

The Focal Point

The Atlanta Astronomy Club
Established 1947
April 2015

Vol. 27 No. 11

Editor: Tom Faber

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April General Meeting

Important Note - April Meeting Location Change!

Please join us for the next meeting of the Atlanta Astronomy Club, to be held on Saturday, April 11th at **3PM at the Atlanta Freethought Building**. Due to Fernbank Science Center being closed the week of April 11 we are moving the April meeting to the Atlanta Freethought building, 4775 North Church Lane, Smyrna. This is the location we met at prior to moving to the Fernbank Science Center. In May we will be back at Fernbank. A short beginner's program will be presented at 2PM. The General Meeting will then start at 3PM. Our featured speakers will be AAC Program Chair Richard Jakiel, Marie Lott, and AAC President Mark Banks. After the talk, upcoming club events and programs will be announced by the club officers. Then we will adjourn to a local restaurant for food, drinks, and more discussions.

The Talk

Our speakers will present a program about the first family of astronomy, the Herschels. Mark will talk about Sir William Herschel, who discovered the Planet Uranus, and observed and cataloged many double and multiple stars, and deep sky objects. William also made contributions to other sciences and telescope making.

Marie will present a program about Caroline Herschel. Caroline assisted her brother William in his observations and made a number of discoveries on her own. She discovered several comets including 35P/Herschel-Rigollet. She was the first woman to be paid for her contribution to science, to be awarded a Gold Medal of the Royal Astronomical Society, and was named an Honorary Member of the Royal Astronomical Society.

Rich will then present a talk about Sir John Herschel, son of William. John Herschel continued the work of his father, including spending about 4 years in South Africa to catalog the stars and deep sky objects of the

The Next AAC Board Meeting

The next Board Meeting of the AAC is scheduled for Sunday, April 12th, starting 3PM at the home of Peter and Sharon, 1057 Trestle Dr, Austell. Contact President Mark Banks or Board Chair Sharon Carruthers for more information about the meeting.

March was Membership Renewal Month

The AAC has moved to a "one-date-for-all" membership renewal. ALL CLUB MEMBERS, with certain exceptions, should submit their \$30 dues for 2015 by the end of March. If you have not yet renewed please do so as soon as possible. Please send your renewals to AAC Treasurer Sharon Carruthers, renew online using PayPal, or you can bring your renewal to the April Meeting. For more information see: http://atlantaastronomy.org/?page_id=22

Thank You for your support of the AAC!

southern skies. While in South Africa John and his wife Margaret produced over 100 high quality botanical illustrations of the flora of South Africa. John also made contributions to other sciences, telescope making, and photography.

Future Meetings will be on the 2nd Saturday

The AAC meetings are now on the second Saturday of each month, still at the Fernbank Science Center and at 3PM. The next few meeting dates are: May 9, June 13, & July 11.



Left: William and Caroline Herschel polishing a telescope lens. Right: John Herschel. Illustrations from Wikipedia.

March AAC Meeting Report

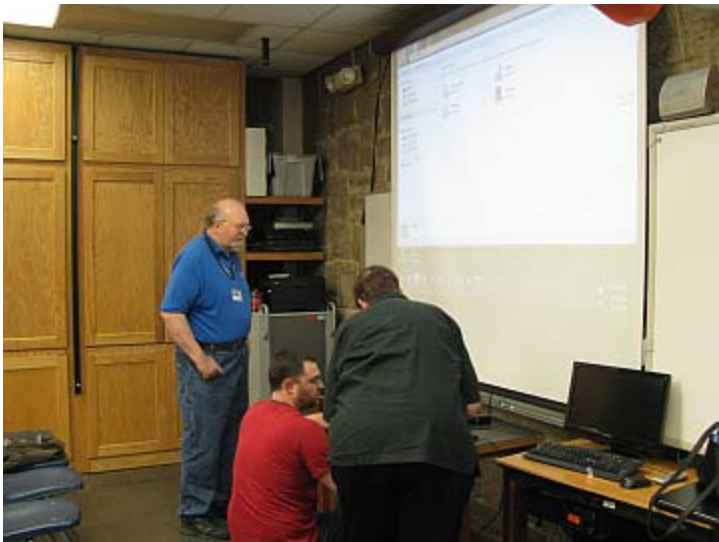
Meeting Photos by Tom Faber

This month's general meeting was on Saturday, March 14th, starting at 3PM at the Fernbank Science Center. There were about 55 members and guests present for the meeting (photo right bottom).

Before the main meeting AAC President Mark Banks presented a beginner's astronomy talk at 2PM (photo below). For the main meeting our speaker was Anita D. Westlake, co-founder and first President of the Meteorite Association of Georgia. Anita presented a talk (photo right middle) about meteorites. She talked about famous meteorite falls including ones that struck buildings and other structures (including a mailbox in south Georgia), animals, and even a person. After the talk she answered many questions. Anita also had a number of nice meteorite specimens for sale (photos next page top left). After the talk club officers talked about upcoming club events and programs.



Our speaker Anita Westlake with AAC Program Chair Richard Jakiel.



Continued on next page



From the President's Desk

We have a lot of things happening that y'all can help the Club with.

Elections: Coming up in May and we could always use some help running the club. If you would like to get involved please contact any club officer and let us know what you can help with.

National Astronomy Day: This year it will be on Saturday April 25th. We will be participating in activities at Tellus Science Museum in Cartersville. There will be daytime as well as night activities, so please reserve that day to help with Club activities.

Villa Rica Observatory: As soon as the weather warms up a little more this spring we are going to be painting the clubhouse. As soon as we set a date & time it will be announced.

Public Stargaze Events: With the coming of spring lots of people are coming out of hibernation and looking up at the sky. That means lots of people at our public events. Please check our calendar frequently and volunteer when you can. You don't need to be an expert. Most questions are very simple and straightforward. If not, then you can refer their questions to another club member and encourage them to join the club to learn more.

Mark Banks, AAC President

The AAC Zombie Party

By Daniel Herron, AAC Observing Chair

This year's Zombie Party is scheduled for Thursday, April 16 thru Sunday, April 19 (3 nights) at the Deerlick Astronomy Village.

The Zombie party is a no-frills, open to the public, 3 night star party hosted by the Atlanta Astronomy club. No speakers, workshops or sessions just observing. This event is open to all, beginners and, experts alike, AAC members, and non-members (how else are we going to get you hooked!).

Cost is 10 dollars per night per person.

No pre-registration necessary, pay once you arrive. This cost covers the fee to use the field

(\$5 per person per night) and the rest goes to support the AAC.

Weather report:

General rule if the weather looks to be rainy during the night we will just cancel for that night and start the party the next day. I will make the go/no-go decision for Thursday by Wednesday night.

Note:

The Zombie party got its name from the way we all look the next morning after staying awake all night observing and has nothing to do with the undead that are occasionally rumored to walk the area! 🤪



March was Membership Renewal Month

If you have not yet renewed your AAC membership for 2015 please send it to Sharon as soon as possible! Thank You for your support of the AAC!

Recent CEA Outreach Events

By Theo Ramakers

Kate's Club of Atlanta at Panola Mountain State Park 2015-03-28

Yesterday we did participate in CEWC's event for Kate's Club of Atlanta at Panola Mountain State Park where we brought a Solar event to about 68 kids and their chaperones. The weather changed its mind and turned out gorgeous, so they got to see the Sun with some nice features and got to search for our model Earth through a scope in our relative size/distance activity. They also learned what UV rays do to us, by looking at our UV beads and learned where the energy comes from on Earth. Thanks to David, Dan T, Dan S, Jon, Frank and Theo for participating.



Outreach for Grayson Elementary 2015-03-27

Friday night we had a great outreach event for Grayson Elementary School. We had four club members come out to brave the wind and cold to show eighty 2nd grade students some night sky objects. The kids and teachers were able to see Jupiter, Jupiter's moons, Venus, M42 and a gorgeous 1st quarter moon. These students were perfect ladies and gentlemen for the whole night. It was a true pleasure to work with them.

Thanks very much to Bob, Dominick and Ken for coming out to give me a hand. (special thanks to Ken Poshedly for taking the photos.)



The Next Charlie Elliott Meeting

Join us for our next meeting at 4:30 p.m., Saturday, April 18, 2015 at the Campbell Aquatic Building. Check <http://ceastronomy.org/blog/home> for the latest information and updates about the meeting.

Meeting Agenda

The meeting talk topic is TBA. Check the CEA web site for updates.

What's Up! - Charlie Elliott Astronomy Observing Supervisor John Towne will be giving a short presentation of what you can expect to see in the sky this month with binoculars and small telescopes as well as the monthly Charlie Elliott Observing Challenge. At the meeting, remember to ask John for the target list and SkyMap! The target list and presentation from the last meeting are available for download at the CE Chapter web page.

Sunset Time Alert - While we would love for everyone to stay for the entire meeting, we realize that some folks prefer to leave a bit earlier so as to set up their equipment at the observing field before dark. If the meeting runs longer than planned, a "Sunset Time Alert" will be announced.

"Observing after the Meeting" - All are invited to Jon Wood Astronomy Field immediately after the meeting (weather-permitting). You don't have to be a member to attend the meeting or join us on Jon Wood Astronomy

Field with your telescope (or just your eyeballs). Note: The security gate at the entrance to the main road leading up to the observing field closes at 10:00 p.m. You'll be able to leave at any time, but you won't be able to get in after 10:00 p.m. You will, however, be able to park near the gate and walk a few hundred feet to the observing field after 10:00 p.m.

Place: Jon Wood Astronomy Field at Charlie Elliott Wildlife Center.

AAC Notes

Upcoming DSO Dates and Locations

These are the dates for the next few AAC Dark Sky Observing (DSO) events. All of these events are scheduled to be at Grier's Field at the Deerlick Astronomy Village: **Zombie Party** April 16-19 at DAV. The locations and dates of the DSOs may change - check the AAC web page for any updates.

The Astronomical League

As a member of the **Atlanta Astronomy Club** you are automatically also a member of the **Astronomical League**, a nation wide affiliation of astronomy clubs. Membership in the AL provides a number of benefits for you. They include:

- * You will receive *The Reflector*, the AL's quarterly newsletter.
- * You can use the Book Service, through which you can buy astronomy-related books at a 10% discount.
- * You can participate in the Astronomical League's Observing Clubs. The Observing Clubs offer encouragement and certificates of accomplishment for demonstrating observing skills with a variety of instruments and objects. These include the Messier Club, Binocular Messier Club, the Herschel 400 Club, the Deep Sky Binocular Club, and many others.

To learn more about the Astronomical League and its benefits for you, visit <http://www.astroleague.org>

The Focal Point Archives

The AAC began publishing the *Focal Point* as a PDF online in June 1998. Since then every issue has, and still is, available for download from the club's web page. Recently that archive has expanded. Sharon Carruthers has scanned 61 issues of the AAC's newsletter (then called *The Atlanta Astronomers' Report*) from 1948 to 1977. Although many issues from this period are still missing these provide a valuable record of the club's early years. In addition I (Tom Faber) came across 19 issues of the *Focal Point* from the years 1995-1998 that I scanned to make available on the club's web site. Again not every issue during this period is available but it is another step in maintaining and making available to all a record of the AAC's history. Our web master Daniel Herron has uploaded these to the web site as PDF's for download. Just visit www.atlantaastronomy.org and click on the "Focal Point Archives" link on the right side of the page. If you have any of the missing issues of the club's newsletter that you would like to scan and submit to Daniel as a PDF please do!

Bradley Observatory Open Houses

Open House Lecture Series for the 2014-2015 school year. The lectures are generally on the second Friday of each month (no open house in January) and run from 8:00PM to 9:00PM. They are followed by viewing with the Observatory's 30-inch Beck Telescope and smaller telescopes (weather permitting). For updates or possible changes to the schedule of lectures see: <http://www.agnesscott.edu/bradleyobservatory/open-house-series.html> **April 24:** Quantum Computing - Adam Meier (GTRI), **May 15:** Cassini Mission - Carol Paty (Ga Tech).



Countdown to Pluto

Encounter - 3 Months

The New Horizons Science Instruments

From: <http://pluto.jhuapl.edu>

The New Horizons science payload consists of seven instruments – three optical instruments, two plasma instruments, a dust sensor and a radio science receiver/radiometer. This payload was designed to investigate the global geology, surface composition and temperature, and the atmospheric pressure, temperature and escape rate of Pluto and its moons.

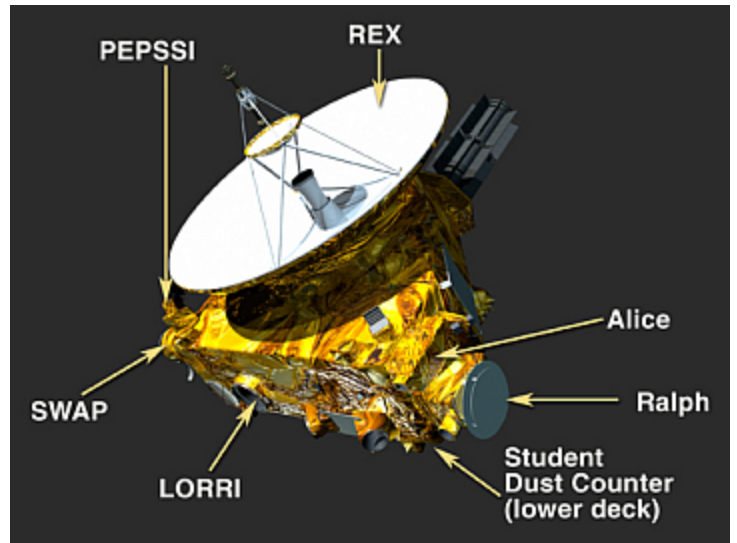
If an extended mission is approved, the instruments will probe additional Kuiper Belt Objects that the spacecraft can reach.

The payload is incredibly power efficient – with the instruments collectively drawing less than 28 watts – and represents a degree of miniaturization that is unprecedented in planetary exploration. The instruments were designed specifically to handle the cold conditions and low light levels at Pluto and in the Kuiper Belt beyond.

Alice

Alice is a sensitive ultraviolet imaging spectrometer designed to probe the composition and structure of Pluto's dynamic atmosphere. Where a spectrometer separates light into its constituent wavelengths (like a prism), an "imaging spectrometer" both separates the different wavelengths of light and produces an image of the target at each wavelength. Alice's spectroscopic range extends across both extreme and far-ultraviolet wavelengths from approximately 500 to 1,800 Angstroms. The instrument will detect a variety of important chemicals in Pluto's atmosphere, and determine their relative abundances, giving scientists the first complete picture of Pluto's atmospheric composition. Alice will search for an ionosphere around Pluto and an atmosphere around Pluto's largest moon, Charon. It will also probe the density of Pluto's atmosphere, and the atmospheric temperature of Pluto, both as a function of altitude.

Alice consists of a compact telescope, a spectrograph, and a sensitive electronic detector with 1,024 spectral channels at each of 32 separate



An illustration showing the locations of the various science instruments on the New Horizons spacecraft.

spatial locations in its long, rectangular field of view. Alice has two modes of operation: an "airglow" mode that measures ultraviolet emissions from atmospheric constituents, and an "occultation" mode, where it views the Sun or a bright star through an atmosphere and detects atmospheric constituents by the amount of sunlight they absorb. Absorption of sunlight by Pluto's atmosphere will show up as characteristic "dips" and "edges" in the ultraviolet part of the spectrum of light that Alice measures. This technique is a powerful method for measuring even traces of atmospheric gas.

A first-generation version of New Horizons' Alice (smaller and a bit less sophisticated) is flying aboard the European Space Agency's Rosetta spacecraft, used to explore the escaping atmosphere and complex surface of a comet.

Ralph

Ralph is the main "eyes" of New Horizons and is charged with making the maps that show what Pluto, its moons, and (potentially) other Kuiper Belt Objects look like. (The instrument is so named because it's coupled with an ultraviolet spectrometer called Alice in the New Horizons remote-sensing package – a reference familiar to fans of "The Honeymooners" TV show.)

Ralph consists of three panchromatic (black-and-white) and four color imagers inside its Multispectral Visible Imaging Camera (MVIC), as well as an infrared compositional mapping spectrometer called the Linear Etalon Imaging Spectral Array (LEISA). LEISA is an advanced, miniaturized short-wavelength infrared (1.25-2.50 micron) spectrometer provided by scientists from NASA's Goddard Space Flight Center. MVIC operates over the bandpass from 0.4 to 0.95 microns. Ralph's suite of eight detectors – seven charge-coupled devices (CCDs) like those found in a digital camera, and a single infrared array detector – are fed by a single, sensitive magnifying telescope with a resolution more than 10 times better than the human eye can see. The entire package operates on less than half the wattage of an appliance light bulb.

Ralph will take images twice daily as New Horizons approaches, flies past and then looks back at the Pluto system. Ultimately, MVIC will map landforms in black-and-white and color with a best resolution of about 250 meters (820 feet) per pixel, take stereo images to determine surface topography, and help scientists refine the radii and orbits of Pluto and its moons. It will aid the search for clouds and hazes in Pluto's atmosphere,

Continued on next page

and for rings and additional satellites around Pluto. It will also obtain images of Pluto's night side, illuminated by "Charon-light." At the same time, LEISA will map the amounts of nitrogen, methane, carbon monoxide, and frozen water and other materials, including organic compounds, across the sunlit surfaces of Pluto and its moons.

It will also let scientists map surface temperatures across Pluto and Charon by sensing the spectral features of frozen nitrogen, water and carbon monoxide.

Radio Science Experiment (REX)

REX consists only of a small printed circuit board containing sophisticated signal-processing electronics integrated into the New Horizons telecommunications system. Because the telecom system is redundant within New Horizons, the spacecraft carries two copies of REX. Both can be used simultaneously to improve the data return from the radio science experiment.

REX will use an occultation technique to probe Pluto's atmosphere and to search for an atmosphere around Charon. After New Horizons flies by Pluto, its 2.1-meter (83-inch) dish antenna will point back at Earth. On Earth, powerful transmitters in NASA's largest Deep Space Network antennas will beam radio signals to the spacecraft as it passes behind Pluto. The radio waves will bend according to the average molecular weight of gas in the atmosphere and the atmospheric temperature. The same phenomenon could happen at Charon if the large moon has a substantial atmosphere, though Earth-based studies indicate this is unlikely.

Space missions typically conduct this type of experiment by sending a signal from the spacecraft through a planet's atmosphere and back to Earth. (This is called a "downlink" radio experiment.) New Horizons will be the first to use a signal from Earth – the spacecraft will be so far from home and moving so quickly past Pluto and Charon that only a large, ground-based antenna can provide a strong enough signal. This new technique, called an "uplink" radio experiment, is an important advance beyond previous outer planet missions.

REX will also measure the weak radio emissions from Pluto and other bodies the spacecraft flies by, such as Jupiter and Charon. Scientists will use the data to derive accurate globally averaged day-side and night-side temperature measurements. Also, by using REX to track slight changes in the spacecraft's path, scientists will measure the masses of Pluto and Charon and possibly the masses of additional Kuiper Belt Objects. By timing the length of the radio occultations of Pluto and Charon, REX will also yield improved radii measurements for each body.

Long Range Reconnaissance Imager (LORRI)

LORRI, the "eagle eyes" of New Horizons, is a panchromatic high-magnification imager, consisting of a telescope with an 8.2-inch (20.8-centimeter) aperture that focuses visible light onto a charge-coupled device (CCD). It's essentially a digital camera with a large telephoto telescope – only fortified to operate in the cold, hostile environs near Pluto.

During the encounter, LORRI images will be New Horizons' first of the Pluto system, starting about 180 days before closest approach. Pluto and its moons still resemble little more than bright dots, but these system-wide views will help navigators keep the spacecraft on course and help scientists refine their orbit calculations of Pluto and its moons. Approximately 60 days before closest approach – around mid-May 2015 – LORRI images will surpass Hubble-quality resolution, providing never-before-seen details each day. At closest approach, LORRI will image select sections of Pluto's sunlit surface at football-field-size resolution, resolving features at about 50 meters across.

This range of images will give scientists an unprecedented look at the geology on Pluto and its moons – including the number and size of craters on each surface, revealing the history of impacting objects in that distant

region. LORRI will also yield important information on the history of Pluto's surface, search for activity such as geysers on that surface, and look for hazes in Pluto's atmosphere. LORRI will also provide the highest resolution images of any Kuiper Belt Objects New Horizons would fly by in an extended mission, should NASA approve one.

LORRI has no color filters or moving parts – operators take images by pointing the LORRI side of the spacecraft directly at their target. The instrument's innovative silicon carbide construction keeps its mirrors focused through the extreme temperature dips New Horizons experiences on the way to, through, and past the Pluto system.

Solar Wind Around Pluto (SWAP)

The SWAP instrument will measure interactions of Pluto with the solar wind – the stream of fast charged particles flowing from the Sun. The incredible distance of Pluto from the Sun required the SWAP team to build the largest-aperture instrument ever used to measure the solar wind.

Pluto's small gravitational acceleration (approximately 1/16 of Earth's gravity) leads scientists to think that about 75 kilograms (165 pounds) of material escape its atmosphere every second. The atmospheric gases that escape Pluto's weak gravity leave the planet as neutral atoms and molecules. These atoms and molecules are ionized by ultraviolet sunlight (similar to Earth's upper atmosphere and ionosphere). Once they become electrically charged, the ions and electrons are "picked up" and carried away by the solar wind. In the process, these pickup ions gain substantial energy (thousands of electron-volts). This energy comes from the solar wind, which is correspondingly slowed down and diverted around Pluto. SWAP measures low-energy interactions, such as those caused by the solar wind. By measuring how the solar wind is perturbed by the interaction with Pluto's escaping atmosphere, SWAP will determine the escape rate of atmospheric material from Pluto.

At the top of its energy range SWAP can detect some pickup ions (up to 6.5 kiloelectron volts, or keV). SWAP combines a retarding potential analyzer (RPA) with an electrostatic analyzer (ESA) to enable extremely fine, accurate energy measurements of the solar wind, allowing New Horizons to measure minute changes in solar wind speed. The amount of Pluto's atmosphere that escapes into space provides critical insights into the structure and destiny of the atmosphere itself.

Pluto Energetic Particle Spectrometer Science Investigation (PEPSSI)

PEPSSI, the most compact, lowest-power directional energetic particle spectrometer flown on a space mission, will search for neutral atoms that escape Pluto's atmosphere and become charged by their interaction with the solar wind. It will detect the material that escapes from Pluto's atmosphere (such as molecular nitrogen, carbon monoxide and methane), which break up into ions and electrons after absorbing the Sun's ultraviolet light, and stream away from Pluto as "pickup" ions carried by the solar wind.

The instrument will likely get its first taste of Pluto's atmosphere when the planet is still millions of miles away. By using PEPSSI to count particles, and knowing how far New Horizons is from Pluto at a given time, scientists will be able to tell how quickly the planet's atmosphere is escaping and gain new information about what the atmosphere is made of.

PEPSSI is a classic "time-of-flight" particle instrument: particles enter the detector and knock other particles (electrons) from a thin foil; they zip toward another foil before hitting a solid-state detector. The instrument clocks the time between the foil collisions to tell the particle's speed (measuring its mass) and figures its total energy when it collides with the solid-state detector. From this, scientists can determine the composition of

Continued on next page

each particle. PEPSSI can measure energetic particles up to 1,000 kiloelectron volts (keV), many times more energetic than what SWAP can measure. Together the two instruments make a powerful combination for studying the Pluto system.

Venetia Burney Student Dust Counter (SDC)

Designed and built by students at the University of Colorado at Boulder, the SDC detects microscopic dust grains produced by collisions among asteroids, comets, and even Kuiper Belt Objects during New Horizons' long journey. Officially a New Horizons Education and Public Outreach project, SDC is the first science instrument on a NASA planetary mission to be designed, built and "flown" by students. The SDC counts and measures the sizes of dust particles, producing information on the collision rates of such bodies in the outer solar system. SDC will also be used to search for dust in the Pluto system; such dust might be generated by collisions of tiny "impactors" on Pluto's small moons.

The instrument includes two major pieces: an 18-by-12-inch detector assembly, which is mounted on the outside of the spacecraft and exposed to the dust particles; and an electronics box inside the spacecraft that, when a hit occurs on the detector, deciphers the data and determines the mass and speed of the particle. Because no dust detector has ever flown beyond 18 astronomical units from the Sun (nearly 1.7 billion miles, about the distance from Uranus to the Sun), SDC data is giving scientists an unprecedented look at the sources and transport of dust in the solar system.

With faculty support, University of Colorado students have been distributing and archiving data from the instrument, and lead a comprehensive education and outreach effort to bring their results and experiences to classrooms of all grades.

In June 2006 the instrument was named for Venetia Burney, who at age 11 offered the name "Pluto" for the newly discovered ninth planet in 1930.



The **Atlanta Astronomy Club, Inc.**, one of the South's largest and oldest astronomical society, meets at **3:00 P.M.** on the 2nd Saturday of each month at the Fernbank Science Center in Decatur, or occasionally at other locations or times. Membership fees are **\$30** for a family or single person membership. College Students membership fee is **\$15**. These fees are for a one year membership.

Magazine subscriptions to *Sky & Telescope* or *Astronomy* can be purchased through the club for a reduced rate. The fees are **\$33** for *Sky & Telescope* and **\$34** for *Astronomy*. Renewal forms will be sent to you by the magazines. Send the renewal form along with your check to the Atlanta Astronomy Club treasurer.

The Club address: Atlanta Astronomy Club, Inc., P.O. Box 76155, Atlanta, GA 30358-1155. AAC Web Page: **http://www.AtlantaAstronomy.org**. Send suggestions, comments, or ideas about the website to webmaster@AtlantaAstronomy.org. Also send information on upcoming observing events, meetings, and other events to the webmaster.

Atlanta Astronomy Club Online

While this newsletter is the official information source for the Atlanta Astronomy Club, it is only up to date the day it is printed. So if you want more up to date information, go to our club's website. The website contains pictures, directions, membership applications, events updates and other information. <http://www.atlantaastronomy.org> You can also follow the AAC on Facebook by joining the AAC group, and on Twitter at <http://twitter.com/atlastro>.

AAC Officers and Contacts

President: Mark Banks President@AtlantaAstronomy.org

Program Chair: Richard Jakiel Programs@AtlantaAstronomy.org

Observing Chair: Daniel Herron Observing@AtlantaAstronomy.org

Corresponding Secretary: Tom Faber
Focalpoint@AtlantaAstronomy.org

Treasurer: Sharon Carruthers Treasurer@AtlantaAstronomy.org

Recording Secretary: Alan Coffelt,
Secretary@AtlantaAstronomy.org

Board Chair: Sharon Carruthers Treasurer@AtlantaAstronomy.org

Board: Brigitte Fessele, Contact info TBA

Board: David Lumpkin, Contact info TBA

Board: Steve Phillips sandsphillips@att.net

ALCor: Jamie Anderson, jameia@bellsouth.net

Elliott Chapter Director: Steve Siedentop
director@ceastronomy.org

Elliott Observing Supervisor: John Towne
observing@ceastronomy.org

Elliott Recording Secretary: Van Macatee
secretary@ceastronomy.org

Elliott Coordinator: Alesia Rast Alesia_Rast@mail.dnr.state.ga.us

Elliott Webmaster: Theo Ramakers 770-666-5084
webmaster@CEastronomy.org

Elliott Outreach Coordinator: Valorie Whalen
outreach@ceastronomy.org

Georgia Astronomy in State Parks: Sharon Carruthers
Treasurer@AtlantaAstronomy.org

PSSG Chairman: Peter Macumber pmacumber@nightsky.org

PSSG Co-Chair: Open

Sidewalk Astronomy: Brad Isley
sidewalkastronomy@AtlantaAstronomy.org

Light Trespass: Ken Edwards, Contact info TBA

Woodruff Observ. Coordinator: Sharon Carruthers
Treasurer@AtlantaAstronomy.org

AAC Webmaster: Daniel Herron
Observing@AtlantaAstronomy.org

Calendar by Tom Faber (Times EDT/EST unless noted)

AAC Events are listed in BOLD

- Apr 4th, Saturday: Full Moon. Partial Lunar Eclipse (Partial phase begins 6:15AM).
- Apr 6th, Monday: Uranus Conjunction with Sun.
- Apr 10th, Friday: Mercury at Superior Conjunction.
- Apr 11th, Saturday: Moon Last Quarter. Venus near Pleiades. **AAC Meeting at the Atlanta Freethought Building, Smyrna 3:00PM. ***Note Meeting Location Change*****
- Apr 16th-19th, Thursday-Sunday: **AAC Zombie Party at DAV.**
- Apr 18th, Saturday: New Moon. **CEA Meeting.**
- Apr 19th, Sunday: Close grouping Moon, Mercury, and Mars.
- Apr 20th, Monday: Moon near Pleiades.
- Apr 21st, Tuesday: Moon near Venus.
- Apr 22nd, Wednesday: Mercury near Mars. Lyrid Meteor Shower.
- Apr 25th, Saturday: Moon First Quarter. **Astronomy Day at Tellus Science Museum.**
- Apr 30th, Thursday: Mercury near Pleiades.
- May 5th, Tuesday: Full Moon. Eta Aquarid Meteor Shower.
- May 7th, Thursday: Mercury at Greatest Eastern Elongation.
- May 9th, Saturday: **AAC Meeting at Fernbank Science Center 3:00PM.**
- May 11th, Monday: Moon Last Quarter.
- May 16th, Saturday: **CEA Meeting.**
- May 19th, Tuesday: New Moon.
- May 23rd, Saturday: Saturn at Opposition.
- May 25th, Monday: Moon First Quarter.
- June 2nd, Tuesday: Full Moon.
- June 5th, Friday: Venus at Greatest Eastern Elongation.
- June 9th, Tuesday: Moon Last Quarter.

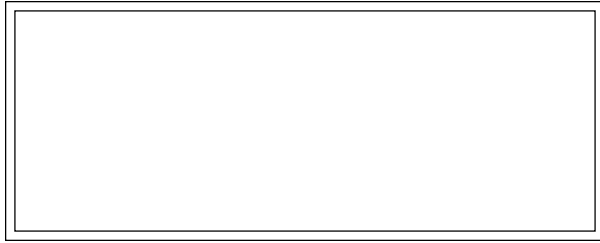
For more event listings see the calendar at www.atlantaastronomy.org

Atlanta Astronomy Club Listserv

Subscribe to the Atlanta Astronomy Club Mailing List: The name of the list is: AstroAtlanta. The address for messages is: AstroAtlanta@yahoogroups.com . To add a subscription, send a message to: AstroAtlanta-subscribe@yahoogroups.com .

Focal Point Deadline and Submission Information

Please send articles, pictures, and drawings in electronic format on anything astronomy, space, or sky related to Tom Faber at focalpoint@atlantaastronomy.org. Please send images separate from articles, not embedded in them. Articles are preferred as plain text files but Word documents or PDF's are okay. You can submit articles anytime up to the deadline. **The deadline for May is Saturday, April 18. Submissions after the deadline will go in the following issue.**



FIRST CLASS



www.beclage.com



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

2206 Treeridge Parkway
Alpharetta, GA 30022

Tom Faber

FROM:

Newsletter of The Atlanta Astronomy Club, Inc.



The Focal Point

www.atlantaastronomy.org

Atlanta, GA 30358-1155

P.O. Box 76155

Atlanta Astronomy Club

On Twitter at <http://twitter.com/atlastro>