

THE FLINT RIVER OBSERVER

NEWSLETTER OF THE FLINT RIVER
ASTRONOMY CLUB
An Affiliate of the Astronomical League

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

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Club mailing address: 1212 Everee Inn Rd., Griffin, GA 30224. Web page: www.flintriverastronomy.org.

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., Nov. 6: girl scout observing (8:00 p.m., Camp Pine Valley near Meansville); **Tues., Nov. 10:** Sun City Peachtree observing ((7:30 p.m., Griffin, Ga.); **Thurs., Nov. 12:** FRAC meeting (7:30 p.m., Stuckey Bldg. on the UGa-Griffin campus); **Fri.-Sat., Nov. 13-14:** Cox Field observings (at dark); **Thurs., Nov. 19th:** Gordon College observing (9:15 p.m., Abbott Farm); **Fri.-Sat., Nov. 20-21:** Cox Field observings (at dark).

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President's Message. On Oct. 4, 1957, the Russians shocked the world by successfully launching the first artificial satellite, Sputnik I. Weighing just 184 lbs., Sputnik achieved an altitude of 588 miles.

A month later, the successful launching of Sputnik II with a little dog, **Laika**, aboard, established Russia

as clearcut leader in the Space Race. Unfortunately, Laika didn't survive the trip.

Later, on Apr. 12, 1961, the Russians cemented their lead by sending cosmonaut **Yuri Gagarin** into space for 108 minutes and landing him safely.

Shortly thereafter, **Pres. John F. Kennedy** challenged the newly formed National Aeronautics and Space Administration (NASA) to devise a program that would land a man on the **Moon** and return him safely to Earth within that decade. Three successively more daring and difficult programs – Mercury, Gemini and Apollo – were formulated to achieve that goal.

With the U. S. having successfully launched Freedom 7, our first unmanned satellite, on Jan. 31, 1958, the Mercury astronaut program saw **Cmdr. Alan Shepard** become the first American in space with a 15-min. suborbital flight on May 5, 1961. That was followed by **John Glenn's** first orbital flight on Feb. 20, 1962.

Four more Mercury flights, followed by a series of Gemini missions, proved that humans could survive for prolonged periods in a weightless environment, maneuver a spaceship and dock with another vehicle, walk and work in the vacuum of space, and return to the Earth without harm.

Enter the Apollo program.

On Dec. 24, 1968, Apollo 8 astronauts **Frank Borman**, **James Lovell** and **William Anders** became the first humans to orbit the Moon. Nearly seven months later, on July 20, 1969, after a scary, manually controlled landing with but 15 seconds of fuel allotted for the task remaining, Apollo 11 astronauts **Neil Armstrong** and **Edwin (Buzz) Aldrin** set down in the Sea of Tranquillity and became the first humans to walk on the Moon. It was truly a "giant leap for mankind," as Armstrong put it.

Armstrong and Aldrin spent a total of 21 hrs. and 36 min. on the Moon, including time for a brief nap between Moon walks. (A little known fact: Aldrin was supposed to be the first to walk on the Moon, but three months before the launch Armstrong pulled rank on him, insisting that, as Mission Commander, he – Armstrong -- should be the first to step down onto the Moon. NASA officials wimped out and changed the agenda to allow Armstrong to leave the Lunar Module

before Aldrin. Armstrong and Aldrin were not exactly bosom buddies after that.)

In all, seven Apollo lunar missions landed a total of 12 U. S. astronauts on the Moon. They planted flags, conducted scientific experiments, rode around in lunar rovers, hit a golf ball, hopped around the lunar landscape like kangaroos, brought back soil samples and Moon rocks, and returned safely. The only glitch in the Apollo program arose with Apollo 13, which suffered an onboard explosion on the way to the Moon and forced the three astronauts to circle the Moon in their lunar lander before returning to Earth in the Apollo capsule. (The landing module would have burned up during re-entry.) It was a harrowing journey because the explosion depleted much of their oxygen – thus, the necessity of spending part of the trip in the landing module, which had a separate oxygen supply -- but they made it home safely.

Apollo 17 was the last manned lunar flight, in Dec., 1972. After that, attention turned to creating an earth-orbiting space station (our first was Skylab, launched in 1973), and to sending unmanned probes to other planets in the solar system.

There's ongoing talk about sending humans to **Mars**, but in fact the U. S. doesn't presently possess the capability of sending astronauts to the Moon, let alone to a planet 40+ million miles away.

So here's a tip of our FRAC hat to the folks who, with infinitely less sophisticated technology 40 years ago than we have today, realized mankind's oldest dream, namely, going to the Moon and back. Science fiction writers **Jules Verne** (*From the Earth to the Moon*, 1865) and **H. G. Wells** (*The First Men in the Moon*, 1901) would have been proud.

We were proud, too, in revisiting that exciting era when miracles were routine daily accomplishments, via FRAC's Sept. club trip to the U. S. Space & Rocket Center. If you couldn't attend and haven't been there before, you owe it to yourself and your loved ones to visit Huntsville with them. In doing so, you'll step back into a time when pride in the U. S. and its achievements was at an all-time high, and no one felt the need to apologize for it.

-Bill Warren

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Last Month's Meeting/Activities. Ten members attended our trip to the U. S. Space & Rocket Center in Huntsville, AL on Sept. 26th: **Alan & Sally Bolton, Dwight, Betty & Laura Harness, Jerry & Bev Williams, Cynthia Armstrong, Larry Higgins** and **yr. editor**. The trip was everything we had hoped it would be. We came away from it with an overwhelming sense of pride (and awe) in what the U. S. achieved in the brief span of 15 years (1957-1972).

That's three *very* enjoyable and informative road trips for FRAC in the past eleven months: Wetumpka Meteor Crater (Oct., 2008), the Cove (Jan. 2009) and the Space & Rocket Center (Sept., 2009).

We had 17 attendees at our Oct. meeting: **Irene & Curt Cole; Joel Simmons; Cynthia Armstrong; Betty & Steve Bentley** and their granddaughter, **Brianna Mills; Laura & Dwight Harness; Brit & Tom Danei; Larry Higgins; Kevin Murdock; Charles Turner; Carlos Flores; Felix Luciano;** and **yrs. truly**. Highlights included: an excellent minitalk on *Capricornus* by Joel; a long but very interesting dvd, *400 Years of Telescopes*, courtesy of Carlos; and a sneak preview of Tom D.'s reworked *The Night Sky Explorers* cd-rom (which is even better than the original).

On Fri., Oct. 9th, **Dwight Harness** and **yr. editor** joined **Larry Higgins** and his astronomy class for a field trip to **The Cove**, a meteor impact site near Woodbury. The kids were impressed, of course, and we felt as if we were visiting an old friend. (A 50- to 80-million-year-old friend, give or take a few eons.) Thanks go to Dwight for leading the expedition and obtaining the necessary permissions for revisiting the sites we toured last Jan. 28th, and to the landowners for allowing us to revisit their properties.

Our thanks probably should also be extended to the meteor, since without it there would have been nothing to visit except country backroads, forests, farmlands and the massive radio telescopes that Ga. Tech once operated.

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This 'n That. From **Alan Pryor** on Sun., Oct. 4th: "I heard a rumor about ancient documents stating there once was a bright glowing ball 'way up in the

sky above the clouds. I am searching for proof to back up these documents.

“Ha ha! It has been so long since there was a decent night for viewing. Yesterday it was *so* clear. I saw the forecast stating it would start clouding up around 10 p.m. Well, in my area the clouds were there before sunset. I had my telescope set up for a session of trying to observe the **Moon**. No such luck. I had to pack it in. Wishing for clear skies, Alan.”

Hey, Alan, here’s the answer to your (and our) ongoing problem of cloudy nights on our Cox Field observing dates:

All of us in FRAC should sell our telescopes and equipment, pool the money we get from it, and buy the land and twin 30-meter radio telescopes at The Cove. Clouds don’t bother radio telescope reception; we’d be indoors with the lights on; we’d have restroom facilities; and think of how much money we’d save in not having to buy batteries for our GoTo telescopes, dew zappers and red-beam flashlights!

*The aforementioned **Alan P.** recently fell at home and sprained his wrist rather severely. If Murphy’s Law holds true for Alan, his fall will herald a period of excellent observing conditions that will hold until he’s ready to observe again, at which time the clouds will return with a vengeance.

On the other hand, **Tom Danei** either already has, or will soon be getting, his new 20-in, Starmaster, so the skies may never clear up again. (Thanks, Tom.)

*With winter just around the corner and cloudy skies presently keeping you indoors, you need to go to our website’s Articles link and read (or re-read) **Smitty’s** “Of Mukluks and Messiers.” It’s absolutely the best article ever written on how to dress warmly for cold-weather observing. It’ll tell you how to stay roasty-toasty warm outdoors when the temperature plunges lower than a sumo wrestler’s beltline.

***Carlos Flores** has donated two speakers to be used with our powerpoint projector. We used them with the *Telescopes* cd-rom at our Oct. meeting, and they worked fine. Thanks, Carlos!

*To all FRAC members: if you’re planning to buy new astronomy equipment, whether it be a telescope, an eyepiece, a set of filters, a star atlas or anything else, you probably should schedule a visit to **The Camera Bug**, Atlanta’s only (?) and certainly best source for astronomy gear for serious-minded amateur astronomers. Their stock is excellent, and their prices *very* competitive. When **Larry Higgins** and **yr. editor** visited their store on Briarcliff Rd. recently in search of Christmas Party door prizes, they tacked on an additional 10%-20% discount on everything we bought. For Larry, who couldn’t resist Celestron’s new 3” IntelliScope refractor, it meant buying a ridiculously low-priced (for such an excellent little instrument) refractor for 20% less than the \$50 price tag.

If you visit The Camera Bug, don’t be put off by the clutter. It’s a small store, and literally jam-packed from floor to ceiling with astronomy stuff. If you don’t see what you’re looking for, just ask. The biggest problem we had in our visit was leaving with cash left in our wallets and bank accounts.

*A valuable observing tip from **Tom Moore**: “If you’re using an observing patch while using your telescope, be sure not to wear it on the eye that’s looking into the eyepiece.”

(Editor’s Note: The following news item is courtesy of **Steve Bentley, who is rapidly becoming FRAC’s unofficial “Eye on the Sky” news reporter. It was Steve who alerted us to the strange goings-on on **Saturn** back in mid-July.)*

First, there was the **Earth**-sized dark spot that appeared on Saturn on July 19th. Now, in an eerie cosmic coin toss, the other side of the coin has appeared on **Mercury**.

According to Fox News on Fri., Oct. 2nd, “During (its) most recent flyby of Mercury, NASA’s (\$446 million) MESSENGER spacecraft...snapped several new images of Mercury...”

“One of the...images shows a bright spot on the planet’s surface, a feature that scientists cannot yet explain...”

“Surprisingly, at the center of the bright halo is an irregular depression, which may have formed through volcanic processes.”

Photos show a bright splash encompassing several craters of various sizes, as if some cosmic force had hurled white paint onto the planet’s gray surface.

What is it? Who knows? (**Steve Bentley** says it’s where they’re opening a new Super Wal-Mart.) But it’s there, an unexpected brightness in a dark, forbidding landscape. You can see it for yourself by Googling “Mercury’s Bright Spot” and following the links.

At that point, you’ll know as much about it as anyone else (which isn’t much).

*The Spitzer Space Telescope’s infrared imaging has detected a previously unknown, far-out new ring that orbits **Saturn** at a radius of about 8 million mi.

Lying millions of miles beyond the previously known rings in a plane that doesn’t coincide with theirs, the new dust ring has an outer diameter of 30 million mi. and is nearly 1.5 million miles thick.

The new ring is thought to be the remains of repeated collisions over the eons with Saturn’s distant moon **Phoebe** (which, like the newly discovered ring, orbits backward from Saturn’s other rings and moons).

Why hasn’t the ring been detected before now? Because, as **Douglas Hamilton**, one of its co-discoverers at the Univ. of Maryland, put it, “This thing is just immense. If you look at just a small patch of it, you just see fuzziness.” Hamilton and his colleagues saw it in infrared when Spitzer detected sunlight reflecting off the tiny dust particles that comprise the ring.

Those particles are scattered sparsely over a huge area encompassing many millions of miles, much like the dust in a comet’s tail. “If you were there,” Hamilton said, “you wouldn’t know you were in a ring.”

To read more about it, Google “Saturn’s Far-Out New Ring,” and follow the links.

***Yr. editor** has a new candidate for the title of “Most Incredible Astrophoto Ever”:

On Sept. 5th, **Dr. David Tholen** of the Univ. of Hawaii (Manoa) aimed one of the twin Keck telescopes on Mauna Kea at **Pluto** and its moon system. Due to a happy convergence of incredibly clear seeing conditions, newly installed adaptive optics and Pluto’s being at maximum brightness, the images produced that night were sharper than the Hubble Space Telescope could have gotten.

What the images show is Pluto (of course); its moon **Charon** (pronounced CARE en), which is about half as large as Pluto; and, astonishingly, its two other tiny moons, **Hydra** and **Nix**.

Pluto, which is smaller than our **Moon**, is mag. 14 visually; Hydra and Nix are mag. 23.5, or about 5,000 times fainter than Pluto. Because the moons are so small that their exact size has yet to be determined, astronomers say that Hydra and Nix probably are between 30-103 mi. in diameter, with the smaller of the two about 10%-15% smaller than the other.

Think of it: a *ground-based* telescope got an excellent (albeit somewhat understandably faint) image of two objects that are *less than 100 mi. wide* and lie *2.5 billion miles* out from the **Sun**. (In case you need a refresher course in math, that’s 1,000 x 1,000 x 1,000 x 2.5 miles!)

That’d be a whole lotta frequent flyer miles, wouldn’t it? Seeing those moons from the Earth is somewhat akin to identifying the date on a penny held aloft by someone standing 60 miles away.

Wanta see Hydra and Nix? Google “Sharpest Pictures Ever of Pluto” and follow the links.

Mind-boggling.

*Just when you thought we were finished with such trivialities, here comes another **Trivia Question** for your edification:

Everyone knows that **Neil Armstrong** was the first person to set foot on the **Moon**. But who was the *last* person to walk on the Moon? (Answer on p. 6.)

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Upcoming Meetings/Activities. Our public observing season is heating up now that the weather is cooling down.

On **Fri., Nov. 6th**, FRAC will conduct an observing for girl scouts at Camp Pine Valley, near Meansville

(which in turn is near Barnesville, if that helps). The observing will begin at 8:00 p.m.

To get to Camp Pine Valley from, say, Hampton, Come S on U. S. Hwy. 19/41 like you're going to Cox Field. Instead of getting off at Williamson Rd. (Ga. Hwy. 362), though, stay on the 4-lane and go 2.4 mi. to the 2nd stoplight, where Hwy. 19 turns right toward Zebulon.

Go 7.6 mi. on Hwy. 19 to the stoplight at the town square in Zebulon. Stay on Hwy. 19 for 3.7 mi. more, and turn left at Ga. Hwy. 109 East. Go 3.3 mi. on 109, and after passing through the little town of Meansville turn right onto unpaved Pine Valley Rd. Go 1.1 mi. on that road, and the stone gate entrance to Camp Pine Valley will be on your left.

Once you've entered the Camp, turn left (toward the dining hall) at the 3-way split in the road. Drive around the dining hall and cross the dam to the open field beyond. That's where we'll set up our 'scopes.

Dr. Richard Schmude will talk about his work with the planet **Venus** at the Georgia Regional Astronomy Meeting that will be held at North Ga. College in Dahlonega, GA on **Fri.-Sat., Nov. 6th-7th**. The 2-day event offers free admission to amateur astronomers.

At **7:30 p.m. on Tues., Nov. 10th**, we'll hold a public observing for residents at Sun City Peachtree near Griffin. To get there, go N from Griffin (or S from Hampton) on U. S. Hwy. 19/41, and turn E (right if you're coming from Griffin, left if you're coming from Hampton) at the stoplight at Birdie Road.

From there, Birdie Rd. becomes Baptist Camp Rd. Stay on Baptist Camp Rd. for 2.4 miles to the 1st and only stoplight. The gated entrance to Sun City Peachtree is just beyond that stoplight, straight ahead: you'll see a huge, lighted waterfall ahead on the right that marks the entrance. Stop at the front gate, then go on in. (The security guard will be expecting you.)

Continue on that road beyond the 1st intersection, and 0.4 mi. from the security gate the road will deadend at the large and lovely Sun City clubhouse. Drive into the parking lot, turn right, and you'll find us set up at the far right end of the lot.

The rainout date for our Sun City Peachtree observing is **7:30 p.m., Tues., Nov. 24th**.

Dr. Richard Schmude, will be the featured speaker at our FRAC meeting at **7:30 p.m. on Thurs., Nov. 12th**, in the Stuckey Bldg. on the UGa-Griffin campus. He'll tell us all we really need to know about **Saturn**. (One envisions **Ken Walburn** thinking, *Hot dog, maybe Richard can tell me how I can get better gas mileage out of my Saturn!*) **Joel Simmons** will present another of his fascinating Constellations minitalks, and **Larry Higgins** will preview Celestron's remarkable little IntelliScope. As an added highlight and sneak preview of things to come, the door prizes that will be given out at our Christmas party meeting at Ryan's buffet restaurant in Griffin on **Fri., Dec., 11th** will be on display at the Nov. meeting.

On **Thurs., Nov. 19th**, we'll conduct a Gordon College observing for students in **Dr. Schmude's** classes. The observing, which will begin at **9:15 p.m.**, will be held at the same Abbott Farm location S of Barnesville where we've conducted our previous GC observings.

To get to Abbott Farm from, say, Hampton, come S on U. S. Hwy. 19/41 like you're going to Cox Field, but stay on the 4-lane past the Ga. Hwy. 362 (Williamson Rd.) exit, and past the next two stoplights (at Airport Rd. and Zebulon Rd., where Hwy. 19 crosses the 4-lane).

About 10 mi. ahead, stay on the 4-lane past the Thomaston exit on the left, and stay on 41 South after it becomes U. S. Hwy. 341. Beyond Thomaston, look for paved Brent Rd. on the left, turn left there, and turn left again into the driveway of the 1st house on the left.

Our Cox Field observing weekends of **Fri.-Sat., Nov. 13th-14th** and **Fri.-Sat., Nov. 20th-21st** will be ideally situated on either side of the New Moon on Nov. 16th, so deep-sky observing will be superb if the sky cooperates.

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THE MAN ON THE MOON

article by **Bill Warren**

Here's a trivia question to end all trivia questions:
Who has spent more time on the Moon than

anyone else? (Two hints: he wasn't an astronaut – although he wanted to be – and he's still there.)

The answer is, of course, **Gene Shoemaker**.

If you're new to astronomy but that name sounds vaguely familiar, it's because Gene, along with his wife **Carolyn** and another well-known comet hunter, **David Levy**, discovered a number of comets, including one, **Comet Shoemaker-Levy 9**, which broke apart during a close flyby of **Jupiter** in 2003. On its return to Jupiter a year later in July, 2004, the 21 fragments of S-L 9 smashed into Jupiter in a succession of impacts that left dark scars on the Jovian atmosphere for more than a year. Collectively, they were the most powerful non-solar explosions in our solar system ever witnessed by man.

As important as that event was to astronomers, however, it pales in comparison to Gene Shoemaker's contributions to the U. S. space program.

In his association with the Apollo moon program during the '60s-'70s, Shoemaker, an eminent geologist, was given the task of selecting sites on Earth for the Apollo astronauts to practice the skills they would later be using on the lunar surface – walking, riding in lunar rovers and conducting tests and collecting samples of the lunar rocks and soil. They walked, worked and learned to drive the moon buggies in desolate, rock-strewn locales such as Haleakala (pronounced: hah lee AHK uh luh) Crater on Maui, (Hawaii); Craters of the Moon National Monument in Idaho; Meteor and Sunset Craters in Arizona; the San Juan Mtns. of Colorado; and other sites in Nevada, New Mexico and even Iceland.

At the successful conclusions of their separate Moon missions, the astronauts agreed to a man that the sites that Shoemaker selected were eerily similar to what they actually encountered on the Moon. It was, they said, as if they had already been there before – except for the Moon's reduced gravity, of course.

(Incidentally, it was Gene Shoemaker who proved that the famous Barringer Meteor Crater in Arizona referred to above was created by a meteor impact rather than an ancient volcanic upheaval or any other earthly phenomenon.)

On July 18, 1997, Shoemaker was killed in an auto accident in Australia. As a tribute to his contributions to the Apollo lunar program, his cremated remains

were placed aboard a Lunar Prospector spacecraft that crash-landed near the Moon's South Pole on July 31, 1999, after its 18-month lunar mapping mission ended due to battery failure. It was a fitting requiem for a man who, despite his fame and accomplishments, was admired and respected by his scholarly peers and loved by everyone who met him. By all accounts, Gene Shoemaker was the sort of man who, five minutes after you met him, you felt as if you'd known him all your life.

Our loss is the Moon's gain.

Next time you look at the Moon, say Hi to Gene from all of us.

*(Editor's Note: One ounce of the cremated ashes of **Clyde Tombaugh**, the discoverer of **Pluto** who died in 1977, are stored aboard the New Horizons spacecraft that is bound for Pluto and the Kuiper Belt. New Horizons will fly by Pluto in July, 2015, coming to within 5,500 miles of the [dwarf] planet he discovered, before continuing on to probe the rest of the Kuiper Belt.)*

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Answer to the Trivia Question on p. 3: The last person to walk on the Moon was **Eugene Cernan**, who followed fellow astronaut and Moonwalker **Harrison (Jack) Schmitt** back into the Lunar Module (or LM, pronounced "Lem") at 9:33 p.m. EST on Dec. 18, 1972, to begin preparing for the Apollo 17 spacecraft's long ride home. They left behind them a battery-powered lunar rover, the last of three "moon buggies" that accompanied the astronauts on the Apollo 15, 16 and 17 Moon missions and were left behind.

Cernan and Schmitt traveled a total of 22.3 miles in the moon buggy, cruising the lunar landscape at dizzying speeds of up to 9.5 mph. The farthest they ever ventured from the lunar module was 4.7 miles.

"For us," Cernan later said, "the operant words were *walking distance*. We couldn't go farther from the Lem than we could walk back to it if the Rover failed." There were no problems, though, and their Moon rides and Moon walks went without a hitch.

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