

FLINT RIVER OBSERVER

Newsletter of the Flint River
Astronomy Club

Special Edition

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THE FRAC 50 OBSERVING PROGRAM

After months of preparation, **Larry Fallin** and **Dawn Knight** unveiled their “**FRAC 50 Observing Program**” at the August meeting – fifty of the visually most appealing and fascinating objects for small telescopes beyond our solar system.

In compiling their list, Larry and Dawn wisely chose to include the best objects from **Sir Patrick Caldwell-Moore’s** heralded but disappointing **Caldwell Club** list of 110 “easy” deep-sky objects for small telescopes that do not appear on the Messier list. Thus you’ll find in the FRAC 50 such familiar gems as: **NGC 457 (the Owl Cluster)** in *Cassiopeia*; **NGC 6826 (the Blinking Planetary)** in *Cygnus*; the splendid edge-on galaxy **NGC 4565 (Bernice’s Hair Clip)** in *Coma Berenices*; the aptly named “**Blue Snowball**” planetary nebula (**NGC 7662**) in *Andromeda* and other planetaries resembling Jupiter (**NGC 3242**, the **Ghost of Jupiter** in *Hydra*) and Saturn (**NGC 7009**, **Saturn Nebula** in *Aquarius*); the M31 look-alike galaxy **NGC 7331 (Little Andromeda Galaxy)** in *Pegasus*; an open cluster resembling a Christmas tree (**NGC 2264**) in *Monoceros*; and fourteen other Caldwell deep-sky objects.

The FRAC 50 doesn’t stop there, though: There’s also a coathanger-shaped asterism (**Brocchi’s Cluster, Collinder 399**) in *Vulpecula*; the striking YELLOW-light blue color contrast of **Albireo’s** double star components; the pretty little open cluster **NGC 1502** at the SE end of **Kemble’s Cascade**, itself a well-known 2-1/2 degree trail of mag. 5-9 stars in *Camelopardalis*; the inverted “**V**” of mag. 5-6 stars called **Mel 111** (after its cataloguer, **P. J. Melotte**) that identifies the constellation *Coma Berenices*; and much, much more.

While none of the FRAC 50 objects is best viewed via naked-eye, about a dozen of them are at least marginally visible without binoculars or a telescope. Roughly twenty more require a telescope of at least 6” aperture in order to maximize their observational qualities; and the rest are within fairly easy range of 7x35 binoculars. The list thus offers an excellent range of observing possibilities.

With two exceptions, the FRAC 50 list is composed of objects that appear in various Astronomical League observing clubs. There are 36 Herschel 400s, 22 Caldwells, 18 Deep-Sky Binoculars, 14 Urbans, two Universe Samplers, and two Arp Peculiar Galaxies among the FRAC 50. Since that total amounts to 94 objects, it’s obvious that considerable overlap exists among A. L. observing clubs. That’s why we constantly remind you to *Save Your Observing Records*: you may be able to use them in other observing programs.

The two objects unique to the FRAC 50 list are the planetary nebula **NGC 6572** in *Ophiuchus* and the emission nebula **IC 1396** in *Cepheus*; neither appears in any A. L. observing club list.

IC 1396 and **NGC 2237 (Rosette Nebula)** in *Monoceros* are probably the greatest challenges on the FRAC 50 list. Both are emission nebulae, too large to fit into a low-power (25mm) telescopic field of

view and so diffuse as to require very dark skies to be seen in binoculars.

On the other hand, they are easy to find and both contain bright open clusters. Rosette Nebula contains mag. 4.8 **NGC 2244** -- another FRAC 50 target, two for the price of one; and IC 1396 offers a mag. 3.5 cluster and the bonus of being located immediately south of the brightest naked-eye red star in the night sky, the variable star **Mu Cephei** (mag. 3.4 - 5.1), better known as “**Herschel’s Garnet Star.**”

Two other likely candidates for “Most Difficult Object” on the FRAC 50 list are the large galaxies **NGC 247** in *Cetus* and **NGC 253** in *Sculptor*, both of which are located relatively low in the sky in areas that always appear nebulous to me. Despite their stated 9.1 and 7.2 magnitudes, respectively, 247 and 253 are also likely to be difficult because their light is spread out over 1/3 of a degree apiece. Still...

Such challenges are necessary to balance out the ease with which many other FRAC 50 targets can be found in small telescopes, finderscopes, binoculars or even with the unaided eye.

Find the mag. 5.1 / 8.3 double star **S Mon**, and you have the base of the Christmas Tree (NGC 2264). Find **Herschel’s Garnet Star**, and you have the IC 1396 open cluster and nebula adjoining it to the south. Place mag. 3.5 **Delta Geminorum** at the ENE edge of your 4 degree Telrad circle, and there’s the **Eskimo, or Clown Face, Nebula (NGC 2392)**, a lovely blue planetary that you won’t forget. And so it goes.

Twenty-eight constellations are represented in the FRAC 50 object list – *Cassiopeia* has the most (6) – with heavier concentrations in the Fall and Winter months (17 apiece) than in the Spring (9) and Summer (7). The list includes 22 open clusters, eleven galaxies, ten planetary nebulae, four double stars, two emission

nebulae and one asterism – Cr 399 – that doesn’t technically qualify as an open cluster because its stars are associated only from our point of view in space.

So what’s missing from the above list?

Well, there’s no supernova remnant (SNR) – but so what? There aren’t any dark nebulae, either – thank goodness! – although **Steve** probably lobbied for the **Horsehead Nebula** because he has an H-Beta filter to view it with.

The big surprise is the absence of any globular clusters from the FRAC 50 list. But one of the joys of compiling your own observing list is that you can put in whatever you want and leave out everything else.

Personally, I like the FRAC 50 just the way it is. I *like* the ten planetary nebulae because planetaries tend to offer color that you just don’t get in most galaxies in small ‘scopes. And I *like* the 22 open clusters: in addition to being attractive, they bring the night sky down to understandable proportions for beginners.

Look at, say, **M31**, and you see light emanating from one large glow (albeit a glow that comes to us from 2.6 million light-years back in time); look at the open cluster **NGC 2362** in *Canis Major*, and even a small telescope you’ll see two dozen individual stars in a small but precisely defined equilateral triangle surrounding the 4th-mag. star **Tau Canis Majoris**. Beauty often comes in small packages.

Anyway, whatever Larry and Dawn left out can always be put into their sequel, “**FRAC’s Further Fabulous Fifty,**” or whatever they might call it. If they create such a list, it doubtless will contain enough globular clusters to satisfy whatever purists might prefer a more well-rounded list.

As for my own preferences for the 2nd FRAC 50 list – well, I hope they’ll include my favorite planetary nebula, **NGC 2261 (Hubble’s Variable Nebula)** in *Monoceros*.

This lovely little cometary look-alike has warmed my soul during many a chilly winter evening at Cox Field.

The complete FRAC 50 Observing Program list is appended to this e-mail. (On hard copies it appears on p. 6.)

Enjoy.

-Bill Warren

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AN INTERVIEW WITH LARRY AND DAWN

Question: Why did you decide to create a FRAC 50 Observing Program?

Dawn: At the time, I was working on (and near completion of) the *Caldwells*. I became burned out with the *Caldwells* to the point where I wasn't enjoying myself. I thought that maybe there were other people in the club who might want to try the *Caldwells*, thinking it was a good step between the *Messiers* and the *Herschel 400s*. This, of course, could not be farther from the truth. I began thinking that we needed something for beginners in the club to do that we knew would not be *Caldwell* caliber. **Larry** and **Steve** talked about creating a list of the best non-*Messier* objects and I decided to throw in my two cents' worth. I spent a lot of time at work researching objects -- down time is wonderful! -- and putting together some ideas. **Larry** and I got together, each with suggestions for the list, and *voila!* The FRAC 50 was born.

Larry: There were several reasons. First and foremost was the need for a program that would appeal to beginners who were not ready to commit to the larger A. L. deep-sky observers' programs. We hope to give beginners the motivation and experience that

will help them tackle the larger A. L. programs.

We wanted to create a program composed of objects that are visually interesting and do not require extensive observing skills to be enjoyed. We also wanted to give our members a good database of objects to share with people interested in astronomy who visit our observings.

Question: How long did it take you to compile your list? Were there any special problems you encountered along the way?

Dawn: I can't recall exactly how long I worked on it, but it was time consuming because we wanted to observe each object and make sure it was obtainable for beginners using small 'scopes in the 6" range. My biggest problem was trying to imagine what it would be like to look for these objects without the Fire Starter (*Dawn & Steve's 14" telescope, a.k.a. The Frankenscope. -Ed.*).

Larry: We started the list at *PSSG 2002*, did much refinement to it at the *Chiefland Star Party* last November, and we made small changes to it during the first half of 2003. The final list given out at the August meeting was completed in June.

One reason it took as long as it did was that we wanted to make sure the list was good for Cox Field. We found out quickly that some objects that sounded good at first were extremely difficult to observe at Cox Field. We also had to keep our egos in check, because some of our personal favorites -- **NGC 891**, **Steve** -- didn't fit the criteria we used for the program.

Question: What were the criteria you used in selecting -- and rejecting -- objects for your list?

Dawn: The only criteria I had were (a) I wanted objects that are beautiful, and (b) I wanted some different things than what you see every night. I like the **Helix** and **Rosette Nebulae**, and wanted them to be included. I think that they are two of the most beautiful objects out there.

After we put together our list we reviewed it in comparison to the Herschel 400s, Caldwell's and Arps. You can see that there are some objects from other observing programs on our list. Then we observed all of the objects on our list to make sure they were obtainable. Finally, we went back through the list, considered each item separately and replaced those we weren't completely comfortable with.

Larry: Several years ago the usenet bulletin board sci.astro.amateur surveyed its members, asking them to list their favorite non-Messier objects. The board moderator compiled the objects and came up with the "sci.astro.amateur 100 favorite non-Messier observing list" – basically, a list comprising 100 of the prettiest objects in the sky (sans Messiers). I have been picking at this list little by little over the last few years, observing the objects that were available to northern hemisphere observers.

When discussion began about doing a FRAC program, we used this list as a starting point. Then we decided to target our list to amateurs who did not have a lot of observing experience. With that, we set the criteria for telescope size. We wanted a list that could be achieved with small- to medium-sized telescopes. We also decided not to include any objects that required filters. (That's why the **Horsehead Nebula** is not on the list.)

We did, however, include objects that can be enhanced with filters. We also wanted to include a few binocular objects as well. This left us with a rough list of about 75-80 objects. We then eliminated some

objects based on low declination or low visual magnitude. We wanted to make the list favorable for Cox Field observers. Then we refined the list by adding objects that interested us and were common favorites among FRAC members. While we did this, we verified the feasibility of the objects we weren't familiar with. Some of the objects looked terrible under Ga. skies, so we did further refining. This was the most labor intensive part of the process. **Dawn, Steve** and I spent several hours digging through books and verifying through 'scopes the final few objects that completed the list.

Of your 50 objects, ten (20%) are planetary nebulae and 22 (44%) are open clusters, yet there are no globular clusters on the FRAC 50 list. Why not?

Larry: We made a small effort to include different types of objects on the list, but frankly, the most interesting objects we love to observe are open clusters. We didn't want to sacrifice any favorites just for the sake of adding a different type of object. The original sci.astro.amateur list contained a few globular clusters; all but one of them were small, faint targets with more appeal for advanced observers than for beginners.

Anyway, in my opinion – and Dawn's as well -- the Messier program contains the best globulars you can see from the northern hemisphere. **NGC 5139 (Omega Centauri)** doesn't generally make a good appearance at our latitude. It was a tough call to drop 5139 from our list, but we wanted the list to be customized for our latitude. The other southern objects we've included in the FRAC 50 offer a better appearance at Cox Field and can be quite stunning on a dry, clear night.

Besides, every observing program needs a few challenging objects. **Sir Patrick Caldwell-Moore** obviously doesn't

understand the concept of an observing program having a *few* challenging objects.

Question: What do you plan to do with the FRAC 50?

Dawn: I plan to watch other club members thoroughly enjoy the list (hopefully), and I hope to spur other club members to come up with observations and programs of their own. Most of the things I do within the club are to try and spur activity out of our members. We have a wonderful group of members, many of them so wonderfully talented beyond what they think of themselves, and I would like to see more activity and participation out of them. I mean, honestly, if a person (such as I) who didn't even like science until a few years ago can co-create a program, then anybody can do it.

Larry: Well, for any interested FRAC members, we will give a certificate for completing the FRAC 50 list. There is one caveat, though: *We will only accept new observations dated after 8/21/2003.* (We added that provision to encourage FRAC's seasoned [weathered? aged?] observers to participate in the program.) By taking another, fresh look at each object, they will be even better prepared to help newer members who are participating in the program.

The FRAC 50 lends itself to a mini-marathon. It can also be used as a competitive observing list for star parties. The FRAC 50 will always be a good resource of objects to show people who are new to astronomy. I hope every member participates in this program, and has fun doing so.

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