

# THE FLINT RIVER OBSERVER

Newsletter of the Flint River Astronomy Club  
Vol. 8, No. 6 August, 2004

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

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**Club Calendar.** **Thurs., Aug. 12:** FRAC meeting (Beaverbrook media center, 7:30); **Fri.-Sat., Aug. 13-14** and **Fri., Aug. 20:** Cox Field observings (at dark); **Sat., Aug. 21:** boy scout observing (Cox

Field, 4:00 p.m. –11:00 p.m., club observing afterward).

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**President's Message.** Our July observing with the girl scout science camp went very well. Although the original Wed. night date was cancelled due to solid cloud cover and the threat of thunderstorms, the Thursday rainout date brought surprisingly clear skies.

Of course, our Cox Field observings that weekend, which fell on the new moon that we "blue water sailors" of deep-sky observing so eagerly await, were washed out by cloudy skies. So if you wanted to take advantage of clear skies, you should have been with us at Camp Meriwether on Thurs. night. Those of us who made it – **Bill Warren, Doug Maxwell, the O'Keeffes** and I – had a great time showing and telling about 125 eager scouts the night sky. David, a first-timer at scout observings, was impressed with the intelligence of their questions. One girl asked, "What are stars made of?"

You might find this interesting (or, as Spock would say, *fascinating*): in the darkness, I heard girls speaking with unusual accents and found that some of them had come from as far away as Australia, South Africa, England and other parts of the world.

One of the counselors, **Kiwi**, was from New Zealand. I met her during a planning visit to the camp. I brought my 10" and 16" telescopes to the observing and, after I showed Kiwi how to keep objects in the field of view, she operated the 16" 'scope, giving us five telescopes in all. Naturally, whenever someone bumped the 'scope I had to relocate the object for her, but she did an admirable job of tracking.

Some of the campers and counselors, forgetting my name, referred to me as "The Astronomy Guy." In visiting schools, boy scout camps and other groups over the years, I've been called "The Telescope Man," "That Star Guy," "The Astronomy Dude" and other colorful titles, but I like this one.

"The Astronomy Guy." I'm going to keep it.

**-Steven (Saratoga Smitty, a.k.a. The Astronomy Guy) Smith**

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**Membership Renewals Due in August: Grady & Cory Dukes; and Chris, Kim, Kyle & Joseph Thompson.** Under our new dues renewal system, you folks need pay only \$7.50 to cover the period between Aug. 1<sup>st</sup>-Jan. 31<sup>st</sup> – or you can pay \$22.50 to have your dues paid up until Jan. 31<sup>st</sup>, 2006.

Please send your check payable to FRAC c/o **Steve Knight** at his home address as shown on p. 1.

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Last Month's Meeting/Activities. We had 13 members at our July meeting held at **Curt & Irene Cole's** home. (And while we're at it, Curt & Irene, thanks for sharing your lovely home with us. **Steve K.** says that, if you'll let us hold all our future FRAC meetings there, he'll split with you 50-50 all of his future earnings as a professional pool player.)

Besides our host, hostess and Steve, other attendees included: **Tom Moore, Dawn Knight, Jamey, Tonya & Drew Jenkins, Doug Maxwell, Chuck Sims, Smitty, Felix Luciano** and **yrs. truly.** (See "This 'n That" for more about that meeting.)

**Smitty** and **Dan Newcombe** got in a couple of hours of observing at Cox Field on Sun., July 11<sup>th</sup>.

We had five telescopes at Camp Meriwether on July 15<sup>th</sup>. **Smitty, Doug Maxwell, David, Cherrie & Sarah O'Keeffe** and **yr. editor** were there to talk to an advanced science group of about 25 girls for half an hour before they were joined by about 100 more girl scouts for an hour of observing.

Here's the enthusiastic response Smitty received from **Susan Cotter**, Program Coordinator for the Girl Scout Council of Northwest Georgia:

"Smitty, I can't thank you and your team enough for coming to Camp Meriwether to show (the sky) to us. I knew it was going to be pretty neat, but WOW!

"One counselor thought we should do a week of astronomy camp next year because it was "really cool". And one camper wanted to know why we couldn't look through telescopes every night. When I explained that telescopes don't have x-ray vision to see through clouds, she thought that was just poor planning and someone should fix the problem. I said Smitty felt the same way she did."

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**Upcoming Meetings/Activities.** After a 2-month hiatus from the school, we'll be back at Beaverbrook for our club meeting at 7:30 p.m. on **Aug. 12<sup>th</sup>.**

Our Cox Field observing dates will be **Fri.-Sat., Aug. 13<sup>th</sup>-14<sup>th</sup>** and **Fri., Aug. 20<sup>th</sup>.** With the **Perseids meteor shower** peaking before sunrise on Aug. 12<sup>th</sup>, we should be able to get one decent evening with them on Friday, and maybe pick up a few stragglers on Sat. as well. With the new moon on the 15<sup>th</sup>, we should be able to see whatever Perseids come our way.

The Moon will be a factor early on during our Cox Field observing on the **20<sup>th</sup>,** but the way the weather's been misbehaving lately we need all the observing opportunities we can get.

We'll hold a special boy scout observing at Cox Field on **Sat., Aug. 21<sup>st</sup>;** it'll start at 4:00 p.m. with solar observing; then, after a dinner break, they'll return to see the night sky. Since we'll probably have the same kids at 4:00 and later that evening, we'll need a good FRAC turnout for both sessions because, according to **Steve,** "This observing has generated a great response and most likely will draw a lot of scouts. The Moon, still two days from first quarter, will be out that night, but we should have a lot of deep-sky to show them anyway."

If the sky is good and you aren't sufficiently worn out by then, plan to stay awhile afterward for some observing on our own.

If it comes down your choosing between coming out to Cox Field on the 20<sup>th</sup> or 21<sup>st</sup>, though, try to make it the 21<sup>st</sup>. Besides being trustworthy, loyal, etc., scouts – boys and girls alike – are unfailingly polite, well-mannered and appreciative of our efforts to show them the wonder and beauty of the sky, whether at night or during the day. And if you can show kids the **Sun,** please don't forget that the first session begins at 4:00.

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**This 'n That.** Acting on a suggestion by **Smitty** that FRAC should switch to a universal dues payment schedule, a committee composed of him, **Larry Fallin, Doug Maxwell, Steve Knight** and **yr. editor** proposed certain changes to Article 5 (Dues) of

FRAC's bylaws. Those changes were discussed, voted on and passed unanimously at the July meeting.

Under our new payment structure, all members' dues renewals will be Feb. 1<sup>st</sup> of every year, and members will have until March 1<sup>st</sup> to renew their memberships. After Mar. 1<sup>st</sup>, those who fail to pay will be dropped from the club's active roster until they renew their memberships.

New members' dues will be prorated during the first year of their membership on the following bimonthly basis:

Feb. 1-March 31:	\$15.00
Apr. 1-May 31:	12.50
June 1-July 31:	10.00
Aug. 1-Sept. 30:	7.50
Oct. 1-Nov. 30:	5.00
Dec. 1-Jan. 31:	2.50

Present members whose dues renewal dates fall between July 1, 2004-Jan. 31, 2005 will pay either \$10.00, \$7.50, \$5.00 or \$2.50 for their memberships during that period, depending on where their renewal date lies. After Feb. 1, 2005 their renewal date will be the same as everyone else's.

No other changes were made in the bylaws.

\*As you know if you attended the July meeting, the ISSP folks put the kibosh on our plan to hold **Ga. Sky View '05** at Camp McIntosh. They'll be renovating the facility through next June, so May and June '05 are out; so is July, since the necessary time slots are already taken by other groups. (The only acceptable weekend(s) in any given month are those nearest to the new moon: even a first- or third-quarter moon would be as deadly to star party registration numbers as holding the event in downtown Atlanta.)

Meanwhile, **Steve K.** is scurrying around trying to find somewhere else that is suitable for such a gathering. If you have any ideas, please let Steve know asap via his phone no. or e-mail listed on p. 1. (State parks probably are out, since ISSP had to get special permission to let AAC and FRAC camp outdoors at anywhere other than an officially designated camping area at Camp McIntosh.)

Steve says, "After the surprising success of **GSV '04**, we're really handcuffed. To lose quality at all, be

it site amenities or operation, would be a death blow to the event.

"Look at PSSG, for instance: 315 attended their first year at WhiteWater Express, 182 the 2<sup>nd</sup> year – a 42% drop in attendance -- simply because AAC moved to an inferior site.

"Being new as we are, cutting back or scaling down would be the end of **Ga. Sky View**.

"There have been some good ideas tossed around, like **Rock Eagle** out of Eatonton, that I'm looking into. But keep the ideas coming, I need all the help I can get."

\*When asked if he had named his new 16" Meade Dob, **Smitty** said, "Well, actually it has two names. I call it 'Saratoga A,' but it also answers to the name of BURT (Big Ugly Round Telescope)."

Hey, Smitty, take it from your jealous fellow club members, there is **nothing** ugly about that 'scope!

\***An Open Letter from Katie.** "Hi, **Bill**, I enjoyed your article last month about observing galaxies. I had to smile at your "somewhat terrifying fantasy" of **David Levy** observing with FRAC.

"As a leader of the Beginning Teen Astronomy Camp, I had the pleasure of observing with David just two weeks ago. He is a very friendly guy, and quite a good speaker.

"On the last night of camp every summer, David comes to the 61-inch telescope at Mt. Bigelow (Arizona) to talk with the campers for awhile and then observe with them. He had just gotten back from Canada (where he was observing the Venus transit), and I was in charge of operating the telescope that night and helping David use it.

"We started out by observing **Jupiter**, and we could actually see hints of the different sizes of the Galilean satellites and the Great Red Spot in the 61-inch telescope.

"From there we went to **M51 (Whirlpool Galaxy)**, one of David's favorite objects. It was really neat to hear him describe what he saw.

"Following that, one of the campers wanted to see a galaxy jet, so we took a look at **M87** in *Virgo*. Since normally such erupting jets appear only in photographs, no one was really sure whether we were

actually seeing the jet, although we narrowed it down to two possible locations.

“After cycling 30 campers through those objects, David left to return to his home near Tucson. This was actually my second time observing with him, the first being at last year’s camp.”

*(Editor’s Note: For those of you who are new to FRAC, **Katie Moore**, is a senior astronomy major at the Univ. of Arizona. As a high school senior, Katie won first place nationally in the A. L.’s prestigious “Horkheimer 2000 Award for Excellent Service to Astronomy By a Young Astronomer” competition. To commemorate the occasion, which marked FRAC’s first national recognition, yr. editor decided that henceforth Katie’s last name would not be used in the Observer. Like **Elvis** and **Madonna** before her, Katie’s ascent to superstardom means -- for us, at least -- no last name is necessary.)*

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**The Sky in August.** What’s the difference between an asteroid and a meteor? The answer to that question is not cut-and-dried, but basically it boils down to size.

Asteroids are large chunks of rock left over from the formation of the solar system, and meteors – at least, the ones associated with meteor showers – are smaller bits of debris left behind by passing comets. (Yeah, we know, some meteorites have been found to be bits and pieces of **Mars**, the **Moon** or asteroids, and some are as large as schoolbuses; that’s why precise definition of terms is difficult. But the overwhelming majority of meteors we see streaking across the night sky during meteor showers range in size from dust particles to grains of sand, pebbles and rocks weighing a few pounds.)

Comets reside unborn in uncountable numbers along the perimeters of the solar system in an area called the **Oort Cloud**. Occasionally, when passing a nearby star, one of these “dirty snowballs” is disturbed and, impelled by the **Sun**’s gravitational tug, begins a long plunge through the solar system toward the Sun.

We can’t see it then, of course. Not until the comet draws near enough for the Sun’s awesome energy to sublimate (turn from a solid into a gas) a

portion of its surface does a comet grow a tail. That tail, composed of ionized gases and dust, grows longer and/or more concentrated as the comet draws nearer to the Sun and more gases and dust are released from its frozen surface.

After the comet circles the Sun and begins to move away from it, a brief gravitational tug-of-war begins between the comet and the Sun for possession of that tail, and the outcome is never in doubt. The remnants of the tail assume their own orbit around the Sun, independent of the comet, and whenever that stream of debris passes through Earth’s atmosphere, the result is a meteor shower.

Two factors, *dependability* and *number of meteors per hour*, determine the importance of any given meteor shower.

In terms of sheer numbers, by far the most productive meteor showers of our lifetime have been the Leonids. In 2001, **Dr. Richard Schmude** counted more than 1,500 meteors in the pre-dawn hours of a Leonid shower – and, even more incredible, during one peak minute of the 1966 Leonids an astonishing *40 meteors per second* were witnessed by thousands of observers in the southwestern U. S. Unfortunately, however, although the Leonids meteor shower returns every year it reaches such thrilling peaks only at 34-year intervals, that being the orbital period of its parent, **Comet 55P Encke-Tuttle**. Thus, the importance of dependability.

Arguably the best of the annual meteor showers, the **Perseids meteor shower** is predicted to put on a very good show this year, especially at peak during the pre-dawn hours of **Thurs., Aug. 12<sup>th</sup>**, when the almost-new moon’s absence may reveal up to a meteor a minute. (They’re called “Perseids” meteors because, regardless of where in the sky you see them, their paths can be traced back toward a point in the constellation *Perseus*; that point, called the **radiant**, will lie between *Perseus* and *Cassiopeia*, near the **Double Cluster**. Meteors that do not trace back to a radiant are called *sporadic meteors*, and are not part of the meteor shower.)

As for asteroids – well, on the nights of our club observings on **Aug. 13<sup>th</sup>-14<sup>th</sup>**, mag. 6.5 **Vesta** and mag. 9.5 **Metis** will be less than a degree apart along

the *Cetus-Aquarius* border; *Astronomy* (Aug. '04, p. 67) shows you where to look.

*Astronomy* also points out that, on **Fri., Aug. 20<sup>th</sup>**, **Comet NEAT (C/2001 Q4)** will lie between two galaxies in *Ursa Major*, **NGCs 4036** and **4041**, with all three in the same low-power field of view.

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### **JUPITER ON A VERY POOR EVENING WITH A VERY GOOD OBSERVER**

Observer: **Felix Luciano**

Location/Date/Time: Jonesboro, Ga., July 13, 2004,  
9:25 p.m.

Transparency and Seeing: mag. 3-4 with thin clouds  
over most of the sky; and 3 (on a scale of 1-10,  
with 10 being perfect seeing).

Jupiter's overall image is mostly blurry, with moments (seconds) when the planet comes in sharp. The Great Red Spot is barely visible at moments of good seeing, having already crossed the Central Meridian. (S is at the top of the field of view, N at the bottom, W to the left and E to the right.)

The Jovian moon alignment, from E to W: **Callisto** is slightly above the South Equatorial Belt, **Ganymede** next, below the SEB. **Io** and **Europa**, in that order, are on the other (E) side of the planet.

As for Jupiter itself, from S-N its features include: a small, dark feature marking the South Polar Region and a faint trace of what I believe to be the South South Temperate Belt. Next, the South Equatorial Belt is split into two dark belts, a southern and a northern component, before reaching the Central Meridian.

Crossing the CM, the Great Red Spot is in and out of view, as described above, its outline incomplete except for a break or dip in the South Equatorial Belt. Farther north, the North Equatorial Belt is solid, wide, and bisecting the planet E-W. The last feature observed, the North Polar Region, appears much larger than the South Polar Region.

*(Editor's Note: All that, friends, comes from a guy who insists that he doesn't see very well – and on a night of very poor transparency and seeing, too! Felix may not be as accomplished a planetary*

*observer as **Dr. Richard Schmude** – who is? – but it boggles the mind to imagine what a wealth of insights an observing report from Felix might contain if he were to spend a few nights observing Jupiter from, say, a dark site in New Mexico – or, better yet, from the Visitor Information Station at the 9,200-ft. level on Mauna Kea in Hawaii.*

*Two questions come readily to mind, Felix. First, are you saving up your nickels and dimes so you and **Anna** can spend some quality time in New Mexico (think: **Scott & Alisa Hammonds**) or Hawaii? And second, with all the time and efforts you've invested in observing and studying the planets, why aren't you working on a Planetary Club observing pin?)*

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### **TWO QUICKIES WITH PROF. STARGAZER**

**Reporter:** I'm here on the campus of the Univ. of Arizona, waiting for **Prof. Theophilus Stargazer**, the world's foremost authority on astronomy, cosmology and Dirty Scrabble, to appear. The professor is here today to address an international symposium of astrophysicists. His topic is, "Since Universal Time Is Measured From the Royal Observatory in Greenwich, England, Why Isn't It Pronounced *Green-witch* Instead of *Grin-itch*?" – Wait a minute, here comes the professor now!

Excuse me, Professor, I'm **Bill Warren**, ace reporter for *The FRAC Observer*. I know you're busy, but do you have time for a question from one of our readers?

**Prof. Stargazer**, hurrying: Sure. That'll be forty bucks.

**Reporter:** Wait a minute, Professor, I thought it was \$20 a question.

**Prof. Stargazer:** It is, but you've already asked one.

**Reporter**, scowling as he reaches for his wallet: Actually, I have two questions, sir. First, without using complex mathematical formulas or 15-letter words, tell our readers: What is the "Hubble Constant"?

**Prof. Stargazer:** It's not a *what*, it's a *who*: the nickname of an obscure astronomer from Hubble, Iowa, named **Farley Smarkington**. For many years,

Farley suffered from the green apple quick steps. An energetic man, he was constantly on the go, if you know what I mean – thus, his nickname: “The Hubble Constant.”

Farley never met a Port-O-Let he didn’t like. His specialty was emission nebulae, and at night in the observatory he liked to play a CD of his favorite song, “Man On the Run.” After Farley’s death, his friends vowed to start a movement in his honor.

If you really intend to publish this interview, let me state for the record that I was misquoted here.

Now, what’s your other question?

**Reporter:** This one is from **John Wallace**, who ought to know better by now. John wanted me to ask you, What is a **quark**?

**Prof. Stargazer:** Oh, that’s easy. Quark? It’s the sound made by an animal that’s a cross between a duck and an Irish setter.

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### OBSERVING GALAXIES, Part III

article by **Bill Warren**

#### Ten Tips for Observing Galaxies

1. Do your homework. Among other things, this entails knowing which galaxies you’re going to look for before you start, and preparing accordingly. You aren’t going to find many *Virgo* galaxies in November.

As a beginner, I used *Seasonal Star Charts* to identify which Messiers were available at any given time of year. Starting with the Deep Sky Binocular Club, I’ve used the following rough seasonal groupings based on NGC (New General Catalogue) numbers: Spring (NGCs 3000-5500); Summer (NGCs 5600-6800); fall (NGCs 7000-1800); and Winter (NGCs 2000-2800). The NGCs not accounted for in these groupings represent (for me, anyway) seasonal transitions (e.g., late spring to early summer).

2. “Doing your homework” also refers to buying or preparing star charts that will show you where the galaxy you’re looking for is located. It’s easy with the Messiers and brightest NGC objects, since virtually all beginners’ charts show those objects – but

advanced observing programs require progressively more detailed star charts. Don’t purchase expensive star charts until you need them.

About star atlases: I recommend **Wil Tirion’s** *Deep Map 600* as your first post-Messier atlas. It gives you the whole sky in fold-out, road map fashion; it’s water-resistant; it plots the location of 266 galaxies (among other things) with surprising precision for a flat projection of a spherical sky in one chart; it connects-the-dots between major stars, thus making the constellations immediately recognizable; and best of all, it costs just \$14.95.

If, however, you opt for bigger and better things, try Tirion’s *Sky Atlas 2000.0, 2<sup>nd</sup> ed.* It’s harder to use than *DM600*, but it’ll take you most of the way through all of the A. L.’s deep-sky programs except the most advanced ones (the Herschel IIs and GG&Cs). It’s debatable which is better, the black-on-white background or white-on-black, but whichever you choose, get the bound, laminated version. It costs more, but it’s worth the extra expense.

3. If possible, find a photo of the galaxy you plan to look for. Even if the galaxy doesn’t look much like what you’ll actually see – and black & white is better than color in this regard – the photo will indicate the galaxy’s shape, and possibly its orientation and nearby star field as well.

For several years now, I’ve used the **Interactive NGC Catalog Online** web site to obtain photos of the galaxies I look for: in most cases, they are centered and properly oriented (N at the top, W to the right) in a 15’ (arc-minute) field of view. That information permits me to check the accuracy of observing data I record at Cox Field.

For example, if I were to describe **NGC 4565** in *Coma Berenices* as “a circular, ½’, faint smudge” and the photo shows a NW-SE oriented edge-on galaxy that measures a healthy 14’ x 2’ in size, I’d know I’m describing the wrong galaxy. Knowing in advance that 4565 is large and bright, though, I’ll skip past other small, faint galaxies I come across while scanning for 4565.

4. Averted vision is often necessary when observing galaxies, especially the faint ones. In the dark, your retina depends on light-sensitive nerve endings – **cones** – to detect low levels of illumination;

these receptors are located away from the center of the retina. Looking slightly to one side of the object being observed – say, half an inch away in any direction – will maximize the cones' use of available light.

Averted vision isn't always necessary when observing galaxies -- but it *is* a necessity whenever the galaxy (or whatever portion of it you're trying to observe) is extremely faint.

5. Another related technique for seeing faint galaxies comes from the late **Walter (Scotty) Huston**. Called "jiggling", it consists of tapping the telescope tube lightly to set the field of view in motion, since the eye is more sensitive to moving objects than to stationary images.

6. Regardless of whether you attempt to estimate field-of-view distances or galaxy sizes for your observing records, don't bother to do so with brightness. It's not required, and I've never done it. If I wanted to estimate brightnesses, I'd do variable star estimates for the AAVSO.

7. The books all say that, to see the most that a galaxy has to offer, use high magnification. Well, that's true if you're using top-of-the-line eyepieces costing hundreds of dollars – but if, like me for 10+ years, your eyepieces are no better than \$79.95 Meade Series 4000 Super Plossls, high magnification will help only with bright galaxies. At 200x or higher, a faint galaxy will lose its definition in an inexpensive eyepiece the way a photo becomes a meaningless blur if you hold it too close to your face. All you're doing is magnifying the faintness into nothingness.

8. Using just one eyepiece, whether wide-angle, low-, medium- or high-power, won't necessarily give you the best view of a galaxy. That's like saying that all seats at Turner Field will give you the best view of the game.

I use my low-power eyepiece to find galaxies and estimate their sizes, but not to observe them. Until I switched to Pentax eyepieces, my best views of galaxies almost always were at medium-power (about 150x). I used my high-power eyepiece mainly to look for "occasional" stellar nuclei that pop in and out of view under unsteady seeing conditions. (My rule of thumb regarding eyepiece magnifications is: anything 30mm or above is wide-field; from 20mm to

28mm is low-power; from 8mm to 18mm is medium-power, and anything below 8mm is high-power. It may or may not be accurate, but it works for me.)

I think it's important to have at least one low-, one medium- and one high-power eyepiece, and to switch them frequently when observing to ensure that you're getting the best view of a given galaxy. (Or use a Barlow to get the same effect.) If your eyepieces are parfocal – and eyepieces in the same series usually are – you won't have to refocus every time you switch from one magnification to another.

Orion sells (or at least they used to sell) observing vests with multiple pockets for carrying things like eyepieces, a tape recorder, pens, etc., so you won't waste time or lose objects while going to your car or observing table to switch eyepieces. You can get those vests at a cheaper price, though, in Wal-Mart's hunting/fishing dept., or at Bear Paw Army-Navy Store or The Sock Shoppe, both of them in Griffin. (Orion also sells an eyepiece holder for telescopes; trouble is, the eyepieces dew up under humid conditions while you're not using them.)

9. Wide-field eyepieces (e.g., 32mm, 40mm, 52mm, etc.) may be helpful in finding objects, especially if you're familiar with the surrounding star field – but they are virtually useless in observing galaxies. The magnifications are simply too low to provide any meaningful detail.

10. To estimate a galaxy's orientation in the eyepiece, put in a medium- or high-power eyepiece, center the object (or a bright star in the field of view), and watch the direction of drift to the edge of your field. That's West. If, like most of our members, you're using a Newtonian reflector, North will be 90 degrees counter-clockwise from West. North will still be that direction regardless of how many times you change eyepieces while observing that object.

Remember, though: compass directions in your eyepiece will change whenever you view objects in other parts of the sky.

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