BACK BAY observer

The Official Newsletter of the Back Bay Amateur Astronomers
P.O. Box 9877, Virginia Beach, VA 23450-9877

EPHEMERALS may 2010

05/01
Pungo/Blackwater Library
10 am

05/06
BBAA Monthly Meeting at TCC Building J, JC-12 at
7:30 pm

05/07
Skywatch
NWRP

05/14-15
Kent Blackwell's East Coast Star Party
Coinjock, NC

05/15
Cub Scout Campout
North Landing Beach, VB at
7:30 pm

05/15
Nightwatch at Chippokes cancelled due to ECSP

05/21
Astronomy Program
Indian River Library, Chesapeake
6:30 pm

05/25
Boardwalk Astronomy
24th Street Stage
5:30 pm, dusk

05/26
Bayside Library Astronomy
7 pm

05/28
Night Hike at NWRP

Looking Up!

Another first for me! Only a couple of months ago, I saw my first asteroid. At our monthly Skywatch on April the 2nd, I saw Mercury for the first time. Its proximity to Venus was what helped me find it. The proximity of tall pine trees all over Tidewater was what kept me from seeing it before. I saw it again on the 15th at the Green Run Elementary School Science Fair. The 1-day old, very thin crescent Moon and Mercury both fit in the field in my big Astro-binocs. It was a beautiful sight.

April 10th was Yuri's Night at VASC. There were thousands of people there. Fortunately, they didn't all try to look thru the scopes at once. In fact, most of them never got up to the third level & the observing deck. George Reynolds had his 10" Dob and I had my Astro-binocs. Bird Taylor had a scope there as did a couple of people from the VPAS group. I had just gotten a parallelogram mount for the binocs, but couldn't get them to aim at anything lower than about 25^{0} altitude without slewing them sideways on the mount. Mars and the Beehive cluster were the objects of the evening. I never did find out what a Marstini is (probably for the best).

The Second Annual Mt. Trashmore Star Party was held on Friday the 23rd. I think the semi-official VB Parks estimate was about 1600 attendees. Most of our core group brought instruments (the usual suspects; pics are on the Yahoo website). We had about 12-15 scopes and saw the moon, and talked to people, and saw the moon, etc, etc,... The afternoon had looked like it was going to be clear, but the later it got, the cloudier it got. The official T-Shirt for this year's event should be gray cotton with some holes punched in it :)

Ted and I were the first to show up at Central Library for National Astronomy Day, followed not long after by Chuck Jagow and Georgie June. (Thanks for the coffee, Georgie; and bring my gloves to the meeting.) Kent Blackwell and Dr. Hitt stopped by to wish us well. It was a bit chilly out and completely overcast. We didn't set up any instruments, but Ted had an E-Z-Up type shelter and we borrowed a couple of tables from the Library. NASA bookmarks and Space Place stickers for the younger set made good conversation starters with folks coming from and going to the Library. We gave away quite a number of photographs courtesy

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CONTENTS

NASA's Space Place

A Rock Hound Is Born

Patrick L. Barry and Dr. Tony Phillips

It's tough to be a geologist when you can't tell one rock from another. Is that a meteorite or a chunk of lava? A river rock or an impact fragment? Houston, we have a problem!

It's a problem Spirit and Opportunity have been dealing with for the past six years. The two rovers are on a mission to explore the geology of the Red Planet, yet for the longest time they couldn't recognize interesting rocks without help from humans back on Earth.

Fortunately, it is possible to teach old rovers new tricks. All you have to do is change their programming—and that's just what NASA has done.

"During the winter, we uploaded new software to Opportunity," says Tara Estlin, a rover driver, senior member of JPL's Artificial Intelligence Group, and the lead developer of AEGIS, short for Autonomous Exploration for Gathering Increased Science. "AEGIS allows the rover to make some decisions on its own."

Estlin and her team have been working for several years to develop and upload increasingly sophisticated software to the rovers. As a result, the twins have learned to avoid obstacles, identify dust devils, and calculate the distance to reach their arms to a rock.

With the latest upgrade, a rock hound is born.

Now, Opportunity's computer can examine images that the rover takes using its wide-angle navigation camera (NavCam) and pick out rocks with interesting colors or shapes. It can then center its narrower-angle panoramic camera (PanCam) on targets of interest for close-up shots through various color filters. All this happens without human intervention.

The system was recently put to the test; Opportunity performed splendidly.

At the end of a drive on March 4th, the rover settled in for a bit of rock hunting. Opportunity surveyed the landscape and decided that one particular rock, out of more than 50 in the NavCam photo, best met criteria that researchers had set for a target of interest: large and dark.

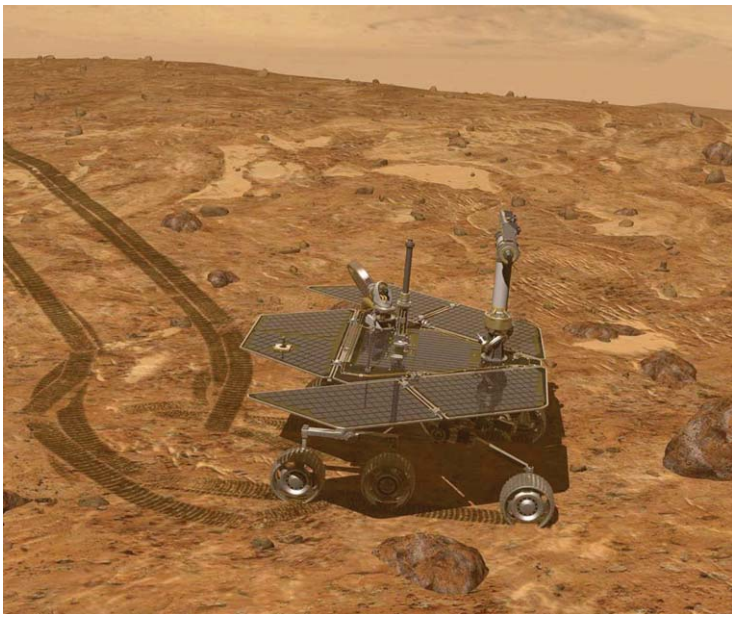
"It found exactly the target we would want it to find," Estlin says. "It appears to be one of the rocks tossed outward onto the surface when an impact dug a nearby crater."

The new software doesn't make humans obsolete. On the contrary, humans are very much "in the loop," setting criteria for what's interesting and evaluating Opportunity's discoveries. The main effect of the new software is to strengthen the rover-human partnership and boost their combined exploring prowess.

Mindful that Opportunity was only supposed to last about six months after it landed in 2004, Estlin says "it is amazing to see Opportunity performing a brand new autonomous activity six years later."

What will the rock hounds of Mars be up to six years from now? Stay tuned for future uploads!

Learn more about how the AEGIS software works at http://scienceandtechnology.jpl.nasa.gov/newsandevents/newsdetails/?NewsID=677. If you work with middle- or high-school kids, you'll find a fun way to explore another kind of robot software—the kind that enables "fuzzy thinking"—at http://spaceplace.nasa.gov/en/educators/teachers_page2.shtml#fuzzy.



Opportunity spots a rock with its NavCam that its AEGIS software says meets all the criteria for further investigation.

The Back Bay Amateur Astronomer's
Observer

The BBAA Observer is published monthly; the monochrome version is mailed to members who do not have Internet access. Members who do have Internet access can acquire the full color version on the Internet at **http://www.backbayastro.org/newsletters/newsletter.shtml.**

Please submit articles and items of interest no later than the 15th of the month for the next month's edition. Please submit all items to: BBAAErica@yahoo.com
or BBAA Observer, P.O. Box 9877, Virginia Beach, VA 23450-9877

BBAA Meetings

The BBAA meet the first Thursday of every month except for July. While school is in session, we meet at the VA Beach TCC Campus. **The April meeting will take place at TCC VB in Building JC-12 at 7:30 pm.** Directions available at www.backbayastro.org.

BBAA Internet Links

BBAA Web Site
http://www.backbayastro.org
Yahoo! Group
http://tech.groups.yahoo.com/group/backbayastro
BBAA Observer Newsletter
www.backbayastro.org/observer/newsletter.shtml

Looking Up! Continued from page 1

of NASA and Lunar phase charts and Star Finders courtesy of Chesapeake Planetarium & Dr. Hitt.

April 28th was our monthly Bayside Astronomy event. George Reynolds provided a talk about our Sun's place in the galaxy, Lunar phases, and several other subjects. Outside, George and Chuck Jagow had their Dobs set up. Mars and Saturn were the objects of the night, and the attendees were treated to a really good view of the ISS as it went over.

Upcoming Events:

The Eta Aquarids meteor shower is scheduled to peak the night of May 5 and morning of May 6. This is usually a light shower with about 10 meteors per hour. As with most meteor showers, the best time to viewing is toward the East after midnight. The moon will be just before last quarter and will be rising in the East before midnight, so it will probably outshine the shower. But you never know!

The 6th is also our next meeting, room JC12 at Tidewater Community College. We will be discussing the 2011 VAAS Convention. The following night is Skywatch at Northwest River Park, weather permitting .

I'm sure everyone is looking forward to the Spring 2010 East Coast Star Party, May 14-16 in Coinjock. I sure am! I had a great time there last fall.

Our first Boardwalk Astronomy event is May 25th, with a rain date of May 27th. This was a very popular outreach last year, and I expect it will be again this year. I believe we are scheduled for 5 or 6 dates thru the summer. These and all our other events can be found on the Calendar page on the Yahoo website (tech.groups.yahoo.com/group/backbayastro).

An early heads up for anyone who does not receive Sky & Telescope: Uranus and Jupiter will be within 1^{o} of each other during three periods this year, with the first being June 1-16. Their closest approach will be June 8, 2010 at 4:14 A.M. when they will be 26 minutes apart, less than half a degree. Uranus is a little fainter than Jupiter's Galilean satellites, so it may be difficult to pick out.

If you do receive S&T, look for Ted Forte's article about planetary nebula

For our June meeting, we hope to present a DVD on the history of space flight. It's a bit long, so we will try to have an abbreviated business meeting.

Mark Gerlach

BBAA Meeting Minutes
April 1, 2010

The April meeting was called to order at 7:34 PM in Room JC-13 of the TCC Science Building, Virginia Beach campus, by president Mark Gerlach.

Those in attendance were Neill Alford, Bruce Bodner, Bryan Condrey, Courtney Flonta, Tony Flonta, Ted Forte, José Gelpí, Mark Gerlach, Chuck Jagow, Karen Jagow, Georgie June, Curt Lambert, Matt McLaughlin, Bill McLean, Bill Newman, Bill Powers, George Reynolds, and "Bird" Taylor.

Reports: It was moved, seconded, and approved that the reading of the March meeting minutes be waived, since they are posted on the BBAA Web site, www.backbayastro.org.

Treasurer Chuck Jagow reported that as of the meeting date there is $3228.07 in the Scholarship Fund and $3817.28 in the General Fund, for a total of $7045.35. ALCOR Georgie June mentioned that Cliff Hedgepeth had earned the Binocular Deep Sky award. Once again, Cliff received applause "in absentia".

Old Business: None.

New Business: President Mark Gerlach reported that the BBAA will host the 2011 VAAS Conference. Chuck Jagow was appointed chairman of a committee (to be assembled) to begin planning for the event. Bird Taylor suggested getting a speaker through the NASA Speakers' Bureau. Some discussion ensued concerning posters and projects, possible observing sites, possible meeting sites, and food for the conference. It was decided to set up a committee at the next monthly meeting.

Matt McLaughlin reported that Garden Stars went well last Friday, with he, Neill Alford, and Kevin Rasso all taking part in the presentation. The weather precluded outdoor observing. Matt said the number of club members present outnumbered the paying visitors.

Vice President Courtney Flonta gave a report on the Nansemond-Suffolk Academy science night March 31st. There were about 50 visitors, and BBAA members had telescopes outside for viewing Saturn, Mars, Orion, and a "tour" of the constellations.

Schedule: Skywatch is ON for tomorrow night, 4/2. Saturday, April 10 is Yuri's Night at the Virginia Air and Space Center, Friday, April 15 is the Green Run Elementary School science night, April 23 is Mount Trashmore stargazing, and Saturday, April 24 is National Astronomy Day. Anyone wanting to participate in Yuri's Night, contact Bird Taylor. Anyone wanting to participate in the Mount Trashmore event, contact Chuck Dibbs and give him your name, address, phone number, email, T-shirt size, and type of scope (if any).

President Mark Gerlach presented the evening presentation, the January program of "The Sky at Night" with Sir Patrick Moore.

The meeting was adjourned at 8:37 PM.

Respectfully Submitted,

George Reynolds
Secretary

NEO Searching with the RRRT

by Ted Forte

The "RRRT" is Norfolk State University's "Rapid Response Robotic Telescope," a 60 cm (24") f/8 Ritchey-Chrétien open truss telescope under a 16' Astro Haven clamshell dome. It is located at Fan Mountain Observatory outside of Charlottesville Virginia (the site of the University of Virginia's observatory).

The BBAA is a partner in the RRRT project; a few of our members have been involved since it was just a concept on a drawing board. Now that the observatory is functional, BBAA members are eligible to use the scope.

The science objectives for the RRRT have evolved considerably since its initial conception. Originally designed to study the optical afterglows of gamma ray bursts, and in particular to capture polarimetry of those afterglows, the emphasis has now shifted a bit. Pragmatism reigns. Limited budgets, shoestring manning levels, delays in construction of the polarimeter, and the changing scientific landscape have conspired to define new roles for the scope. The observatory's founder and director, Dr. Carlos Salgado, has decided to embark on an effort that can keep the telescope employed within the constraints of economic reality. And once again he is counting on our help.

He would like to keep the scope busy imaging the sky and detecting moving objects. These might be the critically important "NEOs" or Near Earth Objects, or the scientifically hot Kuiper belt objects. The project capitalizes on the telescope's main strength - robotic operation. While the RRRT was once envisioned as a remotely operated fully autonomous robot , the reality is more limited. Achieving the necessary reliability and functional redundancies to be completely autonomous are probably cost prohibitive. The scope is superbly suited, however, to programmed operation with only limited human oversight.

The other advantage he hopes to capitalize on is our cache of willing volunteers, allowing for both some occasional onsite supervision of the scope and reduction of massive quantities of data. The RRRT is capable of producing an enormous number of images in a night. Identifying and cross checking moving objects in those images can be semi-automated with the bulk of the grunt work done by software (astrometric engines like "Pin-Point"), but human intervention and management is still required.

A near-Earth object (NEO) is a Solar System object whose orbit brings it into close proximity (less than 1.3 AU) with the Earth. The Harvard Minor Planet Center (MPC) maintains a data base of known orbiting objects including NEOs and NEAs (asteroids). Thanks to the efforts of BBAA member Matt McLaughlin and Dr. Salgado, we now have an observatory ID that enables the RRRT observatory to make automated reports to the MPC. Potentially hazardous objects (PHOs), i.e. objects that come within 0.05 AU and have an absolute magnitude brighter than 22.0 (roughly indicating a large size), are of paramount importance due to their potential for impacting Earth; the value of searching for these objects is obvious.

The Kuiper belt is just beyond the orbit of Neptune and is thought to contain up to 70,000 orbiting bodies. Only about 1,000 are cataloged. Many of these objects are bright enough to be imaged by the RRRT. We have an excellent chance of making a discovery there.

Several BBAA members have already used the

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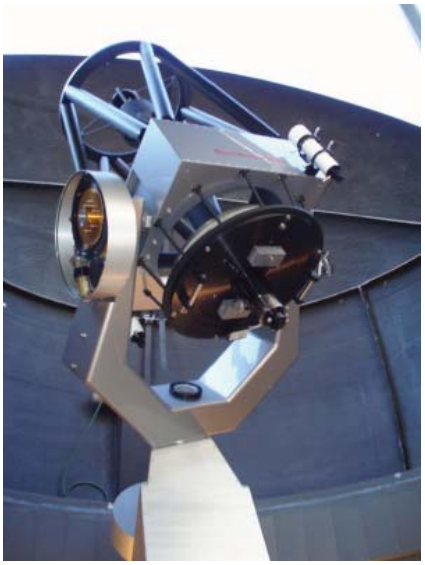
Welcome New Members!

RRRT, continued

RRRT to conduct these searches. Ben Loyola, Matt McLaughlin, and Neil Alford have done so, and Jordan Bramble and I collaborated on his project that helped earn him second place in the National Young Astronomer competition. The procedure Jordan and I used to search for asteroids employed the software: TheSky6 Professional Astronomy Software (Software Bisque), ACP Planner with The Sky Plan Capture, and PinPoint Astrometric Engine all by DC3Dreams. The software creates a script that the telescope's control software can read and follow.



To search for asteroids, a grid of CCD frames is imaged repeatedly in a sequence that records each square in turn, completing the whole grid, and then returning to the first square and repeating the process. Creating your grid, called a "mosaic", near the ecliptic increases your chances of catching an asteroid and positioning your search mosaic opposite the sun ensures that any objects crossing your grid will be at their brightest. TheSky allows you to display the Earth's shadow and thus makes it quite easy to find the opposition point. The RRRT's dome produces an artificial horizon at 30 degrees altitude, so the grid must be above this to be photographed. Once the script is input into the scheduler, the observatory executes the plan autonomously. The images are collected as FITS files and retrieved via FTP.

Searching for asteroids is a two step process accomplished by the PinPoint Astrometric Engine. The images are first plate solved and then blink compared. If the engine auto-detects an object when blinking, an "Accept" button is activated and the operator can accept the object as real or not. If there is no auto detection, the "Accept" button changes to a "Report" button. The operator can then manually report objects with the mouse. It is here, at the computer screen monitoring the blink comparator engine, that we need your help. It's easy, fun, and exciting. Want to help? Just let me know.

And there is another way BBAA'ers might help. Those really close objects, the PHOs, move so fast that they might reveal themselves in a single frame on our mosaic, and then be completely out of the area by the next series of images. We need to come up with a strategy for capturing them. We need innovative ideas and clever procedures to pin these objects down.

Like a challenge? Want to help us solve this puzzle? Get involved! Contact me: twforte@cox.net

Constellation Stories and Myths

by George Reynolds

Leo, the Lion, can be found in the northern hemisphere in the spring and southern hemisphere in autumn. It was named after the Nemean lion, which was killed by Hercules on the first of his twelve labors for the king of Mycenae. According to legend, the lion had a hide that could not be pierced by iron, bronze, or stone. Hercules strangled the great beast after unsuccessfully trying to reason with it. The ancient Egyptians worshiped Leo as the place where the Sun rose after creation. Its appearance in the night sky coincided with the summer solstice and the flooding of the Nile river. Leo contains five Messier objects, all of them galaxies. All of these are spiral galaxies, except for M105, which is an elliptical. The bright star, Regulus, was seen in ancient times as the guardian of the heavens. Its name means "heart of the lion", due to its position in the constellation. With a magnitude of 1.35, Regulus is the 25th brightest star in the sky.

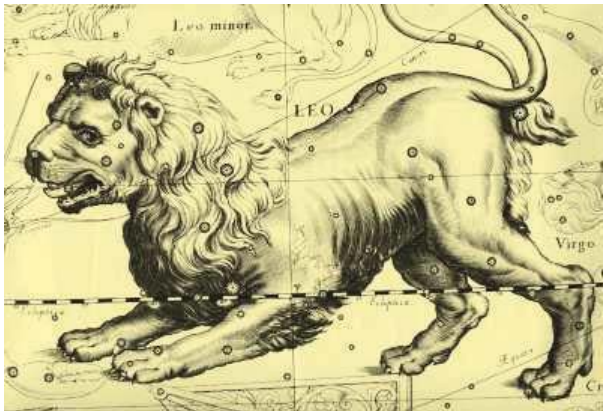


Illustration of Leo by Polish astronomer Johannes Hevelius (17th century)

2010 EAST COAST STAR PARTY MAY 14 & 15

Star Party Admittance $15.00 per person
Pay Kent Blackwell upon arrival, no need to register in advance

- Hampton Lodge Camping Resort – Coinjock, NC (252)453-2732
- Portable restroom conveniently located near observing area
- Observing area is at the cedar trees and surrounding areas about 100 feet to the left after the entrance gate (follow the signs)
- Showers and store located in the campground
- You may camp near your telescope
- No A/C available at camp site; if you have an RV needing A/C hookup, addtional charges will apply

Approximately 45 miles south of Norfolk/Virginia Beach, VA area

- Driving north on US 158, take Waterlilly exit before crossing the Joseph Palmer Knapp Bridge at Coinjock. Follow signs
- Driving south on US 158, cross the Joseph Palmer Knapp Bridge at Coinjock. Turn left at foot of bridge. Waterlilly exit Campground is approximately 7 miles down Waterlilly Road
- Please obey the campground's 10 mph speed limit

NOTE: THE SKY IS 6TH- MAGNITUDE BUT CEDAR TREES OBSTRUCT THE HORIZON 20% OBSERVING SITES

AGENDA
FRIDAY:
Registration begins at 2:00 PM and continues all day
Coffee & snacks served all night

SATURDAY:
Registration begins at 10:00 AM and continues all day
Optional: Brunch at local restaurant at 10:00 AM

5:00 PM Cookout at observing site
Kent will supply hamburgers, hot dogs, soft drinks
Bring a dish if you wish

6:30 PM Door Prize Drawings
Observing begins after door prizes
Coffee & snacks served all night

DOOR PRIZES
Orion 3.5" Dobsonian FunScope, $50, donated by Kent
Burnham's Celestial Handbook, donated by Cliff Hedgepeth,
Norton's Star Atlas, $30 donated by Kent
JMI Gift Certificate, $100, donated by Kent
Astrophotography for the Amateur by Covington, $30, donated by Kent
Stargazing Year, donated by Al Marchand
Sky & Telescope Pocket Star Atlas, $20
Astronomy Hacks, O'Reilly Books, $25
Illustrated Guide to Astronomical Wonders, O'Reilly Books, $30
Digital Astrophotograpy, book by Stefan Seip, $30
Meade 7x17 Radio Binoculars, donated by Bruce Bodner
Orion Laser Collimator Deluxe, donated by Chuck Jagow
A Brief History of Time by Stephen Hawkins, donated by Rocky Nelson
Eyes on the Skies, $20, donated by Sky & Telescope

GRAND PRIZE
Tele Vue 4mm Radian eyepiece, $200, donated by Mark Ost

Door Prizes for the Kids
The Solar System Book & Mobile
Solar System Information Pack
Galileo Scope
Meade 7x17 Radio Binoculars, donated by Orion Telescopes
Glow In The Dark T-shirt, donated by Chuck Dibbs

Kent Blackwell, Organizer
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Virginia Beach, VA 23464
757-495-4663 e-mail: kent@exis.net

BACK BAY observer

May 2010

BBAA Events	Special Outreach	Astronomical Events
01 Pungo/Blackwater		
06 Meeting at TCC Va Beach		06 Last Quarter
07 Skywatch at NWRP		
14 - 15 East Coast Star Party		14 New Moon
15 Nightwatch - CANCELLED	15 Cub Scout Campout	
		20 First Quarter
	21 Astronomy Program/Indian River	
	25 Boardwalk Astronomy	27 Full Moon
28 Night Hike at NWRP	26 Bayside Library Astronomy	

Sneak Peak into June
03 Meeting TBA
04 Skywatch at NWRP
12 Nightwatch at Chippokes
17 Library Astronomy at Bayside Library
18 Night Hike at NWRP
21 Library Astronomy at Pungo/Blackwater
22 Boardwalk Astronomy

The June and August BBAA monthly meetings will NOT be held at Tidewater Community College. Please check the BBAA web site and/or the Backbayastro Yahoo Group and calendar for the announcement of the locations for the June 3 and August 5 meetings.

The July meeting will be the annual BBAA family picnic at Northwest River Park, July 17, 2010.