THE FLINT RIVER OBSERVER

Vol. 1, No. 4 **FLINT RIVER ASTRONOMY CLUB** **June, 1997**

Officers: President, Larry Higgins (227-2233); 1st Vice President/newsletter editor, Bill Warren (638 Pinehill Rd., Griffin, GA 30223/ 770-229-6108); 2nd Vice President/Secretary-Treasurer, Ken Walburn (954-9442); AlCor, Melanie Handy (228-6214); Librarian, Keith Cox (227-8171); Hospitality Chairman, Lee Russell (228-0704). Observing Chairman, Steven "Smitty" Smith (583-2200). Club mailing address: 2431 Old Atlanta Road, Griffin, GA 30223.

Please notify **Bill Warren** and **Melanie Handy** promptly if you have a change of address.

Club Calendar: Thurs., June 12: Club meeting (7:30, Beaverbrook observing site, weather permitting; media center otherwise); **Fri., June 13:** Club observing session, Beaverbrook Elem. (at dark); **Fri., June 27:** Deep-sky observing session, Cox Field (at dark).

May Observings. There were four 'scopes and their owners present, along with 25-30 Beaverbrook students and parents, at our May 9 observing at the school.

The May 16 "Relay for Life" observing session for the American Cancer Society walk-a-thon participants at Flint Middle School was a huge success in several respects: we had seven telescopes and ten members present to show the night sky to well over a hundred visitors during the course of the evening; **Lee Russell** unveiled his beautiful new 8" Dob; and later, while **Ken Walburn**, bundled up like Nanook of the North, hibernated in his lawn chair, **Larry Higgins** favored the rest of the Diehards with a stirring rendition of Joe South's old classic, "The Games People Play," that brought tears to his listeners' eyes, the way you get when you bite into a spoiled onion. And despite the light pollution, Ring Nebula came in so clear you'd have sworn you could blow it away with a puff of breath.

May 8 Meeting. Fifteen members attended **Dr. Richard Schmude's** presentation on the planet Mars, which included a lively question-and-answer period followed by a brief outdoor observing session featuring Mars. A good time was had by all, except possibly yr. humble newsletter editor who stayed outside with the telescopes, contemplating his navel and waiting...and waiting... and waiting... while the telescopes cooled down and everyone else was inside enjoying Dr. Schmude's talk and refreshments afterward.

My time alone was hardly wasted, however: while waiting in vain for someone to bring me a Coke and a cookie, I managed to solve the problem of what the dark matter in the universe is composed of. (It's chocolate cake crumbs.) And later, while observing Hale-Bopp, I was able to confirm that there really IS an alien invasion fleet hidden behind it. Due to a

computer malfunction, however, they're actually attacking the Sun, not us.

Next month, I guess I'll read the three volumes of Burnham's Celestial Handbook. And bring along some Oreos.

The amendment proposal passed unanimously. No collimations with crowbars were necessary.

Upcoming FRAC Meetings. Our June speaker, **Art Russell**, is the newly elected president of the Atlanta Astronomy Club and a member of FRAC as well. Art is an accomplished deep-sky observer who has conquered the Messier (and even more difficult Herschel 400) list; he is also an eloquent spokesman regarding star-hopping techniques. Bring your observing gear to the meeting: weather permitting, we'll meet outside behind the school for some hands-on-the-sky star-hopping with Art.

Art is writing four chapters on seasonal star-hopping for AAC's stargazing book-in-progress. You'll get two samples of Art's work in this month's newsletter: his monthly Star-Hop column, and an equally enlightening guide to what to look for in observing deep-sky objects.

If, as many of our members are, you're interested in deep-sky objects (open and globular clusters, nebulae, and galaxies), your June newsletter and club meeting alone will be worth the $10 you paid to join our merrie little clubbe!

Our July meeting will feature Atlanta Astronomy Club member **Phil Sacco** speaking on astrophotography.

Our August meeting is tentatively scheduled to address the problem of building a personal library of reference materials, with various club members discussing such topics as what's available and worthwhile, how much it costs, and where to get it. We'd love to have you take part in the presentation; if you're interested, contact **Larry Higgins** or **Bill Warren** before August 1st.

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Smith Named Observing Chairman. Steven "Saratoga Smitty" Smith has agreed to serve as FRAC's Observing Chairman. His responsibility will be to arrange and coordinate our regular and special observing sessions. So if you want our club to have an observing for a special group of your choosing, call **Smitty** at 583-2200 to set it up.

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Radio Astronomy at Georgia Tech

By Keith Cox

I recently had the opportunity to interview **Dr. Paul Steffes**, Professor of Electrical Engineering at Ga. Tech. Dr. Steffes heads the radio astronomy program at Tech and is on NASA's Search for Extraterrestrial Intelligence (SETI) Microwave Observing Team. As a graduate student at Stanford, Dr. Steffes became involved with the SETI program and helped develop spectrum analyzers to detect the presence of signals from space.

Since coming to Ga. Tech, Dr. Steffes has started an initiative called "microwave and millimeter wave remote sensing of planetary atmospheres." This initiative uses earth-based radio telescopes and space-based systems that transmit and recieve wavelengths greater than one millimeter. Studying the effects of planetary atmospheres on these transmissions enables scientists to draw conclusions about those atmospheres.

Dr. Steffes showed me radio photographs taken of Venus at both 1.35

and 2 cm wavelengths by the National Radio Astronomy Observatory's Very Large Array in New Mexico. In these photos, the middle of the planet displayed the light-colored part of the spectrum, while darker colors were evident at the rim, indicating that natural microwavelength absorbing constituents are present on the surface of Venus. The polar caps, however, were much darker. From this, lab technicians infer an abundance of sulfuric acid and other sulfur-bearing compounds -- a prime example of combining radio astronomy with the study of microwave properties of planetary atmospheres.

Another facet of Ga. Tech's radio astronomy program is its facility in Woodbury, Ga. Constructed in the 1970s by AT&T for use as a high density microwave telephone communication facility, the site lost its usefulness as satellite performance improved over the years. Ga. Tech purchased the property in 1991, and under the direction of Dr. Wit Smith the formerly abandoned site was prepared for its new role. When Comet Shoemaker-Levy 9 collided with Jupiter in 1994, the Woodbury dishes were manually pointed toward the planet. No tracking took place because the tracking motors were still inoperable; however, radio measurements were made using the "transit method," whereby the dishes were pointed in a direction along the ecliptic while Jupiter passed through their coverage area.

In 1995, SETI became involved with Tech in helping to fund the renovations, which have recently been completed on the southern (30m) dish. This antenna has been retrofitted with a new feed system, motors and controllers. Its performance has been competitive with other 30m dish telescopes throughout the world.

In March, 1991, Ga. Tech began a series of microwave searches in conjunction with the National Radio Astronomy Observatory in West Virginia. This search will continue for several years. All of the planets are under investigation, particularly Neptune. Dr. Steffes indicated that the Woodbury site might be available for public open house in the near future.

After reading Roger W. Sinott's article, "Radio Astronomy with a Satellite Dish" in the August, 1996, issue of Sky & Telescope, I was curious to hear Dr. Steffes' thoughts on amateur involvement in radio astronomy. He was enthusiastic about it and pointed out two facets for amateurs to get involved in, SETI or regular radio astronomy. The Society for Amateur Radio Astronomy is the organization to contact. In some cases, scientifically important measurements can be made with small antennas. Dr. Steffes suggested a 3m dish as minimal and a 6m dish as preferable for conducting scientific research.

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Recording Deep-Sky Observations

by Art Russell

(Editor's Note: These are guidelines and suggestions, not requirements.)

A. Basic Data: date, location, observing instrument, eyepieces (magnification), and filters used (if any).

B. General Observing Conditions: 1. weather; 2. transparency (estimate the limits of visual magnitude directly overhead, whether naked-eye or telescopic); and 3. seeing (test for atmospheric turbulence over your observing site by viewing the slightly out-of-focus image of a star or planet:

"poor seeing" is evidenced by a rapidly shimmering image, "good seeing" by a slow, rippling image, and "superb seeing" by a dead calm image. Rate your seeing on a scale from 1 [worst] to 5 [best]).

C. General Questions (respond only to those questions which apply to the object under observation)**:** 1. Sketch the object. (A picture is worth a thousand words.) 2. How did you find the object? Was it difficult or easy to find? Were there any bright stars, double stars, or other notable objects nearby? 3. How difficult or easy was the object to see once you found it? Did it require averted vision, or could you observe it directly? 4. Was there anything unusual or peculiar about the object? 5. How large was the object? (If possible, use arc minutes and arc seconds.) What was its shape? If not round, (a) How was it oriented in the sky?, and (b) What, if any, earthly objects did its shape suggest? 6. Could you resolve individual stars? How many? 7. What color was the object and/or individual stars within it? How bright was it, and how bright were the individual stars? 8. Were some parts of the object brighter than others? How did the brightness change with distance from the center? 9. Were there any dark areas indicating the possible presence of a dark nebula? 10. What was the best magnification for observing the object?

D. Questions Specific to the Object Under Observation:

Open Clusters. 1. Was the cluster (**r**), rich with 100+ stars, (**m**) moderately rich, with 50-100 stars, or (**p**) poor, with less than 50 stars? 2. Were the stars in the cluster (a) detached from the surrounding star field and concentrated toward the center, (b) detached but weakly concentrated toward the center, (c) detached with no concentration toward the center, or (d) not well detached from the surrounding star field? 3. Was any nebulosity present? Does a nebula filter suggest that there may be a bright nebula associated with the cluster?

Globular Clusters. 1. Were there any chains of stars? 2. How centrally concentrated were the resolved stars? Compare the size of the unresolved glow with the distribution of the resolved stars.

Bright Nebulae. 1. At high magnification, does the nebula (a) remain, (b) resolve, or (c) disappear? 2. Does a filter improve contrast and/or expand the apparent size of the nebula?

Planetary Nebulae. 1. Using the Vorontsov-Velyaminov scale, describe the appearance of the nebula: (a) stellar; (b) smooth disk (bright center, uniform brightness, traces of ring structure; (c) irregular disk (irregular brightness, traces of ring structure; (d) annular (ring structure); (e) irregular form (similar to a diffuse nebula); or (f) anomalous form (no regular structure).

Galaxies. 1. Was there a nucleus? If so, what was its size, shape and brightness? 2. Were there any bright spots outside the nucleus to possibly indicate the presence of star clusters or nebulae? 3. Was the galaxy's surface (a) mottled, or (b) smooth? 4. Were the edges of the galaxy (a) ragged, or (b) even? Were they (a) clearly defined, or (b) vague? 5. Were there any dust lanes? Spiral arms?

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