

THE FLINT RIVER OBSERVER

NEWSLETTER OF THE FLINT
RIVER ASTRONOMY CLUB

An Affiliate of the Astronomical League

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Officers: President, **Dwight Harness** (1770 Hollonville Rd., Brooks, Ga. 30205, 770-227-9321, rdharness@yahoo.com); Vice President, **Bill Warren** (1212 Everee Inn Rd., Griffin, Ga. 30224, warren7804@bellsouth.net); Secretary, **Carlos Flores**; Treasurer, **Roger Brackett** (686 Bartley Rd., LaGrange, GA 30241, 706-580-6476, rdb487@yahoo.com).

Board of Directors: **Larry Higgins; Jessie Dasher;** and **Aaron Calhoun.**

Facebook Coordinators, **Jessie Dasher** and **Laura Harness;** Alcor, **Carlos Flores;** Webmaster, **Tom Moore;** Program Coordinator/Newsletter Editor, **Bill Warren;** Observing Coordinators, **Dwight Harness, Larry Higgins & Bill Warren;** 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., Jan. 8: FRAC meeting/lunar observing (7-10 p.m., the Garden in Griffin); **Fri.-Sat., Jan. 16-17:** JKWMA observings (Site #3, at dark).

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Vice President's Message. With club elections coming up in February, you need to start thinking about whether you might want to serve as an officer

in FRAC. If so, here's what you need to do: (1) go to our website, look up the Bylaws and study the duties and responsibilities for whichever position you might like to hold; and (2) let **Dwight Harness** or me know that you'd like to run for office. The more members who become involved in leadership positions, the stronger FRAC will be in the future. New officers bring new vitality and new ideas to the club.

Example: When I decided to step aside as president in 2013 after 5 yrs. in office, it was because I felt that the club needed to move in new directions. Dwight stepped in and brought a host of new ideas. Not all of them have been realized yet, but he's working on them. (*See p. 2.*)

So give it some thought, and let us know if you'd like to serve as an officer or board member. No experience is necessary, and none of our present officials will be offended at the prospect of stepping aside in favor of new leadership.

Finally, I want to welcome to FRAC our newest members, **Alicia and Kiara Parker**. Kiara, a 5th-grader at Jordan Hill Elem. in Griffin, is interested in astronomy, and we're looking forward to showing her how much fun it can be.

-Bill Warren

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Last Month's Meeting/Activities. We had 23 members at our Christmas dinner party at Ryan's on Dec. 6th: **Betty, Laura & Dwight Harness; Ron Yates; Denise & Truman Boyle; Olga & Carlos Flores; Carol & Scott Cook; Jessica & Aaron Calhoun; Mike Stuart; Erik Erikson; Larry Higgins; Felix Luciano; Deborah & Steven (Smitty) Smith; Dr. Richard Schmude; Jane Barreski & Roger Brackett;** and **Louise & Bill Warren.** The ladies were lovely, and added more than a touch of class to the proceedings. Dwight presented a Zombie award to Ron for taking astrophotos until the wee hours of the morning at JKWMA last month, and a certificate of appreciation to yr. editor for spelling Dwight's name correctly in the newsletter most of the time (or something like that). Deborah wants you to ask Smitty what kind of animals he's raising at home in Sharpsburg. (Hint: What were the three wise men riding when they visited the manger in Bethlehem?)

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This ‘n That. One of **Dwight Harness’s** goals as president of FRAC has been to reinstate our **Ga. Sky View** star party in some shape or form. After discussing the situation informally with some club members after the Nov. and Dec. meetings, Dwight reports that a committee composed of him, **Felix Luciano, Carlos Flores, Truman Boyle, Ron Yates** and **Joe Auriemma** has been formed to explore the possibility of holding a limited GSV in March at either Joe Kurz or the Rock Ranch. Details are sketchy at this point, but will be announced when they are finalized.

*FRAC has contributed \$250 to **Stephen Ramsden’s** Charlie Bates Solar Astronomy Project.

*Longtime FRAC supporter **Tim Nix**, owner of The Camera Bug, Atlanta’s only astronomy store, died on or around Dec. 22nd of complications from diabetes. He will be missed.

*After **Galileo** pointed his telescope at the night sky in Dec., 1609, the term *nebula* was applied to everything in the sky that appeared hazy in a telescope. That’s why you’ll sometimes see **M31 (Andromeda Galaxy)** referred to as “*The Great Nebula*.” It wasn’t until the early 20th century that astronomers realized that other galaxies – “island universes” – lay beyond the Milky Way. Until then, galaxies were thought to be large gas clouds in the Milky Way.

***Trivia Questions.** 1. What is a planetary nebula? 2. What was the first planetary nebula to be discovered? 3. Where did the term *planetary nebula* come from? 4. How many Messier planetary nebulae are there? (Answers on p. 5.)

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Upcoming Meetings/Activities. Our Jan. club meeting/lunar observing will be on **Thurs., Jan. 8th** from 7-10 p.m. at the Garden in Griffin. Our speaker will be **Phil Sacco**, who gave the delightful “Howl-een Fun” talk at our Oct. meeting. Phil’s talk at our Jan. meeting, “The Elements of Stellar Mythology,” will set the stage for a return engagement in Feb., in which he’ll take us outside for his popular “Mythology of the Night Sky” show-and-tell presentation about the constellations and their roots in mythology. Both talks will be loads of fun, as you already know if you’ve heard Phil speak before. We hope you’ll be able to attend

those meetings, because Phil’s talks are always highlight occasions for any group he addresses. Phil is one of the most dynamic, entertaining and knowledgeable speakers in astronomy, and we are fortunate to have the opportunity to enjoy him, not just once but three times.

Our Joe Kurz club observings will begin at dark at Site #3 on **Fri.-Sat., Jan. 16th-17th**. Those dates will be 3 & 4 days after the Last Quarter Moon, so we should have very dark skies on both nights. All we need to enjoy a memorable evening under the stars are two things: clear skies and *you*.

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Ye guileless stars! So eloquently bright,
Untroubled sentries of the shadowy night,
While half of the world is lapp’d in downy
dreams,
And round the lattice creep your midnight
beams,
How sweet to gaze upon your placid eyes,
In lambent beauty looking from the skies.

-Robert Montgomery
The Omnipresence of the Deity (1828)

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People You Should Know: Phil Sacco. Phil is A. L. Master Observer #11, which indicates that his skills as an observer are considerable. But that only scratches the surface of Phil’s accomplishments:

*He served as president of the Atlanta Astronomy Club in the late 1990s, during which time the AAC reached an all-time high of about 450 members, due largely to Phil’s engaging, magnetic personality.

*Later, Phil formed the Charlie Bates chapter of the AAC, and served as its president until it developed sufficiently to produce other leaders capable of guiding the club;

*He served for several years as Southeastern Representative of the Astronomical League (SERAL), in which capacity he basically acted as troubleshooter for all of the A. L.’s affiliate clubs in the southeastern region of the U. S.;

*Phil should have been – and probably *could* have been – an officer in the A. L., but he wasn’t interested in serving at the national level. Instead, he found his niche in astronomy – the mythology of the night sky – and he has become the nation’s leading authority on that subject. His overriding passion is giving show-and-tell outdoor

presentations to astronomy clubs and at star parties. His talks are lively, animated, and engrossing; they offer his listeners insights into a realm of astronomy that many of them never knew existed.

Phil lives in Stone Mountain, Ga.

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FRAC Members' 2015 New Year's Resolutions

***Doug Maxwell:** I resolve not to make any New Year's Resolutions in 2015.

***Bill Warren:** I resolve not to make any typing or spelling mistakes in the newsletter in 2014 2015!!? (It's easy if you take your time and don't rush.)

***Dwight Harness:** I resolve not to talk everyone's ear off in 2015 because there's nothing worse than a guy who has nothing to say but just talks and talks and talks and you think he's never going to stop but he just keeps on talking and talking and you wonder how he does it without stopping to breathe and I'm glad I'm not like that...

***Tom Moore:** I resolve to laugh at the humorous things members say at our meetings and observings, although they aren't funny and the things I say are really funny but nobody laughs.

***Larry Higgins:** I resolve not to be critical of anyone in the club in 2015.

I also resolve not to fall asleep at meetings, but it's hard not to when Bill Warren is the speaker. His talks are so dry that he must have been born in the Sahara Desert.

Finally, I resolve not to get mad when I tell people that I don't smell good and Bill says I need to use a deodorant soap.

***Ken Walburn:** I resolve to attend every FRAC meeting and Joe Kurz observing in 2015, except for the ones on Thursday, Friday or Saturday.

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Messier and the "M-Objects"

article by Bill Warren

The French comet hunter **Charles Messier** (1730-1817) fell in love with comets when, as a teenager, he saw the spectacular **Six-Tailed Comet**

of 1744. Later, as a young man drawing sky charts and atlases for the French navy, he saw **Halley's Comet** in 1758. For the next half century, Messier (pronounced: MESSY- a) searched the night sky for comets, using a series of telescopes with effective apertures of 3 in. to 4-1/2 in. He discovered sixteen comets, earning him the nickname "The Comet Ferret" for his ability to "dig out" comets from their dark surroundings. But that's only a small part of the reason why Charles Messier is famous today.

On Sept. 12, 1758 Messier encountered for the first time a problem that would often arise during his search for comets. While scanning the sky in northern *Taurus*, he came across a small, faint, hazy circular glow that looked very much like a tail-less comet. But further investigation showed that it wasn't a comet: comets change positions in the sky as they swoop toward the **Sun**, and this object was in the same place every night relative to its star field. Messier didn't know what it was, but he filed away its location and description and continued his search for comets.

The object he found was, of course, the supernova remnant that we now refer to as **Crab Nebula**. Messier didn't discover it, he merely re-discovered it – and made it famous as **M1** when his list of "Messier objects" was published. (It was discovered in 1731 by a British amateur astronomer, **John Bevis**. And after seeing it in his 78-in. telescope in 1844, Ireland's **Lord Rosse** gave M1 its now-familiar nickname: its wispy filaments reminded him of a crab.)

So it was with the globular cluster **M2** in *Aquarius*: Messier re-discovered someone else's discovery. The first "M-object" that Messier himself discovered was **M3**, a globular cluster in *Canes Venatici*, in 1764.

Messier's list of celestial objects to be avoided by comet hunters grew over the years, and in 1771 the first of his three lists appeared in the journal of the French Academy of Sciences. It included 45 objects, 17 of which he discovered. His second list, published in 1780, added 35 objects, and his final list, published the following year, added 23 more, making 103 Messier objects in all. Both of those lists appeared in *Connaissance des Temps*, an annual French astronomy journal.

Seven additional objects that appeared in Messier's observing notes but not his lists were added in 1966 by the American **Helen Sawyer**

Hogg. Not surprisingly, those objects were **M104** through **M110**.

In all, Messier discovered 38 of the objects on his list. His close friend and assistant, **Pierre Mechain**, discovered 28 more. The rest were discovered by other astronomers before Messier began compiling his list of cometary imposters. The Messier list was the world's first compilation of what is known today as *deep-sky objects*; its popularity placed him among the foremost astronomers of his day.

Amateur astronomers often wonder why Messier included **M45 (the Pleiades)** on his list, since it resembles a comet about as much as **Larry Higgins** looks like **Taylor Swift**. The Pleiades open cluster was well known to ancient astronomers. Messier included it because, with the publishing deadline for his first list drawing near, he decided that M45 would be a better stopping point than M44. So he added it at the last minute, knowing full well that no serious comet hunter could possibly mistake it for a comet.

Then there was "Messier's mistake": **M102**.

Messier originally intended to include 100 objects in his third list. But when Pierre Mechain discovered **M101**, **M102** and **M103** close to the publishing deadline, Messier decided to add them at the last minute. Unfortunately, the coordinates Mechain listed for M102 were wrong -- but Messier, again pressed for time, didn't check Mechain's coordinates for accuracy as he usually did. That has led people to wonder whether M102 was a repeat of M101, or whether Mechain's coordinates were meant to identify **NGC 5866**, a spiral galaxy in *Draco*. (Either way, though, it was a mistake because there was no galaxy where the coordinates indicated.) In a letter written years later, Mechain admitted that M102 and M101 were in fact the same galaxy. So actually there are 109 "M-objects," not 110.

Another question that sometimes arises is why Messier didn't list his objects in order of their right ascension (i.e., the order in which they rise in the east and set in the west), or why he didn't at least group them by constellation. There were two reasons: first, he published his list in three stages over 11 years; and second, he listed them generally in the order that he and Mechain found them, adding the others along the way.

Other notable facts about Messier and the M-objects:

*Charles Messier did not discover the planet **Uranus**; it was discovered in 1781 by the 43-year-old English amateur astronomer **William Herschel**. But Herschel wasn't sure what he had found, and Messier was asked to figure out what it was. Messier observed the object for several nights, and with the help of a mathematician he determined that its orbit was planetary, not that of a comet. Messier thus verified that Herschel had discovered the first planet to be added to the solar system since prehistoric times.

*The Messier list contains 39 galaxies; 29 globular clusters; 28 open clusters; ten nebulae (including four planetary nebulae); one supernova remnant (**M1**); a double star (**M40**, in *Ursa Major*); and a little Y-shaped, 4-star asterism (**M73**, in *Aquarius*).

Regarding the latter two: M40 is located where, a century earlier, the Polish astronomer **Johann Hevelius** had identified a "nebula above the back of *Ursa Major*." Messier thought it was a mistake but included it anyway, probably as a tribute to Hevelius.

Messier found M73 in 1780. He described it as "four stars with nebulosity." No nebulosity is there now, though.

*"M-objects" are found in 34 constellations. *Sagittarius* has the most (15), followed by: *Virgo* (11); *Coma Berenices* and *Ursa Major* (8 each); *Ophiuchus* (7); *Leo* (5); and *Scorpius* and *Canes Venatici* (4 each). Six other constellations have 3, nine have 2 and eleven have 1.

*The brightest object on the Messier list is M45 (the Pleiades) at mag. 1.6. It measures nearly 2° in dia., making it – along with the open cluster **M44 (Praesepe, the Manger)** in *Aquarius*, which is virtually the same size) – the largest of the Messiers.

*The smallest Messier object is **M76 (The Little Dumbbell)**, a planetary nebula in *Perseus*.

*The faintest object on the list – but not the hardest to find or observe – is **M91** (mag. 10.2), a spiral galaxy in *Coma Berenices*.

*The most difficult Messier objects to find are generally considered to be three face-on spiral galaxies: M101 in *Ursa Major*; **M33** in *Triangulum*; and **M74** in *Pisces*.

*The southernmost Messier is **M7**, an open cluster in *Scorpius*. The northernmost is **M82**, an irregular galaxy in *Ursa Major*.

*The Astronomical League has two Messier observing pin programs, the Messier and the Binocular Messier.

*In 1995, Britain's beloved **Sir Patrick Caldwell-Moore** (who for 55 years hosted the popular BBC-TV show *The Sky at Night*) created a "Caldwell Catalog" of deep-sky objects that do not appear on the Messier list but rival the Messiers in brightness and beauty. The Caldwell list mirrors the Messiers with 109 objects – but not because of M102 being a duplicate of M101. Sir Patrick wrote, "Not many people accept **M110**, one of the companions of M31, and still prefer to call it **NGC 205**." The A. L. offers an observing pin in the Caldwell Program.

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Answers to Planetary Nebula Trivia Questions

on p. 2: 1. A planetary nebula is the shroud of gases expelled from an aging red giant star that is running out of hydrogen in its core and beginning to fuse helium atoms into carbon and oxygen. The remaining white dwarf star's immense heat and energy pushes away the gases in its outer envelope, forming a halo-like ring or patch of glowing gas around the star. 2. The first planetary nebula to be discovered was **M27 (Dumbbell Nebula in Vulpecula)**, by **Charles Messier** in 1764. 3. **William Herschel**, who discovered 33 planetary nebulae, gave them that name because they reminded him of **Uranus**, the planet he discovered in 1781. 4. There are four Messier planetary nebulae: **M27**; **M57 (Ring Nebula)** in *Lyra*; **M76 (The Little Dumbbell)** in *Perseus*; and **M97 (Owl Nebula)** in *Ursa Major*.

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Upper Right Corner: M77, A barred spiral galaxy in *Cetus*. Photo by **Alan Pryor**. **M77** was discovered in 1780 by **Pierre Mechain**, **Messier's** assistant. It lies adjacent to a mag. 9 star and about 1° SE of 4th-mag. **Delta Ceti**. **M77's** large, prominent core comprises about half of the galaxy's size.

M77 is the prototype of the **Seyfert galaxies** – spiral galaxies with unusually bright cores. The

brightness of a Seyfert galaxy's core is thought to be the result of turmoil generated by one or more central black holes.



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Below: IC 342, a face-on spiral galaxy in *Camelopardalis*. Photo by **Alan Pryor**. Located about 3° S of the well-known string of fourteen mag. 7-8 stars known as **Kemble's Cascade**, **IC 342** is faintly seen visually as a large, unevenly lighted glow in small telescopes. In a 10-in. 'scope it displays a large, concentrated core inside the galaxy's diffuse halo, which contains numerous foreground stars and measures about 2 thumb-widths in diameter.



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Above: NGC 2264 (The Christmas Tree Cluster) and Cone Nebula, an open cluster and dark nebula, respectively, in *Monoceros*. (North is at the top of **Ron Yates's** photo.) **NGC 2264** is a large, bright open cluster spanning $1/2^\circ$ of the night sky. Its nickname derives from its elongated triangular shape and stars arranged in rows like lights adorning the limbs of a Christmas tree. The brightest star in the cluster, 5th-mag. **S Mon**, is located at the tree's base.

NGC 2264 is a visual delight with something for everyone. Even 10x50 binoculars or a small telescope will show 20 bright stars and many more fainter ones. A 10-in. 'scope reveals as many as 100 or more bright and faint stars.

Cone Nebula, on the other hand, is virtually impossible to see if you don't own a h-Beta filter – and even then it's not easy. As might be expected, it's cone-shaped, and located at the bottom left in Ron's photo, just beyond the 6.5-mag. star the forms the top of the tree. You'll see the dark nebula, if at all, as a star-poor area with no definable shape. It shows up nicely in the photo, though, doesn't it?

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Opposite Center: NGC 2244 (Rosette Nebula), an open cluster/emission nebula in *Monoceros*.

(North is toward the left edge of **Ron Yates's** photo.) **NGC 2244** is one of **Dawn Chappell's** favorite deep-sky object – and rightfully so. It consists of an open cluster of six bright stars and a multitude of fainter stars lying within a visually faint but undeniably lovely ring of nebulosity – **Rosette Nebula** – that measures $1.3^\circ \times 1^\circ$ in dia.

Due to its large size, the nebula is best seen with a rich-field telescope and nebula filter. The open cluster is bright enough to be seen in small telescopes. **Yr. editor** saw only faint traces of nebulosity when he tracked down NGC 2244 in his Herschel 400 quest using a 10-in. Dob. His description of the cluster: “A loose group of about 15 stars, twelve of which are in pairs. Five of the stars form a wide, flat **X**. This cluster, which defines the center of the Rosette, is located $2-1/2^\circ$ E of 4th-mag. Epsilon Mon.”

Technically, the open cluster is NGC 2244 and Rosette Nebula consists of **NGCs 2237, 2238, 2239 and 2246**, but most people refer to it as 2244.

At any rate, NGC 2244 appears in five A. L. observing programs: Herschel 400, Deep Sky Binocular, Caldwell, Urban and Caldwell (#50).



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The term *black hole* was first used by science journalist **Ann Ewing** in “Black Holes in Space,” a 1964 article that appeared in *Science News*, a publication of the Society for Science and the Public. Ewing said she had heard the term used somewhere, but she couldn't remember who said it, or when, or where.

Later, the term was borrowed by physicist **John Wheeler**, who used it at a national conference.

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