most rewarding observing projects you'll ever do. You don't need a high-powered telescope or even binoculars to see it – and you don't need to be an experienced stargazer. All you need is a clear winter evening, warm clothing and your eyes. (That, and the ability to find the constellation *Orion*, the brightest and most recognizable constellation in the winter sky.)

The "Heavenly G" is a large asterism formed by eight of the 23 brightest stars in the entire night sky. Those stars form a huge letter "G" that involves six constellations and is centered around *Orion*.



You can use this chart to help you find the "Heavenly G" asterism. It's the best one I could find, so please overlook the references to 7:00 p.m., Venus, Mars, Saturn and the Moon on the chart: they won't be there when you look for the "G".

Meanwhile, here's how to find it and what you'll see:

Orion will be high in the southern sky by 7 p.m. in Feb. Look north of Orion's belt and shoulders and you'll see a bright yellow star: it's **Capella** (pronounced: Kuh PELL uh), the 6th-brightest star in the night sky. Located at the base of the 5-star "house" that forms *Auriga (the Charioteer)*, Capella shines at mag. 0.08 and is 41 light-years (l.y.) from us.

Capella is at the top end of the "G", which curls around and includes Orion.

Looking east from Capella, you'll see two bright stars lying fairly close together: they are **Castor** and **Pollux**, which together form the heads of *Gemini (the Twins)*. Castor (closer to Capella) is the 23rd brightest star in the sky, and Pollux (closer to **Procyon**) is 17th on that list. Their magnitudes are 1.57 and 1.14, respectively, and they lie 46 and 36 l.y. from us.

From the Twins, look almost due south to a brighter, solitary white star, **Procyon** (pronounced: PROH see yahn), in the constellation *Canis Minor (the Little Dog)*. "Procyon" means *before the dog* in Greek, because it rises before **Sirius** (the Dog Star). Procyon (mag. 0.34) is the 8th-brightest star in the sky. It lies just 11.4 l.y. from us, making it the 2nd-nearest star in the "G".

Below Procyon you'll find the easiest star of all: dazzling white **Sirius**, the brightest star in the night sky (and also one of the nearest at a scant 8.6 l.y. away). Sirius is a double star, but you won't see its companion due to the Dog Star's overpowering brightness (mag. -1.46).

From Sirius, look to the right to find bright, blue-white **Rigel** (pronounced: RYE jul) lying below Orion's belt. At mag. 0.12, Rigel is slightly brighter than Procyon. The 7th-brightest star in the sky, Rigel is a double star. (You can see its companion in a telescope, but not via naked-eye.) Lying 910 l.y. away, supergiant Rigel is the most distant of all the stars in the "G".

Moving your view upward and to the right of Rigel, you'll come to orange-yellow **Aldebaran** (pronounced: Al DEBB ur un), at mag. 0.85 the 14th-brightest star in the sky. Aldebaran forms the

right eye in the "V"-shaped face of *Taurus (the Bull)* as it looks at us. Aldebaran lies 72 l.y. from Earth.

Those seven stars – Capella, Castor, Pollux, Procyon, Sirius, Rigel and Aldebaran – form a giant "C" in the sky. To form the crossbar that will make it a "G", go east to Orion and find bright **Betelgeuse** (pronounced: BETT ul jooz, not BEETLE juice). Betelgeuse's golden color is immediately apparent above the three stars that form Orion's belt.

Betelgeuse is the 10th-brightest star in the sky at mag. 0.5. Like Aldebaran, it's a variable star, although their brightnesses don't vary by much. (They are always bright.) Betelgeuse is so large that, if it were located where our **Sun** is, it would fill all the space between the Sun and **Saturn**.

Give the "Heavenly G" a good look-see, and then tell us: Wasn't it easy? And wasn't it worth a few minutes in the cold to see something that cool?

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The Trivia Question That Grew, Part III: Cleaning Up the Debris

article by Bill Warren

(Editor's Note: This is the third and final installment of a 3-part series on the formation and contents of the Solar System that began in the Dec. issue of the Observer.)

The Oort Cloud. In 1950, the Dutch astronomer **Jan Oort** (pronounced: YAHN ORT) reintroduced an obscure theory that was first proposed by the Estonian astronomer **Ernst Opik** in 1932. (Yes, Virginia, there *is* an Estonia.) Opik's theory was that long-period comets originate in a distant cloud of leftover material from the formation of the Solar System.

This cloud, which for some reason was named for Oort rather than Opik, lies more than 1,000 times farther out than the Kuiper Belt, and represents the gravitational limits of the Solar System. It is thought to extend from about 5,000 to 50,000 astronomical units (a.u.'s) from the Sun. So we're talking serious distances here: the outermost edges of the Oort cloud

lie about one light-year from the Sun, or nearly ¼ of the distance to **Proxima Centauri**, the nearest star to the Sun.

The Oort cloud consists of two parts, a doughnut-shaped inner cloud and a spherical outer cloud. It contains trillions of objects, and has a total mass that is probably about five times that of the Earth.

The objects comprising the Oort cloud are thought to have formed the same way that the planets, moons and asteroids arose. The difference was, the smaller Oort objects were ejected from the inner solar system through gravitational interaction with the gas giants, sending them -- Oort objects -- into extremely long orbits, far from planetary influence and barely within the Sun's gravitational attraction.

The most famous comet of all time, **Halley's Comet**, returns like clockwork every 76 years. It probably came from the Oort Cloud.

Astronomers have **identified** four large bodies – **Sedna**, discovered in 2003, and three others with designations that read like somebody spilled Alpha Bits on the floor – as possibly being members of the inner Oort cloud.

Okay, we've gone through the Solar System from the Sun to the Oort cloud...Have we left out anything along the way?

Well...as a matter of fact, *Yes*, we have.

Saturn's Rings. In our frenzied rush through the Solar System in the past two installments, we overlooked an important feature that is near and dear to everyone, i.e. **Saturn's** rings.

Saturn is, of course, the second-largest of the four gas giants in the outer reaches of the Solar System. Saturn lies 850 million miles from the **Sun**. It has 62 known moons that are composed of ice and rock. Its ring system, however, is almost all ice.

The rings form a thin – probably less than 200 yards in thickness – flat plate that circles the planet from 40,000-300,000 miles from Saturn's core. (A larger, far more distant and obscure ring was discovered recently.) The particles that comprise the rings range in size from microscopic to as large as an SUV. They are held in place by tiny “shepherd

moons,” new ones of which NASA's Cassini probe discovers with regularity.

But where did the rings come from, and how did they form?

Conventional wisdom held that the rings were the rocky debris left by collisions between moons, and between moons and asteroids. But while Saturn's moons are half-ice and half-rock, the rings are 99.9% ice. Under the old theory, there should be more rocks in the rings than is actually the case.

Enter astronomer **Robin Canup** of the Southwest Research Institute in Boulder, Colo. In Dec., 2010 she and her team offered a bold new theory of the rings' origin that makes more sense.

When Saturn's moons were forming about 4.5 billion years ago, she says, a large disk of hydrogen gas circled the planet. That disk influenced the moons-in-the-making, producing collisions and causing one of them to begin spiraling inward toward Saturn, which subsequently stripped the moon of its icy exterior. The moon eventually crashed into Saturn, but the ice particles were pulled into orbit around the planet, forming the rings.

(Note: **Jupiter**, **Uranus** and **Neptune** have rings, too, but they are far less prominent than Saturn's and, according to Ms. Canup, they probably formed in different ways.)

Centaur. Astronomers have identified nine non-planetary bodies orbiting the Sun between Jupiter and Neptune. Thought to have come from the Kuiper Belt, they are likely comets-waiting-to-happen. The largest of them, **Chiron**, is roughly 270 mi. in diameter. It is, therefore, about 20 times as large as Halley's Comet, so if Chiron ever takes a sudden dive toward the Sun it will be an unforgettable sight.

Near-Earth Asteroids. Not all asteroids are members of the asteroid belt. Some of them, influenced by the planet Jupiter, develop independent orbital paths that tend to be unstable and relatively short-lived. As their orbits decay over time, they eventually either crash into the Sun, a planet or a moon, or else they are ejected from the Solar System.

Some of these rogue asteroids have orbits that cross – but do not necessarily intersect – Earth's orbit.

On Mar. 2, 2009 a 115-ft.-wide asteroid designated **2009 DD45** missed the Earth by just 44,000 miles. (That's about 1/5 of the way to the **Moon**.) And on Mar. 23, 1989, a 1,000-ft. Apollo asteroid named **4581 Asclepius** missed the Earth by 700,000 miles – but it passed through the exact spot where Earth had been six hours earlier. It would have been another Wetumpka.

So do you know why **Pluto** is no longer a planet? Yeah, it's because it was discovered by an American (**Clyde Tombaugh**) and not a European. But it's also because, for 20 years out of every 248-year orbit of the Sun, Pluto slides closer to the Sun than **Neptune**. That makes it a **Trans-Neptunian Object (TNO)**, and also a member of the Kuiper Belt, the latter of which by definition disqualifies it for planethood.

Of course, there's also the fact that there are moons and asteroids in the Solar System that are larger than Pluto, and the figure is steadily growing larger as our detection methods and capabilities improve.

And that's it. Our tour of the Solar System and its contents is over. Not finished, mind you, and not complete. Just over. As **Picasso** said when asked how he knew that a painting was finished, "You don't finish a painting; you abandon it.

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Errata. Presently, there are 7,075 known Near Earth Objects (NEOs, including 84 comets and 6,991 asteroids), not 7,035 as stated on p. 4 of the Feb. issue of the *Observer*. That's the kind of math errors that creep into a newsletter when a p.e. major writes and edits it.

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