

Bays Mountain Astronomy Club

☞ *Next Meeting: Oct. 7* ☞

SKYWARD

Well, although we still need to work out a few bugs, we finally got to point the rebuilt 17.5 truss Dob at the sky and look around. We still need to make a few adjustments to get everything collimated correctly, but I think it's going to make a really nice addition to the club for public viewing. [Ed.: I think great work has been done so far. A few tweaks and its ready to use with the public!]

We had a great turn out at the September meeting. Brandon Stroup started the meeting with a presentation on amateur astrophotography. He showed several ways to make really nice photographs of objects in space without investing a lot of money. He also explained the different imaging systems and image stacking options that are available, and explained the pros and cons of each. After the presentation we had a short business meeting. Todd gave us an update on all the events planned for StarFest, and Wayne gave a short demonstration of his new mixing board and speaker system. We then went to the observatory and worked on the collimation of the Big Dob for the remainder of the meeting.



BY BRAD DUNN

Remember, StarFest's registration deadline is October 3rd.

We cannot accept any registrations after that. The cost to the event is only \$50, and includes five meals, five keynote speakers, all activities, sleeping in the park, and a commemorative, long sleeve T-shirt. This will be our 28th year and is held Oct. 21-23!

We are planning a cleaning party for the October meeting so we can get everything in good working order for StarFest and the fall public viewing sessions, StarWatch. If you can arrive just a little early we can tidy up while the sun is still up and then possibly have time for some observing and fine-tuning of the Dob. Please bring cleaning materials. Don't forget the deadline for StarFest admission. StarFest will be held at Bays Mountain Park on October 21st, 22nd, & 23rd. There are some awesome talks and events planned for this year so don't miss it! Until then, clear skies!

Calendar

Special Events

Oct. 21-23 StarFest. Registration is closing Oct. 3! Go to the Park's website to find the form.

SunWatch

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

Mar. - Oct., weather permitting.

BMACers are always welcome to help.

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7:30 p.m. Oct. 1 & 8

7 p.m.: Oct. 15 22 & Nov. 5

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7 p.m., Discovery Theater

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Nov. 4 Topic TBA.

For Sale:

Bushnell Scope - Almost new
675 X 4.5" Reflector telescope w/
accessories. \$200.00. Call 534-1437.

Harry Fontaine
hfontaine@charter.net



EYE TO THE SKY

BY BOB SMITH

Mighty Jupiter should be the focus of our attention these October evenings; it's well up at dusk and visible 'til just before dawn. Ol' Jove is found between the constellations of Aries and the more elusive Cetus in the east as darkness falls. At magnitude -2.9 it is unmistakable to the naked eye in the fairly blank area between the Ram and the Sea Monster. Jupiter is especially nice this month since it reaches opposition or opposite the Sun in the sky the night of October 28/29. Jupiter is usually an average of about half a billion miles from Earth. This month it is only 369 million miles from us. Through your telescope, the planet has many different features to observe and is especially nice if the sky is steady. The first thing to catch your attention are the two dark equatorial belts on either side of the equator. One of these belts was absent for most of last year and we have no idea why it should act that way. Any guess which one? Consult a timetable and find out if the Great Red Spot is currently visible while observing. With the atmosphere of Jupiter whizzing around in only about 10 hours, the GRS can sometimes be viewed twice in one night. Of course we know that the GRS is neither red nor very prominent currently so it's somewhat of a disappointment when it's finally located. Before an observing session always consult a chart (or the Internet) to figure out which of the Galilean moons are visible and in what order. Io, Europa, Ganymede and Callisto are in constant motion and it's always fun to keep up with which one is which. The Moon is just north of Jupiter the night of October 13th.

Uranus and Neptune, while not especially prominent, are important ice giants in the grand scheme of things and I think we should pay more attention to them while they are well placed in the south. Uranus is the easier of the two and is supposedly a naked eye feature under a dark sky. I'm not so sure about that, but it is fairly easy to pinpoint with binoculars and then observe with a good high-powered telescope. The magnitude 5.7 planet is tucked just south and a little east of the pentagon that forms the western fish of Pisces. The little pentagon is fairly prominent in this relatively dim area. Begin looking about the width of the pentagon to the southeast for a blue "star" that is brighter than almost anything else in the area. Then change over to the telescope and keep increasing magnification. At around 125 or 150 magnification, you'll suddenly realize that the "star" isn't a pinpoint and you're looking at the small 3.9" face of the planet. The blue color comes from methane clouds in the atmosphere of Uranus 1.77 billion miles away.

Much harder to track down is the more distant and fainter Neptune, but it is ideally placed this month. The magnitude 7.9 planet is in south central Aquarius and forms a triangle with 4th magnitude Iota (ι) and 5th magnitude 38 Aquarii (both shown on pg. 77 of Pocket Sky Atlas). Neptune forms a triangle with the pair of stars and is just 1.6° northwest of Iota. Its tiny 2.3" face can be picked out with high power and a medium sized telescope. Neptune is currently about 2.7 billion miles from Earth.

Mars is the lone planet easily visible in the pre-dawn sky and

should be on your calendar for the first day of October. That night the magnitude 1.3 Mars is smack in the middle of the Beehive Cluster (M₄₄) in Cancer. Located just a little south of the cluster center this should present a grand photo-op if you're set up for any kind of wide-field or telescopic photography. The swiftly moving planet will soon sweep eastward and move over into Leo by the end of the month. On the 31st, it is located close to Regulus or the heart of Leo. The "Red Planet's" face is very small at around 6" so only the coarsest features may be spied on the planet's surface. But if you're up and the telescope is set up, why not take a look.

And the reason you may be up in the early AM is to observe Comet C2010 Elenin which may (or may not) be brightening in the early morning sky. Elenin passes through the Sickle asterism of Leo the last week of October and if the comet does brighten, the Moon is out of the way after about the 24th. So give it a try. Another comet visible right now is 2009/P Garradd. Although not as bright as we might like, it still should reach about 7th magnitude among the stars of southern Hercules—high overhead in the evening sky. The early part of October finds Garradd close to the fourth magnitude stars ι 01 and ι 02 Hercules and moving westward through the month. Try for Garradd the last of September and the first few days of October. The Moon will interfere until about the 18th, so good observations should come the final two weeks of the month.

(continued on page 6)

STAR STUFF

BY TERRY ALFORD

I was recently lent a most interesting, educational and entertaining book. It was "The Unbroken Chain," by Guenter Wendt. The title is in reference to the fact that there are tens of thousands of individuals involved in a manned space flight mission. Each person is a link in an imaginary chain. One link fails and the mission can be compromised. Although this autobiography has been out for 10 years, I had not really heard of it until last year. My preference for "space" books is primarily in the areas of telescopes and related accessories and what can be observed with astro equipment. Although I often watch movies or TV shows on the manned space race, I have never sought out books to read on this subject. That is, not until I heard about this particular book.

First of all, who was Guenter Wendt? He was born in Berlin, Germany in 1923. He became a navigator/flight engineer for the Luftwaffe during WW II. His plane was shot down at least once. After the war he moved to America. In 1955, he became an American citizen and was hired as an engineer for McDonnell Aircraft. His employer assigned him to work on the space program. Guenter was placed in charge of the launching pad at Cape Canaveral. This is where the book's narrative begins.

The first problem Guenter faced was to come up with a job title. Working with the military, civilian

contractors and government agencies was the source of the issue. NASA didn't like "Pad Director." The term "Pad Chief" was opposed by the Air Force. Finally someone came up with "Pad Leader" and this was deemed acceptable. Next was needed a formal job description. McDonnell's top engineer put it

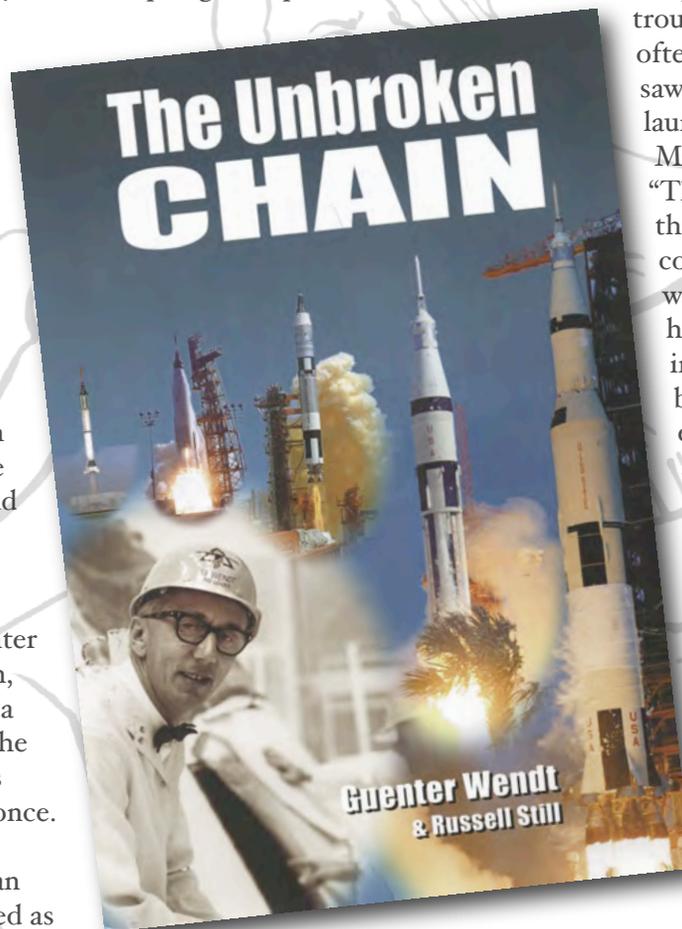
into the start of the Space Shuttle program, Guenter was "da Man" whenever there was a manned launch. He was authoritarian and very serious about anything and everything that happened under his control. Even so, he had a strong sense of humor and a streak of independence that got him in trouble more than once. He was often the last man an astronaut saw and talked with before a launch.

Most of us have seen the movie "The Right Stuff." I was hoping that this book would not be a condensed version of that film. I was not disappointed! This book has so much behind the scenes info and minutia it is mind boggling. Guenter openly expressed his personal feelings about many people he worked with, especially the astronauts. One thing about "The Right Stuff" that bothered me was the depiction of Gus Grissom as almost being a buffoon. According to Guenter, that was far from the truth. He said that Grissom seemed to be the most knowledgeable of all the original astronauts. He worked hard and tirelessly and was largely responsible for many

changes to improve the Gemini space capsule. By the way, Guenter referred to "The Right Stuff" as a fictionalized movie.

One of the most entertaining aspects of this book is all the pranks pulled by nearly everyone, or so it seemed. I found myself laughing out loud many times.

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together:

"The Pad Leader is responsible for any and all activity in and around the spacecraft and its attending GSE (ground support equipment). He will work through established channels of authority, and will report to the Test Conductor."

Simple and concise.

First with the Mercury program, then Gemini, then Apollo and even

HAPPY BIRTHDAY TRITON

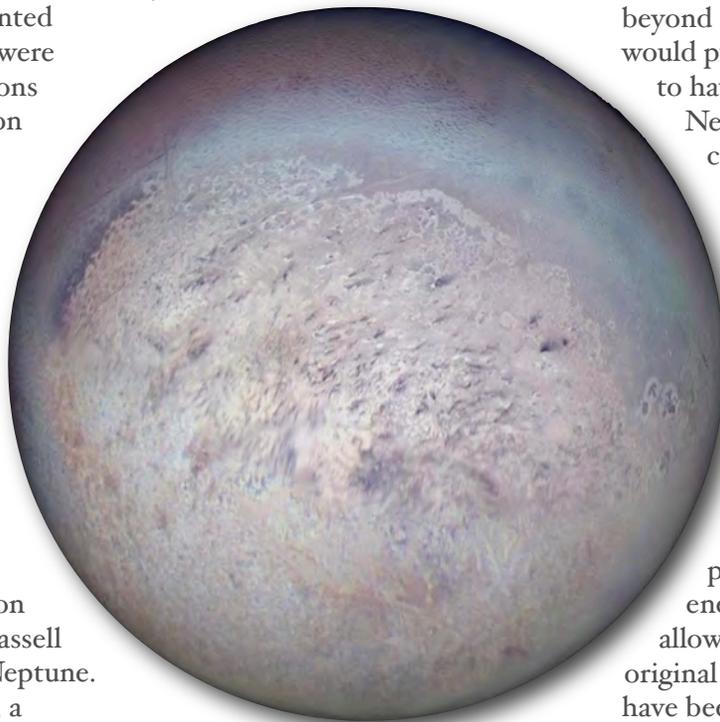
BY ROBIN BYRNE

This month we celebrate the discovery of one of the largest and most unusual moons in our Solar System. On September 23, 1846 in Germany, Johann Galle first observed the planet Neptune, using Urbain Leverrier's predicted coordinates to find it. Meanwhile in England, William Lassell, who made his fortune as a brewer of beer, already had established his reputation for well-made, equatorially mounted reflecting telescopes, which were ideal for planetary observations and discovering moons. Upon hearing of Galle's finding Neptune, John Herschel wrote to Lassell, encouraging him to try to observe this new planet, with the intention of possibly being the first to spot its moons. Lassell first observed Neptune the night of October 2nd, which easily showed a disk. For the next week, Lassell continued to observe when weather permitted. Finally, on October 10, 1846, William Lassell spotted a satellite orbiting Neptune.

To name this new moon, a convention needed to be established for the naming of moons of this new planet. In mythology, Neptune is the Roman god of the oceans (his Greek equivalent being Poseidon), so its larger moons are named for mythological characters associated with Neptune or Poseidon. Smaller, irregularly shaped satellites are named for the Nereids, who are the daughters of Neptune's attendants. The name for the first moon of Neptune's to be discovered was proposed by Camille Flammarion in

a book he published in 1880. He suggested the name Triton, who was Poseidon's son, but this was not adopted officially until many years later. The next moon of Neptune was not discovered until 1949, so for many years Triton was also known simply as "the satellite of Neptune."

Most of what we know about Triton comes from the Voyager 2 fly-by of



Neptune in 1986. It is the seventh largest moon in the Solar System, with more mass than all the remaining smaller moons combined. But, unlike all other large moons, Triton exhibits a retrograde orbit, orbiting Neptune opposite the direction that Neptune rotates on its axis. All moons that have retrograde orbits must have been captured, rather than forming along with the planet. Among the Jovian planets, it is common for the smaller, outermost moons to have been

captured, but for a moon as large as Triton to be captured is quite rare. Triton is similar in composition and size to Pluto (with Triton being slightly larger), which implies that it originated in a manner similar to Pluto, somewhere in the Kuiper Belt. The Kuiper Belt is thought to be the source of short-period comets. It spans a region that begins near the orbit of Neptune and extends out beyond the orbit of Pluto, which would put Triton in a prime location to have an encounter with Neptune, leading to its ultimate capture.

Physically, it is difficult to capture an object as large as Triton. One hypothesis suggests Triton was originally part of a binary protoplanetary system. As it approached Neptune, the companion body was closer to Neptune and ejected from the Solar System. This process would have removed energy from Triton's motion, allowing it to be captured. The original orbit around Neptune would have been very eccentric. This would have resulted in extreme tidal heating (even more extreme than that experienced by Io and Europa). The tidal heating would have liquified Triton's interior, allowing it to separate into layers. Over time, the orbit would have become more circular, and the heating would have diminished. The same gravitational interactions that circularized its orbit, also led to Triton being in

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NASA SPACE PLACE

Dark Clues to the Universe**By Dr. Marc Rayman**

Urban astronomers are always wishing for darker skies. But that complaint is due to light from Earth. What about the light coming from the night sky itself? When you think about it, why is the sky dark at all?

Of course, space appears dark at night because that is when our side of Earth faces away from the Sun. But what about all those other suns? Our own Milky Way galaxy contains over 200 billion stars, and the entire universe probably contains over 100 billion galaxies. You might suppose that that many stars would light up the night like daytime!

Until the 20th century, astronomers didn't think it was even possible to count all the stars in the universe. They thought the universe was infinite and unchanging.

Besides being very hard to imagine, the trouble with an infinite universe is that no matter where you look in the night sky, you should see a star. Stars should overlap each other in the sky like tree trunks in the middle of a very thick forest. But, if this were the case, the sky

would be blazing with light. This problem greatly troubled astronomers and became known as "Olbers' Paradox" after the 19th century astronomer Heinrich Olbers who wrote about it, although he was not the first to raise this astronomical mystery.



This Hubble Space Telescope image of Galaxy NGC 4414 was used to help calculate the expansion rate of the universe. The galaxy is about 60 million light-years away. Credit: NASA and The Hubble Heritage Team (STScI/AURA)

To try to explain the paradox, some 19th century scientists thought that dust clouds between the stars must be absorbing a lot of the starlight so it wouldn't shine through to us. But later scientists realized that the dust itself would absorb so much energy from the starlight that eventually it would glow as hot and bright as the stars themselves.

Astronomers now realize that the universe is not infinite. A finite

universe—that is, a universe of limited size—even one with trillions of stars, just wouldn't have enough stars to light up all of space.

Although the idea of a finite universe explains why Earth's sky is dark at night, other factors work to make it even darker.

The universe is expanding. As a result, the light that leaves a distant galaxy today will have much farther to travel to our eyes than the light that left it a million years ago or even one year ago. That means the amount of light energy reaching us from distant stars dwindles all the time. And the farther away the star, the less bright it will look to us.

Also, because space is expanding, the wavelengths of the light passing through it are expanding. Thus, the farther the light has traveled, the more red-shifted (and lower in energy) it becomes, perhaps red-shifting right out of the visible range. So, even darker skies prevail.

The universe, both finite in size and finite in age, is full of wonderful sights. See some bright, beautiful images of faraway galaxies against the

blackness of space at the Space Place image galleries. Visit <http://spaceplace.nasa.gov/search/?q=gallery>.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

MISCELLANEOUS

Eye to the Sky**by Bob Smith***(continued from page 2)*

Asteroid 1 Ceres is well placed in the evening sky and you may want to attempt finding the 8th magnitude space rock sometime this month. Locate the fairly prominent chain of stars in southeast Aquarius that includes 108, 107, 106, 104 and 103 Aquarii. Ceres spends the first third of October sliding just south of these fourth-magnitude stars. The night of October 6th finds it very close to 106 Aquarii. Ceres was the first asteroid located way back in 1801. It is fairly round, about 970 km in diameter and will be visited by the DAWN spacecraft starting in 2012.

If all that isn't enough, we have a fairly major meteor shower and one that may be better than normal this month. Tiny specks of distant comet Halley will be swept up by Earth the night of October 21/22 bringing us the Orionid meteor shower. The usual best time for observing meteors—about 3 a.m. 'til dawn—will be bright with a waxing Moon that night. Try observing earlier in the evening for a few streaks made by debris from the famous comet. The Draconid shower is normally very sparse but its parent comet, 21P/Giacobini-Zinner is close to perihelion and this sometimes “pumps up the volume” on minor showers. Major outbursts have occurred several times in the past century so you may want to spend a few hours checking out the northern sky the night of October 8. Again, the Moon will interfere, but if the evening is nice I can't think of a more pleasant way to spend a few hours out under the stars.

Star Stuff**by Terry Alford***(continued from page 3)*

Example: By the end of the Gemini program, Guenter and many other McDonnell engineers and technicians were laid off. At a farewell party, astronaut Jim Lovell presented Guenter with a 4-ft check made out for one million Deutsche marks. “Severance Pay!” Lovell laughed out. Guenter was no newco mer to pranks and knew how to retaliate. Later, at a dinner party, two uniformed cops came up and said they had a warrant to arrest Lovell and Buzz Aldrin. “What's the charge?” one of them asked. One cop replied that there was a man in the back of the room who had filed charges because they had written a bad check. With that Guenter stood and held up the check, pointed at the astronauts, and yelled “Gotcha!”

Two months later, Guenter heard the sad news that Gus Grissom, Ed White and Roger Chaffee had died in a fire in a spacecraft on Pad 34. North American was the current contractor with NASA and Guenter was not working for them. That soon changed. Within a few days, Deke Slayton called and asked Guenter to transfer to North American and take over the white room operations. A few months later he became the Pad Leader once again.

After retiring from North American in 1989, he got involved in several other projects including minor movie parts and acting as a technical consultant on the TV adaptation of James A. Michener's “Space,” the HBO mini-series “From the Earth to the Moon” and the Discovery Channel's documentary

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.

“In Search of Liberty Bell 7.”

This book is a little over 200 pages long and it is plum filled with very interesting “stuff.” There are 24 glossy pages of black and white photographs and 24 pages of color photographs. Inside the back cover of this hard cover book is a CD-ROM that features a tour of Cape Canaveral hosted by Guenter.

If it is not too obvious I thoroughly enjoyed this book and hope to read it again in a few years. If you get a chance to read this book please do so. You will not be disappointed.

Guenter Wendt passed away last year at the age of 86.

Happy Birthday

by Robin Byrne

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synchronous rotation, with one side always facing Neptune. Due to a combination of Neptune’s orbital and axial tilt, and Triton’s orbital and axial tilt relative to Neptune’s equator, when using the Sun as its reference, Triton appears to be tilted almost 90°. This means that over time, it alternates between one pole or the other receiving almost continuous sunlight.

Not only is the orbit of Triton unlike other moons in the outer Solar System, neither is its composition. The density of Triton is higher than most of the other moons, which means it has a much higher percentage of rock. Its interior layers are thought to be comprised of a large rock and metal core, comprising over 60% of the moon’s mass. Covering the core is a mantle, which may contain liquid water. The source of the heat necessary to melt the ice could be the radioactive decay of materials in

the moon’s core. The crust of Triton is composed of a combination of ~55% frozen nitrogen, ~25% water ice, and ~15% frozen carbon dioxide. For Triton to have so much solid nitrogen is only possible because of Triton being one of the coldest objects in our Solar System.

The liquid water mantle may be the driving force behind the geologic activity responsible for Triton having such a young, relatively crater-free surface. Ice lava, composed of water and ammonia ice, is thought to flow across the surface, creating the high plains found in Triton’s eastern hemisphere. Other regions show crisscross patterns similar to those seen on Jupiter’s moon Europa, which are due to the ice experiencing freeze-thaw cycles that crack and refreeze the ices. Unique to Triton are features dubbed “cantaloupe terrain,” which exhibit a series of curved cracks 30-40 km in depth that resemble the pattern seen in the skin of a cantaloupe. One hypothesis for their formation involves pockets of less dense material, just below the surface, rising through a region of higher density, creating stress fractures.

Triton is also one of the few objects in our Solar System observed to have active eruptions. In the case of Triton, its eruptions are in the form of nitrogen geysers. With all of the observed eruptions having occurred in the region that receives the most sunlight, they are thought to be powered through solar heating. A process dubbed the “solid greenhouse effect” has been proposed, which consists of a transparent layer of frozen nitrogen allowing sunlight to reach a darker, lower region. The darker region absorbs the solar energy and warms.

The heat then slowly vaporizes the bottom of the frozen nitrogen layer, building up enough gas pressure to eventually erupt with enough force to create plumes as high as 8 km (almost 5 miles). The combination of the erupted nitrogen, along with sublimation from the surface ice, produces a very tenuous nitrogen atmosphere, with an atmospheric pressure less than 1/70,000th of Earth’s atmospheric pressure.

Because of the possibility of liquid water, many have proposed sending a spacecraft to orbit Neptune, equipped with a lander destined for Triton. However, to date, no such mission has been accepted for development. Meanwhile, we can do our own study of this world. With Neptune currently in Aquarius, it is well placed for early evening observing during the month of October. See if you can spot this unusual moon for yourself, and think of William Lassell’s first view, and of all the unusual characteristics associated with this amazing moon called Triton.

References

- Triton (moon) - Wikipedia
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- Solar System Exploration: Planets: Neptune: Moons: Triton
<http://solarsystem.nasa.gov/planets/profile.cfm?Object=Triton>

The Bays Mountain Astronomy Club



Find out more at our website:

www.baysmountain.com

Edited by Adam Thanz:

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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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