THE FLINT RIVER OBSERVER

Newsletter of the Flint River Astronomy Club
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Officers: President/Treasurer, **Steve Knight**, sdknight@bellsouth.net ; Vice President, **Larry Fallin:** lbfj@mindspring.com ; Secretary, **Dawn Knight** (see above); Board of Directors: **David Ward:** dward@flintriverastronomy.org; **Steven (Smitty) Smith; Doug Maxwell:** dougmax1@bellsouth.net; and **Felix Luciano:** Montbo2@yahoo.com. Newsletter editor/ observing chairman, **Bill Warren:** warren1212@mindspring.com ;Webmaster, **David Ward** (see above); Alcor/Librarian, **Tom Moore:** tmoore@dfiequipment.com; Event Photographer, **Doug Maxwell** (see above). Public Observing Liaison, **Felix Luciano** (see above). Club mailing address: 1212 Everee Inn Road, Griffin, GA 30224. Web page: www.flintriverastronomy.org , discussion group at FRAC@yahoogroups.com. Please notify **Bill Warren** if you have a change of address, telephone no. or e-mail provider.

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Club Calendar. Tues., Feb. 10: Beaverbrook observing (following P.T.A. meeting, plan to set up behind the school at 7:15); **Thurs., Feb. 12:** FRAC meeting (Beaverbrook media center, 7:30); **Fri.-Sat., Feb. 20-21:** Cox Field observings (at dark).

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Editor's Message. Officer elections are coming up in February, and since **Steve** has announced that he isn't running for a 3rd term of office it looks like we'll have a new president this time around. To celebrate his and **Dawn's** three years as FRAC officers, we've prepared a **Special Edition #4** of the *Observer,* *"STEVE & DAWN KNIGHT: A PERSPECTIVE,"* that you'll be receiving shortly.

While losing a president of Steve's stature and accomplishment isn't a happy occasion, there's good news here: FRAC is stronger now than it has ever been, with a leadership base that is constantly expanding. Whoever is chosen to lead FRAC in 2004 will not be working in a vacuum of autocratic decision-making, as was largely the case prior to Dawn & Steve's arrival. Rather, he/she can count on receiving capable assistance from a number of directions.

Anyway, it's not as if Steve were leaving the club or moving to Ypsilanti: he'll still be around, probably as treasurer since he has easy access to the club's bank account.

Maybe now he'll have time to catch up with Dawn in the A. L. observing pin count. (See p. 7.)

-Bill Warren

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Membership Renewals Due in February: Scott & Alisa Hammonds; Felix Luciano; and **Mike, Karen & Devan Steen**. Please send your **$15** check payable to FRAC c/o **Steve Knight** at his address on p. 1.

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Last Month's Meeting/Activities. We had six at our Dec. 26th Cox Field observing: **Steve & Dawn, John Wallace, Smitty, Chuck Sims** and **yr. editor.** Fourteen showed up the following evening: MGASers **George "Cousin" Lilley** (with his 18" truss tube Dob) and **David Dempsey**; **Jim Hamilton; Dawn & Steve; John Wallace; Doug Maxwell**; **Chuck Sims; Smitty & Josh Smith; David Ward; Lee & Travis Russell;** and **yr. editor.** John W. finished his Deep Sky Binocular observations, and David W. reached the halfway point of the Herschel 400 Club. (David also has logged 26 Herschel IIs, 31 Caldwells, 17 FRAC 50s and 3 comets since the Nov. meeting.)

An even larger crowd of nineteen – 17 members and two guests – attended our Jan. meeting: **Dawn &**

Steve, Larry Fallin (who presided over the meeting), **Irene & Curt Cole, Felix Luciano, Doug Maxwell, John Wallace, Bill Snyder, Chuck Sims, Lee Russell, Scott Hammonds, Smitty, Katie & Tom Moore, Louise Warren,** visitors **Glen Nelson** and **Russell Whitehead,** and **yr. editor.**

Ten members attended our Jan. 16th Cox Field observing: **Curt Cole** (who never slowed down all evening), **Chuck Sims, Steve Knight, John Wallace, Smitty, David Ward, Jim, Rebecca & David Hamilton** and **yr. editor.**

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Upcoming Meetings/Activities. We're trying something new this time around, i.e., *a new time for our Beaverbrook observings.* Until further notice, we'll conduct those observings after PTA meetings in order to reach more children whose parents haven't been inclined to bring them to the school on our regularly scheduled BB Friday evenings. Since the PTA meets on the 2nd Tuesday of most months during the school year, our new schedule calls for a Beaverbrook observing on **Tues., Feb. 10th.**

The meetings start at 7 p.m. Since normally they don't last very long, we recommend your arriving at the observing site around **7:15 p.m.** We'll set up behind the trailers; to get there, drive toward the school along the main entrance road and bear right around the buildings. The viewing area will be beyond the trailers. **Saturn** should be up and, depending on the treeline, we may also be able to show our guests **Comet LINEAR** (and wouldn't *that* be fun?!!!).

Two nights later, at BB at **7:30** on **Thurs., Feb. 12th,** we'll hold officer elections at our monthly club meeting. **Yr. editor** will talk about how to get started in two of the A. L. observing clubs, the Double Star Club and Deep Sky Binocular Club.

We'll also conduct a public observing for the 2nd graders and their parents at Futral Road Elementary School in Griffin on a weeknight during the latter portion of February, but the date had not been set by the time this newsletter had to hit the presses. We'll let you know when, and how to get there.

With the new moon falling on the 20th, we'll have just one Cox Field observing weekend in Feb., i.e. on **Fri.-Sat., Feb. 20th-21st.**

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This 'n That. Our sympathies to **Dawn Knight** regarding the passing in January of her favorite uncle, **Sonny Adams.**

***Billy and Alice Dodd** are two of Chiefland Astronomy Village's founders. Billy has long been receiving kidney dialysis; until recently, Alice has administered the dialysis to eliminate Billy's having to go to Gainesville for treatment. The Dodds have an adult son, **Anthony,** living at home; he is blind and retarded.

Before Christmas, Alice Dodd suffered a severe stroke that left her partially paralyzed and unable to continue administering Billy's dialysis at home. Worse, her medical disability coverage is minimal, and insufficient to cover their prescription costs and living expenses. Amateur astronomers around the U. S. are being asked to help the Dodds in their time of adversity.

Smitty gave **Steve** a donation to start a FRAC fund for Billy and Alice, and he is asking whoever can to contribute to this worthy cause. No funds will come from our FRAC treasury, only whatever donations you give. You can send your checks, payable to FRAC, c/o Steve at his address on p. 1. He will, in turn, send the Dodds a check on **Feb. 10th.**

***Dan Newcombe's** succinct evaluation of the recently released Mars surface photos: "Red dirt and rocks. It's Georgia."

Prof. Stargazer's response: "Nonsense. Such a simplistic view shows at best a rudimentary knowledge of our state. If it was Georgia in the photos, you'd see a highway roadwork crew, one-lane traffic backed up for five miles, six politicians on their way to prison, a washing machine on a front porch and a car on blocks in the yard (with hubcaps and tires missing, of course)."

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The Sky in February. ***Wanta see a comet without waiting until May?*** Just point your binoculars at the 3rd-mag. star *Gamma Peg* -- the star at the SE corner of the Great Square -- and *Thar she blows!*: **Comet C/2000 T7 (LINEAR),** a fuzzy, mag. 7 ball of whiteness. Although not nearly as bright as it will be 3-4 months from now, LINEAR will show a tail telescopically if not in binoculars. Just note its position in the sky in binocs, then scan that area with your telescope. (The Feb. '04 issue of *Astronomy* [p. 67] charts its location throughout February.)

As for the planets – well, **Saturn** and its lovely rings will be up almost all night in Feb., lying near the feet of *Gemini* (the Twins).

Jupiter will rise about 8:30 at the beginning of the month, and by month's end it will be rising shortly after sunset. At 2 a.m. on **Feb. 7th, Ganymede** and **Callisto** will transit the Jovian face, with Ganymede's shadow in evidence.

Mars, growing smaller and fainter but still evident to the naked eye as a bright orange "star", will lie to the upper left of **Venus,** in *Aries* (the Ram) in the W sky.

Venus will be the very bright "star" in the W sky; lying between **Earth** and the **Sun,** Venus displays **Moon-**like phases that can be seen telescopically: presently its phase is *waning gibbous,* about 2/3 out of round. Under excellent observing conditions, uneven coloration of Venus can be detected telescopically, evidence of cloud activity in its upper atmosphere. (That atmosphere is far too dense for our telescopes to penetrate them and reveal any surface features.)

While the period from May throughout the summer months will find most of us "comet-happy", let's not forget that, on June 8, 2004, Venus will cross the Sun's face. Since Venusian solar transits have occurred only 45 times since the first recorded sighting of the planet in the 16th century B.C. (the last such transit occurred in 1882), you'll be wise to mark that event on your calendar.

Oh, by the way: the transit will already be in progress at sunrise on the 8th, so be sure to take time between now and then to find an observing location that will give you an unobstructed view of the eastern horizon – and to beg, borrow or steal a solar filter or specially filtered eclipse sunglasses with which to view the event.

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Observing Report: Felix Luciano

Date: Jan. 11-12, 2004
Location/Time: Jonesboro, GA, 10:45-12:30
Equipment: XT8 Orion Dob, 11x70 binocs mounted on a photo tripod
Seeing Conditions: Steady views, no noticeable air disturbance, no wind or clouds

NGC 752 (OC, *And*). Huge open cluster taking the full field of view of the 32mm Plossl (38x).

Gamma Arietis. Great looking double star system. Clean split, no distortion noted at 200x.

M37 (OC, *Aur*). Huge, dense cluster, lots of bright stars at 38x. Centrally condensed.

M36 (OC, *Aur*). At 38x and 86x I saw two arms extending away from the cluster's center. The cluster showed in the finder as a bright, dense group of stars.

Saturn. Showed good contrast at 100x. Moons as follows: **Rhea** to the extreme west, **Dione** close to the south of the planet, **Tethys** close by to the north and **Titan** far to the east.

The 32mm with 5x Powermate (188x) showed a pretty good image of Saturn. The A Ring, Cassini Division, B Ring and C Ring showed great contrast, extremely sharp. The C Ring showed a slightly duller shade than that of the black skies between the planet and the rings. A very subtle shade radiated into the B Ring at the eastern part of the planet/rings.

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SEEING AND TRANSPARENCY

article by Bill Warren

(reprinted and revised in combined form from separate articles in the October, 2000, Observer)

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.

Twinkle, Twinkle, Little Star. 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 lighter 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.

The Antoniadi Seeing Scale. Many of the A.L.'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 (e.g., **Capella, Alpha** Aurigae) and take it slightly out of focus, producing a ball-like image with a smaller, blackish ball inside it and 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 along the edges of the out-of-focus image;
2. Slight quivering along the edges, with moments of calm lasting for several seconds;
3. Moderate quivering, with larger air tremors and spikes;
4. Constant, troublesome quivering with large spikes; 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"), *good,* or *average* (3, or "C"), *below average* (4, or "D"), or *failing* (5, or "F").

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 as "3-4". Or, when in doubt as to whether to give an evening a seeing rating of, say, "3" or "4", you might skip the intermediate (3-4) rating and give it the number that reflects poorer seeing – in this case, "4".

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.

Transparency. Transparency – sky clarity – is expressed in terms of the magnitude (brightness) of the faintest star you can see naked-eye, whether directly or by 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 fading sunlight) or artificial (e.g., urban sky glow, 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.

Smitty and **John Wallace** 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 – at least half a magnitude. Nowadays, evenings of 5.8 transparency are rare at Cox Field even in wintertime, and the presence of naked-eye mag. 5-5 stars indicates a *very* clear night. We haven't had many nights like that lately.

Determining Star Magnitudes. One of the many excellent features of the **Seasonal Star Charts** (also sold as **Celestron Star Charts** and **Meade Star Charts**) 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., 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 ½ magnitude.

The easiest way to determine transparency is to use close groupings of familiar stars of known but varying brightnesses for comparison purposes. For example, consider the constellation *Taurus* (the Bull).

The brightest star in the "V" of the Bull's head is, of course, mag. 1 **Aldebaran (Alpha Tauri).** If you extend the two arms of the "V" outward for about 15 degrees, you'll find mag. 2 **Nath (Beta Aurigae**, since Taurus and *Auriga* share that star) and mag. 3 **Zeta Tauri. (M1, Crab Nebula,** lies 1 degree NW of Zeta.) The star at the base of the "V", **Gamma Tauri,** is mag. 4.

Almost exactly halfway between Zeta Tau and Nath, and a bit east of the line between them, is a mag. 5 star – and about 1/3 of the way from that mag. 5 star to Nath is a mag. 5.5 star. A mag. 6 star lies roughly halfway between Zeta and Nath.

If you can see Gamma Tau (mag. 4) but not the mag. 5 star referred to above, the transparency lies somewhere between 4-5. If you can see the mag. 5 star, can you also see the mag. 5.5 and mag. 6 stars? The transparency level – also referred to as the **limiting magnitude** -- lies just below that of the faintest star that you can't see. (And if you can't see mag. 3 Zeta Tauri, you aren't going to see much of anything else that requires clear skies, either.)

Anyway, that's how it's done. Find the faintest star you can see and then find it on your star 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 A.L. observing clubs recommend (but don't require) that you record transparency. Check the requirements for whichever program(s) you're pursuing; if transparency is not required, whether you list it or not is strictly up to you.

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A BEGINNER'S TELESCOPE WITH

YOUR NAME ON IT

article by Steven "Saratoga Smitty" Smith

(Editor's Note: Reprinted from the Aug., 2000, Observer, *this article first appeared in the July, 1997 issue*.)

I'm often asked, "I want to get a telescope; which one is the best?" My reply is always the same: *The one you're going to use often after you buy it.* My listeners' blank stares deepen as I go on to explain that *Telescopes are like hammers…*

There are many different kinds of hammers; each is designed for use in certain kinds of tasks. The telescope that's right for you depends on what you plan to do with it.

A wide variety of telescopes are available – reflectors, refractors, Schmidt-Cassegrains and off-axis reflectors, to name a few. Each type collects and focuses light in its own special way. Each has its own strong points and limitations for different kinds of astronomical viewing.

Mountings. Telescope mountings are many and varied, but basically boil down to two types, *equatorial* and *altazimuth.* With equatorial mounts, a slow-motion control knob or motorized drive is used to track objects across the sky. Equatorial mounts can be a headache for beginning observers because they must be polar aligned and set up properly before objects can be observed. They are also difficult for a beginner to operate in the dark due to the confusing array of friction knobs, handles, counterweight arms and height adjusters present.

Altazimuth mounts simplify the task of locating objects, but they do not track: you must move the telescope tube vertically and horizontally to keep the object in your field of view. This can be rather confusing at first, since most astronomical telescopes (including those on equatorial mounts) invert and/or reverse the images. You can't use motorized drive with an altazimuth mounting without severe modifications of the sort that **Doug Maxwell** has done on his 14" Dob.

Other Problems. Mountings aside, most beginners' problems with their telescopes can be traced back to flimsy or unstable tripods, or to cheaply made friction locks (the devices that enable you to move and point the telescope on its mountings but keep it from drooping or swinging away from its target). A quality mount and tripod costs more than a cheaply made "beginner's telescope" (including mount and tripod) sells for!

Another troublesome feature – and usually an identifying characteristic of unreliable, "el cheapo" telescopes – concerns focusers and eyepieces. Most el cheapos use .965" eyepieces, which are available only with simple lens designs. Some models come with a .965" focuser and an adapter for standard 1.25" eyepieces, but don't be fooled: most .965" focusers are cheaply made. You're better off with a telescope that takes 1-1/4" eyepieces.

Dobsonians: Altazimuths With an Attitude. In what direction should beginners go in looking for a high-quality telescope at a reasonable price? Well, more than 30 years ago **John Dobson,** a Californian, had a similar problem. A monk, he had no money or personal possessions but he wanted to see what the universe was all about. So he built his own telescope, a Newtonian reflector, out of used scraps and parts. What made Dobson's telescope truly special, though, was its mounting: a brilliantly simple kind of altazimuth mounting that is stable, highly maneuverable, and doesn't add the equivalent of open-heart surgery costs to the price of the telescope. A "Dobsonian reflector" can be built with basic hand tools, or you can purchase one from any of several reputable manufacturers at a very reasonable price. Aperture (mirror) sizes from 3" and up are available.

For most people (including women and children), a 4-1/2" or 6" Dobsonian is light enough to be carried and set up with ease, and will gather enough light to fully acquaint you with a wide range of wonderful objects in the night sky. Prices range from about $200 for a 4-1/2" Dobsonian to about $350 for a 6" Dob, depending on the manufacturer. Major manufacturers of Dobsonians under 18" include Celestron, Discovery, Meade and Orion. If you're interested, you can e-mail or write to them for free information about their telescopes – and you should talk to some Dob owners as well. Most of them probably will tell you that they plan to keep their Dobs even if they buy another 'scope for other purposes (e.g., astrophotography).

John Dobson never patented his design, nor has he sought money from the companies that have copied it. He contends that telescopes should not be named after people, so he refers to his creation as a "Sidewalk Telescope."

Personally, though, I feel that Dobsonian owners *should* use names – their own – for their telescopes. In my own case, I like to think of my telescope as a 10" *Smithsonian*! It gets me where I'm going whenever I feel like taking a leisurely, 30-million light-year stroll through the night sky.

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PINNING DOWN THE A. L. OBSERVING CLUBS

article by Bill Warren

Since its founding in Jan., 1997, FRAC has been closely tied to observing. In all, a total of 64 observing pins have been awarded to FRAC members since that date, 42 of them earned by members who are presently enrolled in the club.

Here's the breakdown of pins earned by present members, with A= Arp Peculiar Galaxies Club, BM= Binocular Messier Club, C= Caldwell Club, DSB= Deep Sky Binocular Club, D*= Double Star Club, H2= Herschel II Club, H400= Herschel 400 Club, L= Lunar Club, M= Messier Club, MO= Master Observer Award, S= Sunspotters Club, U=Urban Club, and US= Universe Sampler Club. (The numbers in parentheses refer to the observers' total pins earned, and the number after the club refers to the certificate number.)

BILL WARREN (13). A#15(V) (visual); BM# 357; C#11; DSB#84; D*#68; H2#24(M) (manual); H400#183; L#129; M#1539; MO#4; S#36; US#16(T) (telescope) and 17(N) (naked eye); and U#4.

SMITTY (5). BM#343; C#48; DSB#82; M# 1629; and S#27.

DAWN KNIGHT (5). BM#550; C#17; D*# presently unassigned; M#1835; and US#25(T).

JOHN WALLACE (4). BM#507; DSB#(?); D*# (?); and M#1648.

TIM ASTIN (3). BM#429; L#164; and US#28(T).

JOE AURIEMMA (2). BM#486; and M#1739.

CORY DUKES (2). M#1875; and US#34(T).

LARRY FALLIN (2). D*#175; and M#1852.

DOUG MAXWELL (2). C#42; and M#2059.

DAVID WARD (2). BM#420; and M#1751.

GRADY DUKES (1). BM#551.

STEVE KNIGHT (1). M#1858.

KATIE MOORE (1). M#1683.

JERRY WILLIAMS (1). L#228.

Breaking those totals down by observing club, the Messier Club leads the way with 11 pins earned, followed by: Binocular Messier, 8; Double Star and Universe Sampler, 4 each; Caldwell and Lunar, 3 each; Deep Sky Binocular and Sunspotters, 2 each; and Arp Peculiar Galaxies, Herschel II, Herschel 400, Urban and Master Observer, 1 each.

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