THE FOCAL POINT

The Atlanta Astronomy Club, Inc.

Vol. VIII No. 9 **February, 1996**

The February Meeting

by Richard Jakiel

The next meeting is Friday, February 9 at 8 PM. We will be meeting at Fernbank Science Center. Our guest speaker will be the "guru" of CCD imaging, Richard Berry. If you are fascinated by image processing or would like to build your own CCD camera, this meeting is for you! Please join us for a very interesting program and as always, food and fellowship afterwards.

A few notes on our speaker, Richard Berry...

(Excerpts from the book, "The CCD Camera Cookbook")...."Images have always fascinated me. As a small child, I drew incessantly with colored pencil and crayon. I was thrilled with my sixth grade class trip to Washington, DC because my parents gave me a camera. From my father I learned how to develop film and print photographs; my darkroom was the kitchen with the lights off."...

Richard would soon apply photography to astronomy, starting with photos of the Moon and planets and eventually experimenting with deep-sky photography. Astronomy would became his major passion, and his career would develop along those lines. He wrote Alex Langoussis .. "I worked at *Astronomy* for 16 years, first as a Technical Editor, then Editor, then Editor-in Chief. ...I was the idea-man responsible for getting *Earth* magazine off the ground, and I founded and edited *Telescope Making* for more than a decade."

The appearance of "mass-marketed" CCD cameras in the late '80s and early '90's signaled a new era in amateur astronomy. Richard wrote *Introduction to Astronomical Image Processing* in response to this change. However, the cost of commercial CCD cameras remained in the thousands of dollars, out of reach of most amateur astronomers. Realizing that this would limit the appeal of CCD's, Richard Berry along with Veikko Kanto and John Munger developed a system around the TC211 and TC245 chips. Costing only hundreds of dollars, these cameras have been built by several of our club members (*for sample images -see Doug Chesser's homepage link on the club's website).*

As Richard writes to Alex...."Today I am writing full time, with three more books in the pipeline, and more to come when those are done. I am having a great time carrying out projects that I have long dreamed of working on with the best publisher (Willmann-Bell, Inc.) in the astronomy field"...

Last Month

by Ken Poshedly, recording secretary

The January 19, 1996 meeting of the Atlanta Astronomy Club was called to order shortly after 8 p.m. at Emory University's White Hall by AAC president Alex Langoussis. By actual count, there were at least 78 persons attending. The following club matters were handled prior to the featured speaker:

- Alex recognized members of the Astronomical Society of the Atlantic who were also attending this meeting. The ASA asked its members to be present for this meeting, following discussions between the AAC and ASA regarding a possible merger. That matter is still not settled.
- AAC treasurer Doug Chesser pronounced our financial status as extremely good! He also asked members renewing their *Sky & Telescope* magazine subscriptions through the club to remember that it takes about a month and a half for the renewal to be finally processed by Sky Publishing, so please renew as soon as possible. Checks should be made payable to the Atlanta Astronomy Club; the AAC then issues its own check to cover all renewals. *Sky & Telescope* now costs AAC members only $24 per year; *Astronomy* magazine costs only $20 per year. For more information, contact Doug at (770) 457-5743.
- Observing chairman Art Russell announced that the lock to the eyepiece storage box at the club's Villa Rica observatory has been replaced by Larry Higgins with a more secure device. The eyepiece storage box was apparently forced open recently. Art asks anyone who wishes to use the observatory to contact him and he will be glad to provide whatever information is needed to get access to the observing site and equipment. Also, he asks that members interested in getting a group together for impromptu observing contact him so he

can send e-mail to interested persons. If you're interested in being e-mailed about observing activities, contact Art at (770) 448-6990.

- AAC Light Pollution chairman Tom Buchanan recounted his efforts to have the Georgia Dept. of Transportation install or at least consider full cut-off shields on interstate lighting; the response was "no"
- Dark Sky Sight Search committee chairman Phil Bracken informed all that we now have a number of possible sites from which to observe; they are Blue Ridge, Dahlonega, Daucet Trail, Villa Rica, possibly near Elijay and Akins Field just outside Hard Labor Creek State Park. Phil also invited all to consider the 1998 Solar Eclipse trip being run by Scientific Expeditions. Contact Phil at (770) 941-6517.
- AAC members Bill Black and Mel Tolbert reminded all of the upcoming organizational meeting of the AAC's amateur telescope making interest group on January 27. (The meeting was held at Bill's home in Lilburn and drew 12 individuals, three of whom signed up for the next mirror-making class.) Call Mel (770) 434-0789 for more information.
- Ken Poshedly announced that, following formal approval on January 5 by the state park hosting the event, the ***Peach State Star Gaze*** will be held April 18-21 at Indian Springs State Park, near Jackson. A separate write-up about the event is located elsewhere in this ***Focal Point***

Refreshments chairman Ginny Mintz said she does have volunteers ready to assist at the February and March meetings, but more help is needed for future meetings. If you can volunteer—even for one month—to help, remember that all expenses are reimbursed. Please phone Ginny at (770) 422-7640.

Following the business portion of the meeting, Fulton County School System planetarium director Jim Summers spoke on the history of astronomy, taking us back to its very origins thousands of years ago. He finished by bringing us up to the Middle Ages, when Galileo had it out with the Roman Catholic Church over acceptance of the Copernican theory of the solar system which said that the Sun, not the Earth, is the center of our solar system. Following refreshments outside the meeting auditorium, two dozen or so of us spent the rest of the evening at nearby Jaeggers.

THE 1996 PEACH STATE STAR GAZE

by Ken Poshedly, Peach State Star Gaze chairman

The Atlanta Astronomy Club is proud to announce that the third annual Peach State Star Gaze will be held under the dark skies of Camp McIntosh at Indian Springs State Park near Jackson, Georgia, south of Atlanta, Thursday through Sunday, April 18 - 21.

Participants will be able to view through large and small telescopes, share observing and astrophotography techniques, participate in talks given by amateurs, and bring unneeded astronomical gadgets for the swap table.

Only an hour's drive southeast of Atlanta, the camp offers comfortable lodging in the beautiful foliage of Georgia's spring woods and dark skies of central Georgia. And the timing is right for steady skies with the humid weather of summer still months away. Lodging facilities are described later in this article, and are limited to 150 persons.

Programs/Features

Saturday afternoon talks and presentations by some of the most famous names in amateur astronomy
Workshops on a variety of topics throughout the event.
Open observing on a flat, open field located almost adjacent to the lodging and program facilities.

Featured Speakers

The PSSG is structured to provide the amateur and beginner with as much practical advice as possible on observing. With that in mind, we offer:

- Don Parker, considered by many to be the guru of amateur astrophotography. If you don't know of Don, you□re either new to the hobby or should get out more often. Don is the coordinator of the *Assn. of Lunar and* ***Planetary Observer's CCD imaging and Mars Project***. His subject will be observing the planets.
- Julius Benton, whose presentation will be observing the Moon, is also very active with *ALPO* as coordinator of the *Lunar Selected Areas Observing Program*, and the *Venus* and *Saturn* sections.
- James K. Rouse, astrophotographer, will talk on sunset photography. You'll probably remember many of Jim's lunar and planetary images in *Astronomy* magazine, *Sky & Telescope* magazine and other books and periodicals over the years. His lighthearted talks at previous star parties on *How to Build a $500 Backyard Observatory for Under $3,000* consistently drew chuckles as he explained how the cost of living is directly related to the increased cost of backyard facilities.
- Dawn Jenkins of Cleveland, OH, editor of the federation newsletter for that area's dozen or so astronomy clubs, will offer tips for observing with binoculars, a much-requested subject at star parties from those who don□t yet have scopes. Dawn's observing history includes at least 13 years in the hobby, a 5-inch f/5 reflector, a 6-inch f/10 reflector and a 12.5-inch f/6.6 reflector (the last two homemade), 10x50 binoculars and stand-mounted 11x80 binoculars.
- Paul Traufler, author of the popular shareware computer program Traksat, will present a program on a growing interest observing artificial satellites. You may have seen Paul's program in action during one of CNN's *Backyard Universe* segments last summer.

Camp Facilities

Camp McIntosh is a group camp within the bounds of Indian Springs State Park located near Jackson

in central Georgia. The Creek Indians lived in this area and used the spring water for medicinal purposes. The group camp can accommodate up to 150 persons with four dormitory style cabins, three staff quarters buildings and the centrally located ballfield (which serves as the observing site) where campers may also park. That means bunkhouse, semiprivate rooms and camping-style lodging. A general meeting building and a dining hall fully equipped with cooking and wash-up facilities are also on-site. Registrants provide their own bed linens/pillows and towels.
The observing field features a *wide, low horizon* (-44 degree horizon when viewing south from the north end).

For More Information
To request registration materials, contact Ken Poshedly at 3440 Everson Bay Court, Snellville, GA 30278-4463; phone (770) 979-9842; Internet e-mail to 102745.313@compuserve.com; or CompuServe e-mail to 102745,313.
An on-line registration form with all fees is now available for download on the Atlanta Astronomy Club home page, http://www.mindspring.com/~aleko/atlastro.html.

LOOKING AHEAD TO THE OLYMPICS

by Alex Langoussis, President

This July, when Atlanta plays host to the world, the Atlanta Astronomy Club will be there to do its part. For those astronomers visiting during the games, we will be available to visitors who want to get away for an evening of observing.

Because of the wide number of variables, including weather, travel schedules, event schedules, and even language, the best way to accommodate our guests will be on an individual and group basis.
If you would like to participate as a host, either at Villa Rica or a remote observing site, let me know. As the Games approach we will have a better idea of the response we will be getting, both from members and visitors, and make the arrangements accordingly.

A Cold Night's Observing

The weather finally cooperated for one of our observing sessions! Fourteen people came out to the observatory at Villa Rica on Saturday, January 27. Even though the first quarter moon was bright, the weather was beautiful, if a bit chilly! Besides lunar observing, people were exploring the night sky, some hunting down Messiers, others learning their constellations. The moon finally set after midnight, and several braved the cold to take advantage of the crisp dark sky. Finally, at 4am, the last frozen astronomers headed home for bed.

Observing Radio Emissions from the Crab Nebula Pulsar

submitted by Tom Crowley

The following is from a letter from Dr. Drake of the SETI Institute to the SARA Secretary, Vince Carraci:

The radio emission from the Crab Nebula which is detectable with an ordinary TV set is the occasional "giant" pulses emitted by the Crab Nebula Pulsar. This pulsar is unique so far in this phenomenon; every five minutes or so (not Periodic), one of it's pulses is extremely intense, giving in fact an intensity greater than any other radio source. Such pulses last a few milliseconds and thus would increase the noise, or "snow" level on a TV screen for a substantial portion of one picture frame. The regular normal pulses of this pulsar are not individually detectable, not even with the largest radio telescopes. They can be detected only by making a long recording and folding the recording at the pulsar period of approximately 33 milliseconds. Their existence can than be demonstrated by making a Fourier Transform of the record described above.

The following narrative of the Crab Nebula radio source was taken from Jim Sky's
Radio Sky Planetarium program
Taurus A (the Crab Nebula)

This strong radio source is the result of a supernova explosion which occurred in July of 1054 AD. During the month following the sighting of the initial explosion, many celestial observers saw the "new star " shine as brightly as Venus. Through an optical telescope the Crab Nebula appears as a knot of twisted filaments of hydrogen gas. Though its optical brightness has faded greatly, "the Crab" still shines brightly at radio and x-ray frequencies.

Taurus A, (the common radio name for this source), was one of the first discrete celestial radio objects identified. John Bolton discovered Taurus A in 1947 from his rather primitive radio observatory in Sydney, Australia. Bolton and his co-workers were able to pin point objects by observing interference patterns from the source and reflected waves from the ocean surface. Their antennas were positioned on a high cliff at the oceans edge. The Crab was also one of the first celestial Xray sources detected by rocket flown instruments in 1962.

The Pulsar in the Crab Nebula

Taurus A is home to a pulsar with a pulse rate of about 30 times per second. This pulsar is the spinning neutron star left behind by the supernova of 1054. The Crab pulsar is rather weak, and was first detected by the large (now defunct)) 300 foot NRAO telescope in Green Bank, WVA, and by the Arecibo dish in Puerto Rico in 1968.

The Crab pulsar (NP0532) is traveling through the cloud of nebular gas that surrounds it at about 125 km/sec. Wisps of gas can be observed ahead of the pulsar suggesting a shockwave effect. The energy radiated by the

Crab Nebula originates with the pulsar itself. The rotating magnetic field produced by the rapidly spinning neutron star imparts photons into the nebula by the synchrotron mechanism.
The Crab Nebula radio source, 3C144 is located at: RA 05:31:30 DEC 21:58 in the Constellation Taurus. The pulsar is located within this radio source.

In order to *observe* the Crab Nebula Pulsar, turn your TV to **channel 37** (reserved for Radio Astronomy) and insure you have a good external TV antenna. If you normally watch cable change your TV to Antenna mode. Following Dr. Drakes instructions above you should be able to detect the Pulsars occasional "giant" pulse.

FROM THE OBSERVER'S NOTEBOOK

By Art Russell

Beginner's Interest Group
It looks as if the weather has finally decided that it really doesn't know what it wants to do. So rather than wait on the weather to make up its mind, lets schedule a beginner's session at Villa Rica. For this session, we'll focus on orienting ourselves to the sky and how to use that new telescope you bought for Christmas. I hope to see you there on 10 February, 1996. Don't forget to dress WARM! After all, it is still winter!

Observer's Report.
The time is right for your observations of the Great Orion Nebula. If you can catch it on a clear evening, the views of it are nothing less than spectacular and clearly one of the most interesting deep sky objects visible for northern hemisphere observers. However, don't forget that M42 and M43 aren't the only deep sky objects in that immediate neighborhood. I recently observed two bright nebula associated with the Great Orion Nebula, *NGC 1980*, and *NGC 1999*. Both nebula are Herschel objects and really stand out under clear skies such as we recently had the evening of 21 January, 1996, at the *"R" Ranch* near Dahlenega, GA. My notes read:
NGC 1980: 7:30 PM Eastern Standard Time (EST). Weather was clear, cold, winds calm and temperature was about 30F. Telescope was an 18 inch F5 using a 35mm Panoptic eyepiece at (magnification) 65X without an OIII filter. "Stunning amount of nebulosity visible throughout entire the Great Orion Nebula complex. Nebulosity from M42 sweeps around and encompasses NGC 1980 which itself is a circular body of nebulosity which can be easily surrounding Iota Orionis and a triplet of stars. Nebulosity from denser portion of the Great Orion Nebula is apparent on the northern edge of the field of view and located in an arc from position angles (PA) 30 to 270 degrees. Additional nebulosity seems to be surrounding five stars about 20' north of Iota Orionis. Nebula appears gray-white in color. Nebula very easy to find in direct vision. Sketched object at 65X.
NGC 1999: 8PM EST. Weather was clear, cold, winds calm and temperature was about 30F. Telescope was an 18 inch F5 using a 35mm Panoptic eyepiece at 65X without an OIII filter. I easily found NGC 1999 by using position angle to orient on the nebula since it is approximately 1o south of the Great Orion Nebula. NGC 1999 appears as a star with haze surrounding it in direct vision. The nebula seems to fade in and out in direct vision and immediately stabilizes in averted vision; almost another "Blinking Nebula." 143X. The nebula is easily visible in direct vision. Center of the nebula is stellar and very sharply defined in appearance. Body of nebula appears annular in structure. Stellar nucleus appears in eastern portion of the nebula. 191X. Best view for this object. Nebulosity seems to be distinctly annular in shape. 191X with OIII filter significantly degrades the view of the object.

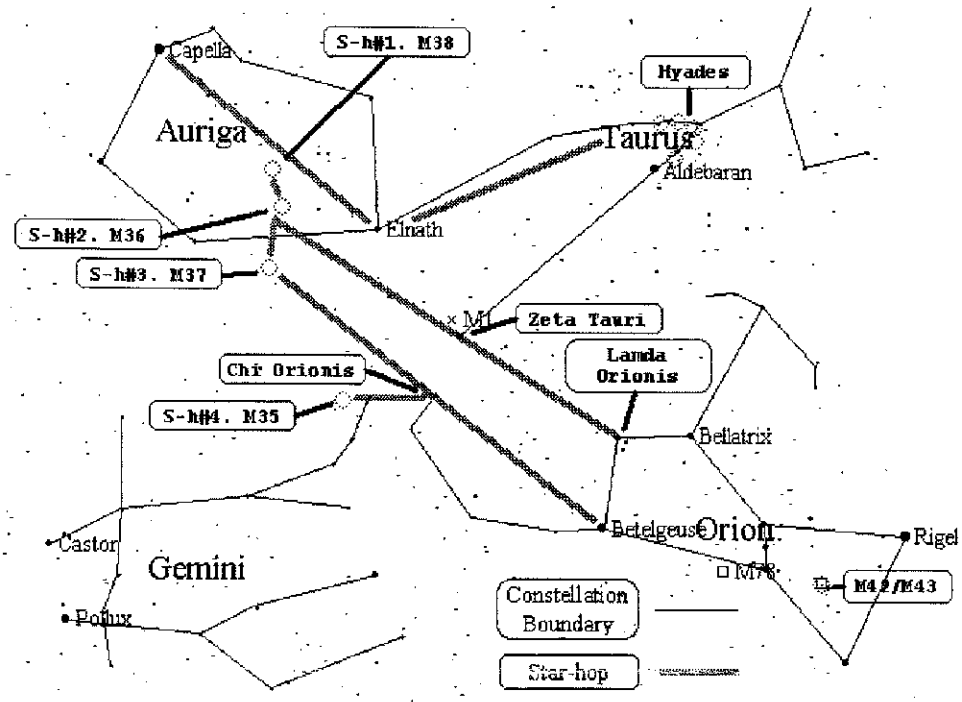
Errata
"Sky and Telescope" magazine recently sent me a new copy of their December, 1995, edition. I had given away my own subscription copy to a young budding astronomer and had been unsuccessful in trying to find a replacement in local bookstores. I contacted *Sky and Telescope's* customer service to purchase a replacement copy. Instead, they sent me a complimentary replacement issue. Actions like this, plus its coverage of astronomy in general, further advance *Sky and Telescope's* excellent reputation in the amateur astronomy community. Once again, thanks *"Sky and Telescope Magazine."*

Many of the older members of the club will remember a magazine called *Deep Sky*. *"Deep Sky"* magazine was dedicated (obviously) to those of us afflicted with an addiction to deep sky objects and stood alone in the field of astronomy magazines. *"Deep Sky"* folded in 1992 and copies of the magazine are still sought by deep sky devotees across the country. I recently discovered that Kalmbach Publishing Company, the publishers of *"Astronomy"* magazine, still has a large stock of back issues of *"Deep Sky."* Needless to say, I've ordered my own reference copies so that I don□t have to borrow those belonging to more fortunate members of the AAC. Available issues are: #15, Summer, 1986; #16, Fall, 1986; #20, Fall, 1987; #21, Winter, 1987; #24, Fall, 1988; #27, Summer, 1989; #28, Fall, 1989; #30, Spring, 1990; #31, Summer, 1990; #32, Fall, 1990; #33, Winter, 1990; #34, Spring, 1991; #36, Fall, 1991. Each copy costs $2.00, less than the original publication price. If you are interested, call Kalmbach Publishing Company's Customer Service at 1-800-446-5489. More importantly, if you have any back issues of *"Deep Sky"* that you□d like to get rid of, **GIVE ME A CALL**. I□d love to take them off your hands, if the price is right!

Beginner's Star Hop; February, 1996

by Art Russell

Here we go with the star-hop for this month. First off, make sure you get out under open skies for the evening of 21 February. On this evening a young Moon and Venus will be in conjunction in our western skies! Be sure to get out early since the Moon sets by 1100 PM and enjoy. This month's star hop takes us through the **Messier** open clusters: **M35**, **M36**, **M37**, and **M38**, plus a few odds and ends along the way.



Star-hop #1. Let's start back in the constellation Taurus at the **Hyades** star cluster. As we run out along the right leg that the cluster forms, we can extend a line to the 1.6 magnitude star *Beta (β) Tauri*, *Elnath*, which marks the tip of the right horn of the mythological figure, **Taurus**, the **Bull**. From there we extend a line to the bright yellow star in the constellation Auriga, *Capella*, *Alpha (α) Aurigae*. Not quite half the distance between *Elnath* and *Capella*, and off to the left of our line you'll find the distinct magnitude 6.4 open cluster **M38**, **NGC 1912**. In the same field of view you may also see a dimmer open cluster, **NGC 1907**, a magnitude 8.2 object, but you won't be deceived, **M38** is easily visible. In September, 1993, I noted that at 62.5X (magnification) there was an "X" shaped alignment of stars apparent in center of cluster.

Star-hop #2. Our next star hop takes us to the 6th magnitude open cluster **M36**, **NGC 1960**, another **Messier** object in the constellation Auriga. Getting to **M36** from **M38** is relatively easy since they are only about 2 1/2 degrees apart. This means that you'll only have to move your eyepiece only a little bit to the south-east in this instance. If you need a different method, then start at the star *Lambda (λ) Orionis*, the head of Orion the Hunter, the constellation Orion, and extend a line past *Zeta (ζ) Tauri* (take time again to stop and look at **M1**, the **Crab Nebula, NGC 1952**, [see last month's star-hop]) for a distance a little more than that between *Lambda Orionis* and *Zeta Tauri*. Once again you'll find the bright open cluster **M36**. I first saw **M36** on the same evening that I first observed **M38** and recorded that at 62.5X **M36** was easy to find as it is in the same field of view as **M38**. Not spectacular.

Star-hop #3. Our third and final Messier object in Auriga, is the 5.6 magnitude open cluster **M37**, **NGC 2099**. **M37** is about 4 degrees south-east of **M36** and forms the apex of the left leg of a equilateral triangle formed with **M36** at the top and the star *Elnath* at the apex of the right leg of the triangle. A second way to get to **M37** is to start at the star *Betelgeuse, Alpha (α) Orionis*, in the constellation Orion. From there, extend a line through the star *Chi (χ) Orionis* to a distance about equal to that between *Betelgeuse* and *Chi Orionis*. You should find **M37** prominent in that location. Once again, I first observed **M37** in September, 1993. At that time I noted that at 62.5X **M37** had a distinct star in center which appears warmer in color than the rest. Rich field with many stars.

Star-hop #4. Our fourth star hop takes us to the constellation Gemini and another **Messier** object, the 5.3 magnitude open cluster **M35**, **NGC 2168**. **M35** is harder to find than the other **Messier** objects we've looked at this month, so don't be surprised if it takes you a bit longer to find it. However, once you do, you'll enjoy this large, rich cluster. **M35** sits alone in the farthest most north-western corner of Gemini. One of the easiest ways to find **M35** is to start at the star *Chi Orionis* in the constellation Orion and extend a line through the star *1 Gemini* for a distance equal to only 1/3 that between *Chi Orionis* and *1 Gemini*. At that point you won't miss **M35**. Additionally, in the same field of view as **M35** you may see a dim patch of light (depending on the size of your scope) to the southwest of the cluster. This is the very rich open cluster **NGC 2158**. Unfortunately, it shines at about 11th magnitude and is harder to see. Take a look if you can find it. I saw **M35** in September, 1993 and recorded that at 62.5X M35 had a rich field with distinct apparent structure. Seems to have three point stars in center of the cluster. I didn't record any observation of **NGC 2158** so I guess I'll have to take a look sometime this month. While in the constellation Gemini, be sure to take a look at the star *Castor, Alpha (α) Gemini*. It is a 6 star system with two main components clearly seen in moderate amateur telescopes.

We're here to help! Here's how to reach us:

Address for New Memberships, Renewals, Magazine Subscriptions, and Book Orders:

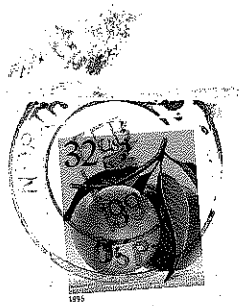
Atlanta Astronomy Club
3595 Canton Road, Suite A9-305
Marietta, GA 30066

Atlanta Astronomy Club Information Line: 770-621-2661

Internet Home Page: http://www.mindspring.com/~aleko/atlastro.html

Officers, Board, and Committees:

Alex Langoussis	President	770-429-8384	aleko@mindspring.com
Jerry Armstrong	VP, Program Chairman	770-947-6548	
Art Russell	VP, Observing Chairman, Library, Beginner's Interest Group	770-448-6990	gs01har@panther.gsu.edu
Doug Chesser	Treasurer, Subscriptions, Books	770-457-5743	chesser@mindspring.com
Rich Jakiel	Newsletter Editor	404-352-0916	jakiel@crl.com
Ken Poshedly	Recording Secretary, Publicity, Peach State Star Gaze Chairman	770-979-9842	ken.poshedly@lightspeed.com
Eric Shelton	Board, Telescope Making Chairman	770-664-2837	eshelton@america.net
Tom Buchanan	Board, Light Pollution Chairman	770-587-0774	
Tushar Thrivikraman	Board, Audio-Visuals	770-270-0742	kthrivi@emory.edu
Lenny Abbey	Board, Publications	404-634-1222	labbey@mindspring.com
Steve Gilbreath	Board	770-409-1915	steve.gilbreath@oit.gatech.edu
Phil Bracken	Dark Site Search Chairman	770-941-6517	philb@mindspring.com
Ginny Mintz	Hospitality Chairman	770-422-7640	
Ginny Mauldin-Kinney	Information Line	770-414-9383	gs05vlm@panther.gsu.edu



THE FOCAL POINT

Newsletter of The Atlanta Astronomy Club, Inc.

FROM:
Richard and Jennifer Jakiel
1101 Collier Road
Apt. Q-1
Atlanta, Georgia 30318

First Class

The Atlanta Astronomy Club Inc., the South's largest and oldest astronomical society, meets at 8:00 p.m. on the third Friday of each month at Emory University's White Hall or occasionally at other locations (check the hot line for details). Membership is open to all. Annual dues are $20 ($10 for students). Discounted subscriptions to Astronomy ($20), and Sky & Telescope ($24) magazines are available. Send dues to: **The Atlanta Astronomy Club, Inc., 3595 Canton Road, Suite A9-305, Marietta, Ga. 30066.**

Hot Line: Timely information on the night sky and astronomy in the Atlanta area is available on a twenty-four hour basis on the Atlanta Astronomy Club hot line: **770-621-2661.**

Check out our ASTRO discussion list on the Internet: ASTRO@Mindspring.com. Also visit our Internet home-page: **http://www.mindspring.com/~aleko/atlastro.html**

Membership Exires 9710
Alex & Nelda Langoussis
2936 Lowe Way
Marietta, GA 30066