

Bays Mountain Astronomy Club

☞ *Picnic: July 30* ☞

SKYWARD

We had a good turnout at the June meeting. Sabrina Hurlock was the speaker. Sabrina is a recent graduate of ETSU with a degree in physics. She recently took a job in Knoxville while she considers options for graduate studies. Sabrina gave a very interesting talk on the Sun, the various levels of it's make up from the core to the different levels of "atmosphere" and the types of energies emitted. She also talked of the effects of such events as a large coronal mass ejection would have on the Earth. She had some neat slides.

We had very little business to discuss other than the picnic. Of course, it will be held July 30th at Natural Tunnel State Park in VA. I think the Park staff has the map to Natural Tunnel and it should be published in the next newsletter. We have been given the Gazebo and will host a star party for the campers and other locals that night. The meeting/cookout will start at 5:30 p.m. The Park is providing hot dogs to grill along with buns, condiments, plates, cups, bowls, plastic wear, napkins, 2 liter sodas, and water. BMAC



members are asked to bring a dish to share: side dish, veggies, dessert, etc.

The annual election for chairman was held and I was chosen again to represent the club. Thank you for a second term! We had a rather lengthy "break" with folks having some spirited conversations with each other. Even though it was clear outside for a change we did not do any observing due to the lateness of dark that night.

Wayne Manly, Todd Gray and Terry Alford have worked more on the Big Dob Project. The final cut of the truss tubes has been done and just a little tweaking and final collimation is left. This will be done before the picnic and the scope should see first starlight that night. Attached is a photo of Todd checking the position of the secondary before we did rough collimation and tried out a couple of eyepieces to focus on a distant ridge line visible from the observatory.

BY BRAD DUNN

Calendar

Special Events

July 30 BMAC annual picnic, 5:30 p.m.
Natural Tunnel, VA at the gazebo. Bring a dish/
snack to share and a chair.

SunWatch

Every Sat. & Sun., 3 - 3:30 p.m.,

Mar. - Oct., weather permitting.

BMACers are always welcome to help.

BMAC Meetings

7 p.m., Discovery Theater

July The picnic is the July meeting.

Aug. 5 Topic TBA.

EYE TO THE SKY

BY BOB SMITH

July nights are short and even worse full darkness doesn't come until almost 11:00 p.m. This old guy finds it harder and harder to stay up that late. One good part of "Early to bed" is that I find myself waking earlier than I used to. I'll find it much easier to locate Venus and Mars this month in the pre-dawn sky.

If you've seen Venus the past few weeks, you'll notice it is sinking ever lower in the northwest before dawn. Observe the bright (mag -3.8) planet through July to see how long you can follow its departure from the morning sky. It will soon be gone and reappear in the evening sky in early October.

Mars is well placed for observing among the stars of Taurus in the early morning sky. The first week of July finds the "Red Planet" only about 5° north of Aldebaran, the "Eye of the Bull." The magnitude 1.4 planet makes an interesting comparison with the slightly brighter star. As the month progresses, Mars moves eastward and ends the month between the horns of the Bull. On the 27th, a slim crescent Moon joins the scene. Even though the face of Mars is only about 4", I always take a peek through the telescope if it's set up.

A good reason to rise early and set up your scope is the "King of Planets"—mighty Jupiter. It is well placed a couple of hours before dawn and presents a never ending show through the telescope of its surface and moons. At magnitude -2.3, Jupiter draws your eye to the fairly dim area around Aries and Pisces. The Last Quarter Moon appears just a little to the upper right of Jupiter the morning of the 23rd.

Just before 11:00 p.m. or so, Saturn should be visible in the southwest. The showpiece for most observers is well worth an hour's observing time anytime this month. The magnitude 0.9 planet is still among the stars of Virgo and very close to 3rd magnitude Gamma (γ) Virginis. Through the telescope the rings are probably the most interesting sight and are currently tilted about 8° to our view. Be sure and study the outer portions of the rings for Cassini's Division, a dark gap about halfway along the rings. The brightest moon, Titan, is easy to locate shining at 8th magnitude. It lies farthest east of the planet on July 1st and 17th, and farthest west on July 9th and 25th. Also be sure to pick out the 10th magnitude moons Tethys, Dione and Rhea. These take fairly high magnification and steady skies to pick out among the background stars.

Anytime you're out observing the second half of the month and observe a meteor, make a mental note if it comes from the south out of Aquarius. These swift meteors are known as the Southern Delta Aquarids and peak on July 30th. Although not very numerous (maybe 10-20 per hour), they sometimes are very bright and tend to make long tracks across most of the sky. The Moon is new at the time of the peak so we should have ideal conditions if the sky is clear. This may be a perfect time to take a trip out to your favorite dark sky location. Also keep in mind that a few early Perseids may be shooting out of the northeast. Keep your eye to the sky.

The 6th magnitude asteroid Vesta is still visible in the early evening sky among the stars of

Capricorn. Vesta slides past the stars ϵ , ζ , ϕ and χ Capricorni this month. Vesta will reach opposition and be brightest in early August but it should be getting lots of coverage for another reason. The DAWN spacecraft will reach Vesta next month and begin transmitting photos and data about the third largest asteroid back to Earth. With NASA's decision not to go back to the Moon anytime soon maybe Vesta or another asteroid could make it onto the space agency's to-do list.

Comet C/2009 P1 Garradd is drawing closer to the inner Solar System and should spend the next year in the sights of northern hemisphere observers. The comet is currently about 8th magnitude among the stars of northern Aquarius and moving into Perseus as the month progresses. Let's hope Garradd meets expectations and reaches naked-eye status this winter. It should currently be visible in a moderate (6-8 inch) scope under a dark sky.

STAR STUFF

BY TERRY ALFORD

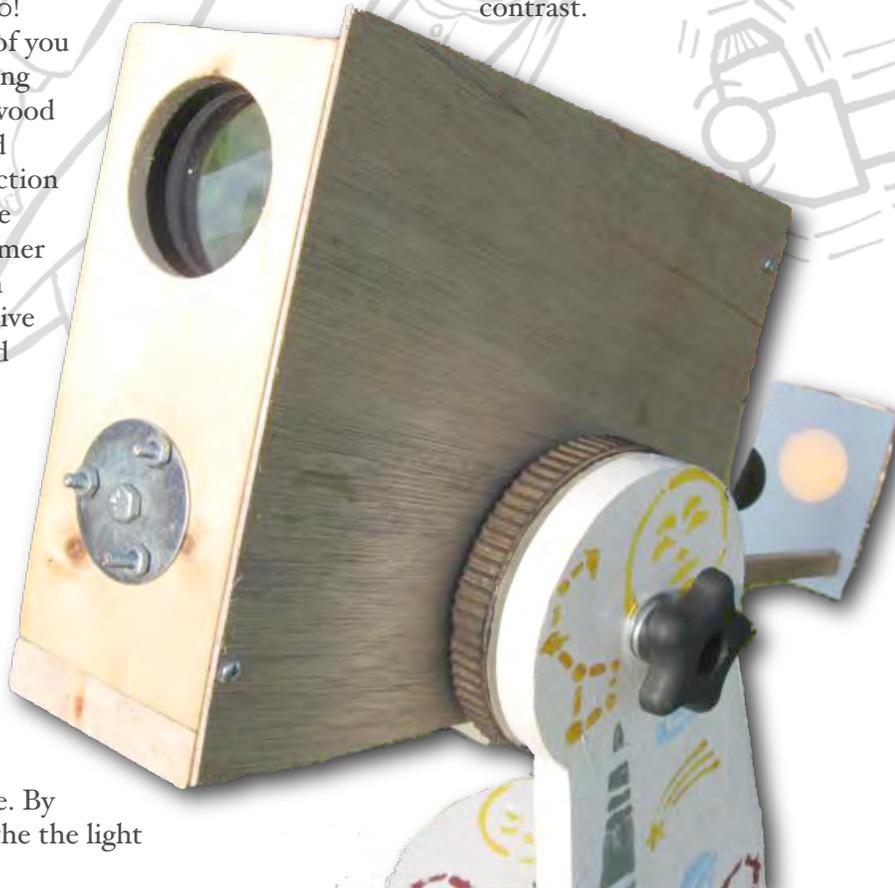
ETSU has a Sunspotter solar projection scope for use in astro labs. This is a small refracting telescope with the optics "folded" by mirrors. The $f/11$ objective is stopped down to about 57 mm and there are three first surface mirrors folding the light path. The light loss from the mirrors reduces the heat enough at the focal point that it is not necessary to use a narrow field of view simple eyepiece like a Huygens. A modern day Plössl eyepiece is used in the Sunspotter without fear of the cement in the eyepiece's elements melting. The Sunspotter is a compact, sturdy solar projection scope that does a good job of showing sun spots. It is safe and easy to use. I have used it a few times and thought it would be a nice scope to add to my arsenal. But wait, this little guy costs \$350!

Well, as most of you know, I love building telescopes out of wood and I knew I could make a solar projection scope for very little expense. Last summer I set out to find an appropriate objective lens. A classified ad on the Cloudy Nights website listed a 60 mm $f/11.5$ achromatic objective in a cell for a very small price, around \$15 if I recall correctly. After the lens arrived I sketched out on paper the light path of a "Z" scope. By "Z" scope I mean the the light

path is folded by two mirrors and takes a "Z" path through the scope's body.

The lens was the only thing I purchased at the time since I had everything else that was needed on hand. The focuser was a salvaged plumbing part. I had some surplus first surface mirrors and an extra 16 mm wide angle eyepiece. Using some scrap wood I fashioned a not so pretty but a serviceable solar projection scope. Since there were only two mirrors I added a yellow/orange filter in front of the eyepiece. This reduced the intensity of the Sun's light a little further. The result was a nice bright image of the sun that is about 2 1/2 inches in diameter. The shadow cast by the body of the scope helped improve contrast.

Unfortunately there were very few sun spots visible last summer, so I put the scope away on a shelf and basically forgot about it. That is until recently when the Sun became much more active. I have been using the Lunt H α scope on the Sun frequently the last six months. Unfortunately, sun spots themselves don't show up that great in H α light so I un-retired the "Z" scope. It is neat to set up both the Lunt and the "Z" scope side by side and compare views of the various features on the ever more active Sun.



*HAPPY BIRTHDAY JOHN GLENN**BY ROBIN BYRNE*

This month, we celebrate the life of a man whose exploits in space span three decades, but who did so much more, as well. In Cambridge, Ohio on July 18, 1921 John Glenn was born. When he was two years old, his family moved to New Concord, Ohio, where his father opened a plumbing business. The family built a home that was large enough to also be a rooming house for students from Muskingum College. Between his parents and the students living in his house, John Glenn was inspired with an interest in science, flying, and duty to his country. After public school, Glenn entered Muskingum College to study math and engineering. It was during this time that he earned his pilot's license.

It was while Glenn was in college that the Japanese bombed Pearl Harbor. Glenn's patriotism sprang to life, leading him to drop out of college and enlist in the Army Air Corps. Due to delays from the Army, Glenn moved on to the Navy as an aviation cadet. It was during this time that Glenn married the love of his life, Annie Castor, on April 6, 1943. Once Glenn completed his advanced training, he was assigned to the Marine Corps to fly transport planes. Later, he was assigned to an F4U Corsair, which he flew in 59 combat missions. After the war, he flew patrol missions over North China, and then later, he was a flight instructor. During the Korean War, Glenn flew 63 combat missions, and then, during a second tour, participated in an interservice exchange, flying with the Air Force.

His eagerness to shoot down Soviet MiGs earned him the nickname "MiG Mad Marine." Shortly before his tour was up, Glenn finally shot down 3 MiGs.

After Korea, Glenn was stationed at the Naval Air Station in Patuxent River, Maryland, where he entered Test Pilot School. His main task was to test



armaments at high altitude. Then, on July 16, 1957, Glenn participated in "Project Bullet." He flew a Vought F8U-1 Crusader from California to New York in a little over 3 hours, making the first supersonic transcontinental flight. This flight guaranteed he would be considered for the manned space program.

When NASA started to search for volunteers, Glenn was quick to respond. In April, 1959, John Glenn was chosen as one of the original seven Mercury astronauts. In addition to training for their space missions, each astronaut had a special assignment related to spacecraft design on which they worked. In Glenn's case, his assignment dealt with cockpit layout and controls. His input influenced, not only, the Mercury capsule design, but also Gemini and Apollo. The first three men chosen to fly the Mercury spacecraft were Al Shepard, Gus Grissom and John Glenn. Shepard and Grissom were to fly the first two suborbital flights, with Glenn as their backup. On February 20, 1962, it was Glenn's turn. Instead of a suborbital flight (straight up and straight back down), Glenn would be America's first man in orbit. To put a spacecraft into orbit requires much more power than a suborbital flight, so, instead of launching on a Redstone rocket, Glenn was propelled into space aboard an Atlas rocket. The Atlas was much more powerful, but also much less reliable. The astronauts had witnessed many Atlas rockets explode during test launches, and, yet, Glenn was more than ready to ride one into space.

(continued on page 6)

NASA SPACE PLACE

Finding Planets Among the Stars**by Dr. Tony Phillips**

Strange but true: When it comes to finding new extra-solar planets, or exoplanets, stars can be an incredible nuisance.

It's a matter of luminosity. Stars are bright, but their planets are not. Indeed, when an astronomer peers across light years to find a distant Earth-like world, what he often finds instead is an annoying glare. The light of the star itself makes the star's dim planetary system nearly impossible to see. Talk about frustration! How would you like to be an astronomer who's constantly vexed by stars?

Fortunately, there may be a solution. It comes from NASA's Galaxy Evolution Explorer, an ultraviolet space telescope orbiting Earth since 2003. In a new study, researchers say the Galaxy Evolution Explorer is able to pinpoint dim stars that might not badly outshine their own planets.

"We've discovered a new technique of using ultraviolet light to search for young, low-mass stars near the Earth," said David Rodriguez, a

graduate student of astronomy at UCLA, and the study's lead author.

"These M-class stars, also known as red dwarfs, make excellent targets for future direct imaging of exoplanets."

Young red dwarfs produce a telltale glow in the ultraviolet part of the electromagnetic spectrum that Galaxy Evolution Explorer can sense. Because dwarf stars are

planets are freshly formed, and thus warmer and brighter than older planetary bodies.

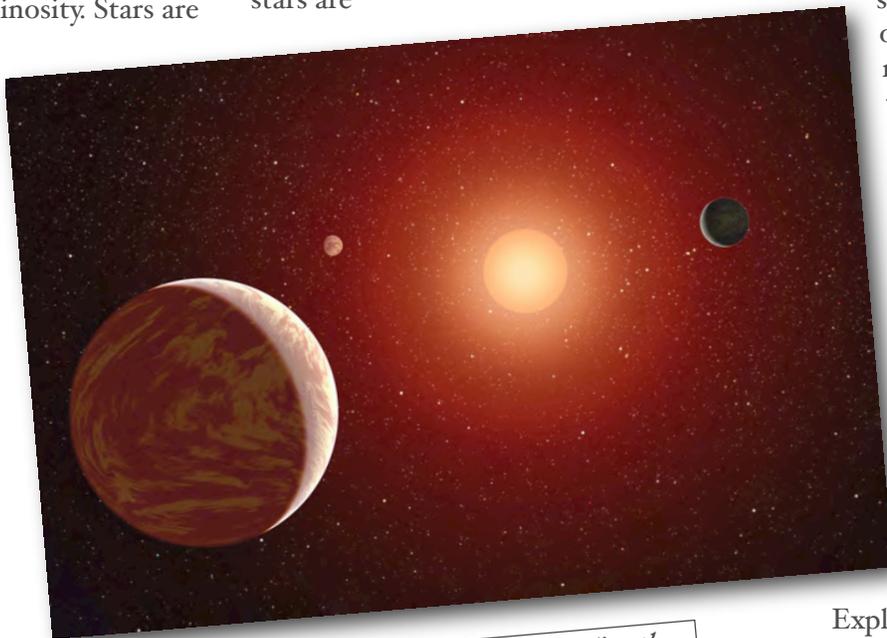
Astronomers know of more than five hundred distant planets, but very few have actually been seen. Many exoplanets are detected indirectly by means of their "wobbles"—the gravitational tugs they exert on their central stars. Some are found when

they transit the parent star, momentarily dimming the glare, but not dimming it enough to reveal the planet itself. The new Galaxy Evolution Explorer technique might eventually lead to planets that can be seen directly. That would be good because, as Rodriguez points out, "seeing is believing." And it just might make astronomers feel a little better about the stars.

The Galaxy Evolution

Explorer Web site at <http://www.galex.caltech.edu> describes many of the other discoveries and accomplishments of this mission. And for kids, how do astronomers know how far away a star or galaxy is? Play "How Old do I Look" on The Space Place at <http://spaceplace.nasa.gov/whats-older> and find out!

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Exoplanets are easier to see directly when their star is a dim, red dwarf.

so numerous—as a class, they account for more than two-thirds of the stars in the galaxy—astronomers could reap a rich bounty of targets.

In many ways, these stars represent a best-case scenario for planet hunting. They are close and in clear lines-of-sight, which generally makes viewing easier. Their low mass means they are dimmer than heavier stars, so their light is less likely to mask the feeble light of a planet. And because they are young, their

MISCELLANEOUS

Happy Birthday**by Robin Byrne***(continued from page 4)*

The launch was perfect. Glenn's mission was originally planned for seven orbits. However, a sensor indicated that his heat shield was loose, so the decision was made to bring him down after only three orbits. To ensure that his heat shield remained in place during reentry, the retro pack of rockets (which are normally jettisoned before reentry) were kept in place to help hold on the shield. During the heat of reentry, the retro pack burned spectacularly, engulfing the capsule in flames. A later inspection of the capsule found that the heat shield was NOT loose, and that the signal was due to a faulty sensor. Glenn returned home a hero and was greeted with a ticker tape parade.

After Glenn's flight, it was rumored that NASA didn't want to risk the life of their hero with another space mission. While he remained at NASA for a few years, Glenn became very close to the Kennedy family. Robert Kennedy suggested to Glenn that he should run for one of the Senate seats in Ohio. In January, 1964, Glenn resigned from NASA and entered his first political race. Unfortunately, after slipping, hitting his head and getting a concussion, Glenn had to quit the campaign. Glenn was then given a job as Vice President (and later President) of Royal Crown Cola. He made a second run for office in 1970, but was defeated in the primary. Finally, in 1974, John Glenn became a United States Senator from the great state of Ohio;

a post he held for the next 24 years. During his time in the Senate, Glenn authored the 1978 Nonproliferation Act, and served on several committees, including the Special Committee on Aging. On February 20, 1997, John Glenn announced that he would not seek reelection.

It was during his time on the Special Committee on Aging that Glenn noticed similarities between the effects of aging and the effects of weightlessness. That was when he began a different campaign: to go back into space as a guinea pig. To be accepted, Glenn had to meet the physical requirements of the astronauts, which he did. On October 29, 1998, at the age of 77, John Glenn became the oldest person to go into space, aboard the Space Shuttle Discovery. Since NASA continuously monitors the health of all astronauts who flew in space, Glenn provided almost four decades of data. He was an invaluable test subject. Once again, he returned home to a ticker tape parade.

John Glenn's most recent project was to found, with his wife Annie, the John Glenn Institute for Public Service at Ohio State University. The goal is to encourage more young people to pursue careers in public service and government. If anyone embodies the spirit of public service it is John Glenn. From careers in the military, the space program and the U.S. Senate, John Glenn has served this country in so many ways. He serves as an inspiration to us all.

References:

John Glenn - Wikipedia

Regular Contributors**BRAD DUNN**

Brad is the current chair of the club and a member since 2007. During the day, he runs Dunn Professional Billing and Dunn Construction.

BOB SMITH

Bob is a founding member of BMAC, since 1980. He has also served as chair many times over the years. He currently works at Pioneer Industrial Sales.

TERRY ALFORD

Terry is also a founding member since 1980 and has been chair many times, as well. He has worked as an astronomy lab instructor at ETSU since 2001 and is also the sole proprietor of Celestial Woodworks.

ROBIN BYRNE

Robin has been writing the science history column since 1992 and was chair in 1997. She is an Associate Professor of Astronomy & Physics at Northeast State Community College (NSCC).

ADAM THANZ

Adam has been the Editor for almost all of the years since 1992. He is the Planetarium Director at Bays Mountain Park as well as an astronomy adjunct for NSCC.

[http://en.wikipedia.org/wiki/](http://en.wikipedia.org/wiki/John_Glenn)

[John Glenn](#)

Astronaut Bio: John Glenn, Jr.

1/99

[http://www.jsc.nasa.gov/Bios/](http://www.jsc.nasa.gov/Bios/htmlbios/glenn-j.html)

[htmlbios/glenn-j.html](#)

The John & Annie Glenn

Historic Site | John Glenn

<http://johnglennhome.org/about/>

[john-glenn](#)



*Todd Gray staring at the sun with the newly
rebuilt 17.5" Dob.
Photo by Terry Alford*

The Bays Mountain Astronomy Club



Find out more at our website:

www.baysmountain.com

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Dues:

The Bays Mountain Astronomy Club requires annual dues for membership. It covers 12 months and is renewable at any time.

Rates:

\$12 /person/year

\$4 /additional family member

If you are a Park Association member, a 50% reduction in fees is applied.

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Apple Made on a Mac!

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