

THE FLINT RIVER OBSERVER



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FLINT RIVER ASTRONOMY CLUB

December, 2001

Officers: Interim President, **Steve Knight:** (770)227-9871, 114 Central Lake Circle, Griffin, GA 30223 <sdknight@bellsouth.net>; Vice President/newsletter editor, **Bill Warren:** <warren1212@mindspring.com>, (770)229-6108; Secretary/Treasurer, **Dawn Knight** (see above); AlCor, **Neal Wellons**, and Web Site Coordinator, **Cody Wellons:** (770)946-5039; Librarian, **Tom Moore:** (770)228-6447. Club mailing address: 1212 Everee Inn Road, Griffin, GA 30224. FRAC web page: <<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. Sat., Dec. 8: FRAC Christmas dinner/meeting (Western Sizzlin Steakhouse, 7:30); **Fri.-Sat., Dec. 14th-15th:** Cox Field observings (at dark).

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President's Message. *"Steve, wake up! Your telescope is on fire!"*

What a way to start a Saturday morning! After staying up till 3 a.m. under the best skies I've ever seen, *that* was the wakeup call **Dawn** gave me. Seems that, at about 7:15 a.m., the rising sun hit Big Boy's primary mirror just right so that the beam focused on the protective ring on the front of the tube, setting it on fire. No serious damage was done, though, thanks to my neighbors who were already up and having their morning coffee when it happened.

Now that I've discovered I can start fires in my sleep, I'll aim the tube south before going to bed at future star parties.

Aside from that minor incident, the Chiefland Star Party was by far the best I've ever attended. Clear skies with confirmed transparency of mag.6.4, room to move around, and some of the nicest people you

could imagine meeting or spending time with.

There were completely homemade outfits, and examples of the newest and best technology. Starmaster seemed to be the 'scope of choice, but there were all kinds to see and check out. Ever wanted to test a 5" Takahashi refractor? Or how about a 30" Starmaster with full GoTo? Tom Clark's 36" Tectron was there, and we got to see the new home for his 42" model that's in the works.

Electricity made things like a fridge and heater possible (next time I'll take more extension cords), and the atmosphere on the ground and in the skies made for a great time throughout. The swap meet was great, as were the vendors. During the day, you could take a chair around, sit down and talk to your heart's content, or stay at your vehicle and people would come to you.

Chiefland is a 5-hour drive from Griffin, but it would be worth the drive if it was twice as far away. Seeing the Milky Way stretch from horizon to horizon was awe-inspiring, to say the least. I found the **Horsehead Nebula**, and Dawn found 22 **Caldwells**.

We'll be going to the next Chiefland Star Party in May, 2001. **Joe Auriemma**, Dawn and I had a wonderful time down there, and I hope more of you can go with us in May. Skies that good don't come around very often -- *never*, around Griffin. Even with ten hours and 650 miles on the road (round-trip), \$200+ spent on goodies I barely need, getting sunburned and setting my telescope on fire, I'd go back right now if I could. We had a blast.

Finally, I want to welcome all of our newest members: **Mark & Bryan Christopher** [(770)229-4496, <wr8y@hotmail.com>], **Carl, Patty & Josh McKinney** [(770)228-7894], and **Terry & Michael Parks**

[(770)229-1529,
<theparks@mindspring.com>], all of the
aforementioned living in Griffin; and **C. M.
(Bud) Sosebee**, of Conyers, Ga.

-Steve Knight

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Last Month's Meeting/Activities. We had 14 in attendance for **Phil Sacco's** splendid talk at our Nov. meeting. As Phil would tell you, you missed *nothing* if you weren't there because the universe, on all levels big and small, is composed primarily of nothing. (Sort of like **Tom Moore's** Lunar log book.)

Seven members showed up at Beaverbrook the following evening: **Steve & Dawn Knight, Joe Auriemma, Mike & Danielle Stuart** and **Mark & Bryan Christopher**; on Sat., Nov. 10th, **Joe, Steve, Dawn, Mark, Bryan** and **yr. reporter** observed at Cox Field.

With part of our gang at Chiefland and others at CEWMA, only **Mike & Danielle Stuart** and **yr. editor** went to Cox Field on Fri. night of our regular observing weekend -- and on the following evening only **yr. stalwart editor** was there, plugging away at the Herschel 2 list. **Mark & Bryan Christopher, Bob Greenfield** and a guest showed up at about 5 a.m. to enjoy the Leonids light show -- and *what a show it was!!!* Between us, we probably saw more than a thousand meteors, including a sporadic (i.e., non-Leonid) fireball that went mag. -6 or brighter and traveled W-to-E across 45° of sky before bursting apart.

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Membership Renewals Due in December: John Felbinger; and Tom & Katie Moore. Please send your check payable to **Steve Knight** or FRAC at Dawn's address listed on p. 1.

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This 'n That. **Larry Fallin** has logged 14 Caldwells, 18 Herschel 400s, one Herschel II and 3/4 of the Double Stars. **David Ward** has 22 Caldwells and 112 of the H400s. **Tim Astin** has completed his third AL pin program, the Universe Sampler. *Way to go, Tim!!!*

***Zombies.** **Joe Auriemma** pulled an all-nighter at Chiefland on Fri., Nov. 16th; too bad **Steve** didn't. **David Ward** and **Larry Fallin** Zombied at Charlie Elliott on Sat., Nov.

17th.

***"For Sale: Rebuilt 13.1" Coultter Dobsonian telescope with a one-year-old Pyrex mirror.** Mirror can be kept in a separate foam carrying case for transport or left in OTA. 9-point mount with sling, mirror is easily removed or seated. Collimation is simple with 3 screws (not the 6-screw setup on most mounts). Has an all-metal rack- and-pinion 1-1/4" focuser. OTA has been modified to accept a 2" focuser.

"7x50mm finderscope included with dual 3-point brackets.

"Scope comes equipped with a Dob Driver II tracking system with 8' cable, all mounting hardware is secure and controller has two easy access velcro locations. You can place the control paddle anywhere you like. Tracking system allows tracking of any object -- comets, asteroids, moon, planets or deep sky. The DDII learns from your input the trajectory of the object being viewed and tracks accordingly. System can run on one or both axes, or can be totally disengaged for manual starhopping. Drive is easily reengaged. Heavy duty battery included and will fit in rocker box. The entire system is self-contained and secure (DSCs had been mounted on the 'scope, and would make a very nice addition to use in conjunction with the DDII.) Very sweet.

"I would rather see this go to someone in the club, so I have not posted it to Astro Mart yet. Asking price \$1,600, eyepieces not included. Contact me if you are interested and we can 'Talk Turkey'. Call soon before this baby is gobbled up." **-Phil Sacco**
(404)296-6332 or e-mail
<ppsacco@mindspring.com>.

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Upcoming Meetings/Activities. Please Note: *We will NOT hold a Beaverbrook observing in December, nor will we hold our monthly meeting at Beaverbrook in December;* instead, we'll meet at 7:30 on **Sat., Dec. 8th**, in the rear dining area of Griffin's **Western Sizzlin Steakhouse** on Hwy. 19/41 for dinner and an informal meeting. Western Sizzlin is located between Blockbuster Video and Kentucky Fried Chicken on the E side of 19/41 near McIntosh Road (Hwy. 92). Bring the whole

family (but not the dog). Separate checks. Steve will play Show & Tell, *showing* us photos from his recent Chiefland trip and *telling* us how to warm up a cold 14" Dob on a chilly morning. We'll have some great door prizes (including a *Sky Atlas 2000.0* and a couple of nice presents to give away.

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The Sky in December. On Fri., Dec. 7th, **Comet LINEAR WM1** will be mag. 4 or 5 (i.e., naked-eye), lying about 2° W of 2nd mag. *Beta Ceti*. *Astronomy* says it "will most likely appear as an elongated fuzzball through binoculars." Early evening hours will be the best time to observe it.

If the comet shows two tails telescopically, the magazine points out, the straight one will be the *ion tail* -- gases being blown away from the Sun by the solar wind; the other, fan shaped tail will consist of dust freed from the comet's nucleus through sublimation.

The **Geminids meteor shower** will peak sometime after 10:00 p.m. on Thursday, Dec. 14th, its 60-80 meteors per hour generally brighter and slower than last month's Leonids. The radiant will be just N of mag. 1.6 **Castor, Alpha Geminorum**.

On the following evening, Dec. 14th, a partial solar eclipse will occur at sunset, with about 40% of the Sun's disk blocked by the Moon. And at 3:56 a.m. on Fri., Dec. 28th, **Saturn** will disappear behind the nearly full Moon, reappearing at 4:53 a.m.

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THOSE CRAZY CALDWELLS

article by Bill Warren

The Caldwell List of 109 "bright nebular objects...within range of modest telescopes" (according to their cataloguer, Sir Patrick Caldwell-Moore), are a curious blend of easy, difficult and very difficult deep-sky objects. But since what's "easy" for one person isn't necessarily easy for another, let's define terms.

In analyzing the Caldwells, we'll define *easy* as "no harder to find and observe than the faintest Messiers," *difficult* as "harder than the Messiers," and *very difficult* as "harder than the 'difficult' Caldwells.

Of course, the quality of observing conditions will affect your ability to find and observe deep-sky objects, too: on evenings of poor transparency and seeing, *anything* you look for will be very difficult to find. Still, under dark, clear skies I think it's possible for a sharp-eyed observer with an 8" 'scope and plenty of patience to find 70 Caldwells. I wouldn't want to try it with a 'scope much smaller than that, though.

Under those terms and definitions, 50 of the Caldwells rate as "easy," 22 are "difficult" and 8 are "very difficult." (I stopped at 80 because the 109 Caldwells are listed in order of their declination, or distance S of the North Celestial Pole, and Caldwell 80 -- **NGC 5139**, the magnificent globular cluster **Omega Centauri** -- lies just 8°-12° above the S treeline at Cox Field.)

Generally speaking, what makes certain Caldwells Difficult or Very Difficult is their size: 32 of the 80 are listed as being at least 1/4 as large as the Moon. And while you won't see their full size even in a bigger 'scope than **Steve K.** can burn down, they're large enough to appear 1-3 magnitudes fainter than those stated figures (which tell how bright they would be if they were single points of light rather than large, diffuse objects). There's a world of difference between a mag. 9.7 star and a mag. 9.7 galaxy measuring 19' x 7' (Caldwell 3, **NGC 4236**, a large, faint galaxy in *Draco*); if you don't believe it now, you will by the time you've worked your way through the Caldwell list.

The 50 "Easy" Caldwells: #2, 4, 8, 10, 13, 14, 15, 16, 18, 21, 22, 25, 26, 27, 28, 29, 32, 33, 34, 36, 37, 38, 39, 41, 43, 45, 46, 50, 52, 53, 54, 55, 58, 59, 60, 61, 63, 64, 67, 68, 69, 71, 73, 74, 75, 76, 77, 78, 79 and 80.

The 22 "Difficult" Caldwells: #6, 7, 12, 17, 19, 20, 23, 24, 30, 31, 35, 40, 42, 44, 47, 48, 49, 56, 62, 65, 66 and 72.

The 8 "Very Difficult" Caldwells: #1, 3, 5, 9, 11, 51, 57 and 70.

Two facts leap out from those listings: first,

*Your margin for error will be quite small. To earn a pin for finding 70 Caldwell's, you'll need to find all of the Easy ones and 20 of the 22 Difficult ones (or else find some of the Very Difficult ones). And second, looking at the Very Difficult list you can see that *Starting at Caldwell 1 and working your way down the list to Caldwell 80 won't work* since they aren't arranged by right ascension and five of the first 11 rate among the hardest to find and observe. So you'll have to adopt a different search strategy.*

I like **Dawn & Steve's** idea of listing the Caldwell's by season and constellation. Within that framework, you might prepare for the chase by marking each target with an **E** (for Easy), **D** (difficult) or **VD** (very difficult or venereal disease -- in either case, *Stay Away From It!*) Start with the westernmost constellations because they're the first to set, and within each constellation find the Easy ones first, the Difficult ones next, and go on to another constellation. If you waste more than minimal time on the Very Difficult ones, you're likely to be drawing Social Security by the time you finish the project. I've searched for **NGC 4236** on ten separate evenings and haven't found it yet, using a 12 1/2" Dob.

Other Tips. You'll need a good star atlas such as *Sky Atlas 2000.0* to help you locate your targets; it also helps to have a photo of the objects to refer to if you've never seen them before. **Night Sky Observer's Guide** (Kepple & Sanner) has star maps based on Megastar and photos or drawings of most of the Caldwell's, but you can also get Digital Sky Survey photos of the NGC's on the Internet by typing that in and hitting GoTo. (Note: DSS doesn't have photos of the Caldwell IC -- Index Catalog -- objects or **Sharpless 2-155.**)

Ask for help when you need it. Borrow whatever you need but don't have at Cox Field, whether it be an atlas, a nebula filter, a wide-field eyepiece, my copy of **NSOG**, or whatever else will help you along. And keep your observing notes, since the Caldwell list contains 44 Herschel 400s, nine Herschel 2s, two Arp Peculiar Galaxies, two Universe Samplers and one Binocular Deep Sky object.

Finally, here's a cheap trick you might consider: *Deep Map 600* (\$13.95 from Sky Publishing) contains 68 of the first 80 Caldwell's, including 46 of the Easy ones, 17 of the Difficult ones and 5 of the Very Difficult ones. The only Caldwell's *DM 600* doesn't show are #5, 8, 9, 17, 31, 40, 42, 43, 51, 58, 66 and 68.

Summary. You shouldn't go into the Caldwell chase expecting it to be easy; it's not. But you shouldn't dismiss it as impossibly hard without trying it, either, because **50** of the 70 Caldwell's you need to find *are* easy.

It's the 30 faintest Caldwell's that will challenge you -- and by the time you reach 50, you'll find ways to overcome whatever problems you encounter with the rest of them if you'll just ask for help when you need it. After all, why do we go out to Cox Field if not to enjoy each other's company, have fun and help each other?

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SEEING DOUBLE (Part II)

by **Bill Warren**

(Editor's Note: Since we included an article on finding the missing Double Stars in the May, 2001, issue of the Observer, we'll simply conclude the observational portion of this article and refer you back to the May issue for the rest. A Greek alphabet for use in identifying stars appears on p. 5 of this issue.)

Description. Draw what you see, making the primary larger but keeping the distance between the stars consistent with what you see. Watch them drift out of the field of view, and draw an arrow pointing in that direction to indicate west. Then record the date, time, location of observation, seeing, size of observing instrument, and magnification used in the drawing, and you're done.

I'm frequently asked if it's necessary to draw other stars in the field of view: the answer is *No*. I did it only when there were other prominent stars near the double; I simply drew the field and then drew a rectangle around the double to indicate that other stars weren't

associated with the primary and its companion(s).

You don't have to be an accomplished artist to draw the stars; after all, all you're drawing is **dots**. For best results, especially with faint stars, use a pencil with a sharp point. I made my field drawings and notes on typing paper at Cox Field or in my backyard, and then re-drew them at home on the AL's observing forms to eliminate the errors, X-outs and false starts.

You may or may not want to include comments or descriptions with your drawings; if you do, they probably will involve star colors or finding instructions. Within the standard star color range -- blue; blue-white;

white; yellow-white; yellow; golden; orange; and red -- specific colors are largely in the eye of the beholder. I've seen stars identified by professionals as *champagne, purple, magenta, gray, lilac, mauve* and even *green*. Call it the way you see it.

To see colors most vividly, use high power and put the star(s) slightly out of focus

Editor's Note: Are you having trouble organizing your monthly searches for objects in the night sky? If so, Larry Fallin offers a list of which Messiers, Caldwell's, Herschel 400s and Double Stars are up. His December installment appears beside the Greek alphabet.

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Constellations of the Month - December

	Messiers	Caldwells	Double Stars	Herschel 400
Aries	<i>none</i>	<i>none</i>	Gamma Arietis Lambda Arietis	NGC 772
Cetus	M77	C51 IC 1613 C56 NGC 246 C62 NGC 247	Gamma Ceti	NGC 157 NGC 246 NGC 247 NGC 584 NGC 596 NGC 615 NGC 720 NGC 779 NGC 908 NGC 936 NGC 1022 NGC 1052 NGC 1055
Eridanus	<i>none</i>	<i>none</i>	32 Eridani 55 Eridani	NGC 1084 NGC 1407 NGC 1535
Perseus	M34 M76	C14 NGC 869/884 C24 NGC 1275	Eta Persei Struve 331	NGC 651 NGC 869 NGC 884 NGC 1023 NGC 1245 NGC 1342 NGC 1444 NGC 1513 NGC 1528 NGC 1545

THE GREEK ALPHABET

Alpha	A	α	Iota	I	ι	Rho	ρ
Beta	B	β	Kappa	K	κ	Sigma	σ
Gamma	Γ	γ	Lambda	λ	λ	Tau	τ
Delta	Δ	δ	Mu	μ	μ	Upsilon	υ
Epsilon	Ε	ε	Nu	ν	ν	Phi	φ
Zeta	Z	ζ	Xi	ξ	ξ	Chi	χ
Eta	H	η	Omicron	ο	ο	Psi	ψ
Theta	Θ	θ	Pi	π	π	Omega	ω

(The Bayer nomenclature always uses lower-case letters)