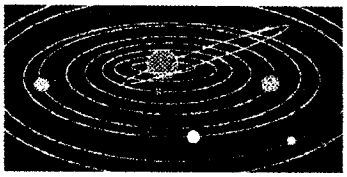
THE FLINT RIVER OBSERVER



Vol. 4, No. 8 **FLINT RIVER ASTRONOMY CLUB** **October, 2000**

Officers: President, **Steven (Smitty) Smith** (583-2200) -- or, if you prefer e-mail: <starship-saratoga@dellnet.com>; Vice President/newsletter editor, **Bill Warren** (229-6108; <warren1212@mindspring.com>); Secretary-Treasurer, **Ken Walburn** (P. O. Box 1179, McDonough, GA 30253 / 954-9442); AlCor, **Neal Wellons**, and Web Site Coordinator, **Cody Wellons** (946-5039); Librarian,**Katie Moore** (228-6447); Observing Chairman & Public Observings Coordinator: **Larry Higgins** (884-3982), e-mail <larrylhiggins@yahoo.com> . All of these phone numbers have 770 area code prefixes. Club mailing address: 1212 Everee Inn Road, Griffin, GA 30224. FRAC web page address: <http://welcome.to/frac>.

Please notify **Bill Warren** promptly if you have a change of address or e-mail.

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Club Calendar. Thurs., Oct. 12th: FRAC meeting (Beaverbrook media center, 7:30); **Fri., Oct. 13th:** Beaverbrook observing (behind the school, at dark); **Fri.-Sat., Oct. 27-28:** Cox Field observings, at dark).

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President's Message. With three articles in this issue (including a **dyne-o-mite!** seasonal observing treat from **Phil Sacco**), space is likely to be somewhat limited so I'll simply (a) thank those of you who helped out at our Boy Scout Camporee observing last month, (b) welcome **Cory & Grady Dukes** to FRAC, and (c) turn things over to **Bill.**

-Steven (Saratoga Smitty) Smith

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Last Month's Meeting/Activities. Since this issue was prepared long before our Sept. 29th-30th observings and meeting, we'll report on those activities next month.

We had 13 at our Fri., Aug. 25th Cox Field observing: **Steve & Dawn Knight, Tim Astin, Larry Fallin, Jerry Williams, Donald Harden, Smitty, Larry Higgins, Mike & Danielle Stuart,** newcomers **Grady & Cory Dukes,** and **yr. reporter.**

The observing drought continues. Between July 3rd-Sept. 17th -- *2-1/2 months!* -- only **five** nights were worth making the effort to get out and observe. Sept. 15th was *not* one of those nights, which probably explains why only **Mike & Danielle Stuart** and **yrs. truly** made it to BB to show the sky to a handful of students and parents. We still managed to find **NGC 6441** (a little globular cluster in *Scorpius* and a Universe Sampler object), though.

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This 'n That. Here's why you should always record your observations: Of the 18 Universe Sampler telescopic objects: four are Messiers **(M1, M27, M51** and **M57);** eight are Herschel 400s **(NGCs 404, 457, 1528, 2169, 2362, 4361, 5907, 6441** and **6624);** and three are Double Star Club targets: (*Gamma [γ] Andromedae, Iota [ι] Cancri,* and *Beta [β] Cygni (Albireo).* **M51** also qualifies as an Arp Peculiar Galaxy target.

***Questions: 1. Which constellation has the most stars visible to the naked eye? 2. Where is the oldest astronomical**

observatory on earth located? (The answers will appear in next month's newsletter.)

*Ask **Smitty** to tell you how to find the "mini-coathanger" asterism (which, located in *Ursa Major*, is not to be confused with the more familiar "coathanger" cluster **Collinder 399, or Brocchi's Cluster**, located in *Vulpecula)*. Or, you can look it up yourself if you still have the May '98 issue of *Sky & Tel* (p. 105).

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Membership Renewals Due in October: Shirley & Brandy Allender; Michael Chappell; Joe & Cody Hinton; Raymond Hughes; and **Art & Jane Russell.** *(Remember, our club dues will go up at least $0.50 a year as of Jan. 1, 2001; if you want to save a bit of pocket change, you might want to renew your FRAC membership before that date regardless of when it's scheduled to expire.)*

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Upcoming Meetings and Activities. Our **Thurs., Oct. 12th** FRAC meeting will feature another visit by Gordon College's (and FRAC's own) **Dr. Richard Schmude,** whose topic will be "Planetary Nebulae," with asides regarding **ALPO,** the Assn. of Lunar and Planetary Observers. Given Dr. Schmude's immense appeal and the popularity of planetary nebulae among veteran observers, this promises to be a truly exciting evening.

Fri., Oct. 14th, will be devoted to our monthly Beaverbrook observing. We'll set up our 'scopes behind the trailer at the NE end of the school.

Our Cox Field weekend observings on **Fri.-Sat., Oct. 27th-28th,** will fall directly on the new moon. Start making plans now to join us for some cool weather and perfect observing conditions. (No, **Ken Walburn,** that *doesn't* mean that **Larry H.** won't be eating pork & bean sandwiches before joining us at Cox Field!)

At our November meeting, **Katie** will tell us about her trip to California to receive the Horkheimer 2000 award.

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The Sky in October. Jupiter & Saturn will be up practically all night in Oct. -- and we hope you will be, too, at Cox Field on the 27th and/or 28th.

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Seeing

article by Bill Warren

Beginning stargazers often confuse the terms transparency and seeing. **Transparency** refers to how clear the sky is, as indicated by the faintest stars you can see naked-eye. **Seeing**, on the other hand, refers to the relative *stillness* of the air, not to its clarity. The more turbulent the atmosphere, the more stars seem to twinkle.

Stars twinkle because we see them as tiny points of light, unlike the Moon and planets that are closer to us and thus are seen as disks that reflect sunlight. When the upper atmosphere is unsteady, moving pockets of air bend the incoming starlight slightly and create a twinkling effect; the Moon and planets, on the other hand, reflect enough sunlight across their disks to retain their shape. But even planets will twinkle in turbulent air when viewed near the horizon, because there's more atmosphere for their light to pass through than when the planet is high in the sky.

At any rate, **seeing** is important because it affects the quality of the images we receive. Under unsteady observing conditions, images flicker or blur and much fine detail is lost. In viewing, say, **Jupiter**, by telescope under poor seeing conditions, you may see its dark belts and light zones appearing to move in and out of focus, or even to disappear entirely for seconds at a time, as the planet's light is bent by the moving air.

Many of the AL's observing programs ask participants to rate the evening's seeing conditions. To do so, select a bright star that is

fairly high in the sky and take it slightly out of focus, producing a ball-like image with spikes of light projecting outward on all sides. Then use the **Antoniadi seeing scale** to rate the amount of flickering or dancing among those spikes on the following 1-5 basis:

1. Perfect steadiness, no quivering of the out-of-focus image;
2. Slight quivering, with moments of calm lasting for several seconds;
3. Moderate quivering, with larger air tremors;
4. Constant, troublesome quivering; or
5. Severe quivering in which images fairly dance across the field of view and render detailed observing impossible.

If that scale is unclear or confusing -- well, you'll soon get used to it if you use it every time you observe. But you can also think of the old high school "A-B-C-D-F" grading scale and use the corresponding numbers 1-5 to grade image clarity as *excellent* (1, or "A"), *very good* (2, or "B"), *average* (3, or "C"), *below average* (4, or "D"), or *failing* (5, or "D").

It isn't necessary to have pinpoint accuracy here, either: it's perfectly acceptable, for example, to describe fairly good seeing conditions as "2-3" and fairly poor seeing conditions as "3-4". Or, when in doubt as to whether to give an evening a seeing rating of "3" or "4", you might skip the intermediate (3-4) rating and give it the number that reflects poorer seeing -- in this case, "4". The lower rating will help to explain why you didn't see more detail in the object you observed that night.

Remember, though, that seeing conditions can change dramatically over the course of a single evening of observing -- and when that happens, you need to re-calculate the seeing as described earlier. When conditions worsen, you'll find yourself seeing progressively less detail in what you observe -- and the fainter the object, the less you'll see. On nights of really bad seeing, you probably won't see face-on galaxies at all unless, like **M51** (Whirlpool Galaxy), they have bright, compact cores; everything else in the galaxy will more or less blend into the surrounding background.

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Transparency

article by Bill Warren

Transparency -- sky clarity -- is expressed in terms of the magnitude (brightness) of the faintest star you can see naked-eye, whether directly or by using averted vision.

Transparency is primarily affected by two factors: (a) solid particles in the air such as water vapor (e.g., clouds, haze, ground fog), smoke, dust, pollen, or any form of industrial or vehicular air pollution; and (b) the amount of light present, whether natural (e.g., moonlight or residual sunlight) or artificial (e.g., urban sky glow or nearby streetlights, security lights or lights from traffic) that bleaches out all or part of the night sky. The clearer the sky, the fainter stars you'll be able to see naked-eye.

Larry and **Smitty** will verify that, when we began observing at Cox Field in 1997, it wasn't at all uncommon for us to experience wintry evenings when mag. 6+ stars were relatively easy to identify naked-eye. Unfortunately, Pike Co.'s low tax base has lured new businesses and residents in droves since then, and the optimal transparency at Cox Field has risen accordingly -- about half a magnitude. Nowadays, evenings of 5.8 transparency are rare at Cox Field even in wintertime, and the presence of naked-eye 5.5 mag. stars indicates a *very* clear night. We haven't had nights like that since June.

One of the many excellent features of the **Seasonal Star Charts** (also sold as **Celestron Star Maps** and **Meade Star Maps**) is that the charts, which show the locations of all stars of mag. 5.5 or brighter, also list the magnitudes beside the stars, with half-magnitudes indicated by a line under the mag. number (e.g., $\underline{4}$ for mag. 4.5). Like other star atlases, **SSC** also indicates relative brightnesses by the size of the circles representing the stars, but placing the numbers by the stars simplifies the process of determining how bright a star is to within 1/2 magnitude.

One of the best constellations to use in determining transparency is the summer constellation *Corona Borealis* (the Northern Crown), lying between *Hercules* to the E and *Bootes* to the W.

Look at *CrB* on the **SSC** chart on p. 11: there are 7 stars comprising the semicircular crown. One is 2nd mag., one is 3rd mag., one is 5th mag., and the rest are 4th mag.

Find *CrB* in the NW sky. How many stars can you see? If you can see all of them the sky's transparency is 5 or higher; if you can see only 6 stars, the transparency is 4.5. (*Delta [δ] CrB* is mag. 4.5.) If you can see just 5 stars in the crown, the transparency is 4. The presence of only 2 stars indicates a transparency of 3, and one star (mag. 2 *Gemma, Alpha [α] CrB*) means you won't be finding much of anything that night.

And that's how it's done. Find the faintest star you can see by averted vision and then find it on the appropriate chart. That star represents the "limiting magnitude" of stars you can use in finding objects in the sky without using a finderscope.

A final reminder about transparency: most of the AL observing clubs recommend (but don't require) that you record transparency. Check the requirements for whichever program(s) you're pursuing; if transparency isn't required, whether you list it or not is strictly up to you.

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Howl-een Fun

article by Philip Sacco (Lunatic #82)

Well, it's that time of year again: the season of witches, ghosts, goblins and "things that go bump in the night."

Yep, it's hard to believe it's almost Halloween again, and time for the annual appearance of eerie celestial sights and scary things. If you like night frights, then this Halloween Trick-or-Treat list will be right up your alley. So pour yourself a hot cup of witches' brew, put on something warm and take a trip on the Dark Side with me for a Howl-een good time!

The Howl-een Hunt. Let's do a little observing warm-up before we get to the "13 Un-Lucky Objects." A little naked-eye hunting will get us in the mood for the evening. If we're going to face up to ghosts, ghouls and such fearsome creatures of the night, we might as well stop by to see some other things that supposedly are Resting In Peace.

Our first stop will be somewhere high overhead by mid-evening. Commonly known as ***Delphinus*** (the Dolphin) and located just NE of *Aquila* (the Eagle), this little constellation was once known as **Job's Coffin;** the name likely came from the odd, ole-timey coffin shape of its small group of stars.

The second constellation to hunt down is just S of *Pegasus*...Find the sea monster ***Cetus***. The third easy monster to hunt down is the constellation ***Draco*** (the Dragon).

A little hunting through some old atlases may be necessary to locate some of the following:

***The False Cross.** I'll give you a broad hint: *Iota (ι)* and *Epsilon (ε) Carinae*, and *Kappa (κ)* and *Delta (δ) Velorum.* Good luck: these are "deep in the ground," so to speak, hee hee hee. (Or should I say, "AH - HAA - HAAA!"?)

***The Horse and the Rider.** (Think: "The Legend of Sleepy Hollow.") *Zeta (ζ)* and *80 Ursae Majoris*, better known as **Mizar A/B and Alcor.**

***The Sickle.** Just try to find this one at this time of year. It's a real trick. (Hint: the star *Regulus* is at the bottom of the sickle's handle.)

***Cerberus** (the 3-headed dog guarding the gates of Hades). This is a *very* uncommon constellation; after all, how many 3-headed, flesh-eating dogs have YOU seen? [*Editor's reply: None, but I dated a few.*]

As we approach the "Witching Hour," let's get to the good stuff -- after one last easy naked-eye object, that is. Turn your attention

to the constellation *Perseus* and hunt down the **"Demon Star,"** commonly known as **Algol,** or **Beta (β) Persei.** This star is one of the shortest-term variable stars, and can be seen to brighten and dim in the course of just a few days!...

Thirteen Un-Lucky Objects. Okay, it's dark out now and the sky is full of creatures of the night. You'll need a telescope to spy out these 13 wickedly delightful targets; after all, they'd rather you didn't see them at all, so they can be found only under the cover of night!

1. Markarian's Chain (M84/86/88). You'll have to hunt early to find this (galaxy) chain in a woman's hair.

2. The Dragon Nebula (M8, NGC 5623). Reputed to live in a teapot, if you know what I mean.

3. The Ghost of Jupiter (NGC 3242). It's located under the tail of *Hydra* (the Sea Serpent), if you're brave enough to spook it out. Good luck!

4. The Cat's Eye (NGC 6543). This creepy critter can be found under the first curl of the Dragon.

5. The Owl Nebula (M97, NGC 3587). You'll have to crawl under the belly of the Big Grizzly to find this grisly bird.

6. The Owl Cluster (NGC 457). This owl guards a queen's (*Cassiopeia's)* treasure.

7. The Veil (NGCs 6960, 6992-5). Just slipped off Job's Coffin onto the swan.

8. The Blinking Nebula (NGC 6826). Be careful or this one will drop on your head when you're not looking -- or rather, when you can't see him. Trickly little fella: now ya see him, now ya don't! Like the veil, this winking will-o'-the-wisp flies with the Swan.

9. The Ghost Ring (IC 5148). Hee hee hee, Happy Hunting! Dig REAL DEEP to find this "*Grus*-some" one...and up comes a GHOST!

10. Mirack's Ghost (NGC 404). This guy is related to a chained-up princess (*Andromeda)* -- "monster meat," if you will; he'll be hovering overhead soon.

11. The Spider (NGC 5829). No telling where you'll find this little guy...Try looking under your observing chair! (Actually, you'll find him in *Bootes -- BOO!* for short.)

12. Medusa. This one is an unable -- **Abell 21**; are you *sure* you want to look her up? (Hint: She lives with the Twins, and she also answers to the name **PK 201**.)

13. The Witch Head Nebula (IC 2118). The witch will be a haunting sight early in the morning in *Eridanus* (the River), near *Rigel,* the right foot of *Orion* (the Hunter) as he faces us.

Well, there you are, kiddies: a ghastly, ghostly ~~gallery of gremlins~~, goblins ~~and~~ ghouls. Looks like you made the trip okay...You *did* get back in one piece, didn't you? If not, you can't say I didn't warn you! AH - HAA - HAAA!

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*Editor's Note: Of Phil's "13 Un-Lucky Objects," **#s 1, 2 and 5** are Messier objects (Markarian's Chain also includes several easy Herschel 400 objects); **#s 3, 4, 6, 8* and **10** are easy Herschel 400 objects; **#7**, a well-known supernova remnant, is an easy Herschel II target for any telescope, and best viewed with a nebula filter; and **#11** is an Arp Peculiar Galaxy. As for the rest -- well, some things are perhaps best left undisturbed, especially on a Howl-een good night!

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