September 2006

Inside this Issue

S*T*A*R
P.O. Box 863
Red Bank, NJ 07701
On the web at:
http://www.starastronomy.org

September's Meeting

The next meeting of S*T*A*R will be Thursday September 7th. The meeting will begin promptly at 8:00pm at the King of Kings Lutheran Church, 250 Harmony Road, Middletown.

Our program will be "Restoring the Tuthill Telescope" presented by Clif Ashcraft.

New Editor

Hi everyone: Daniel Handlin here, your new Spectrogram editor. Gavin leaves some very big shoes to fill as editor of the Spectrogram, and I will not try to imitate him, as I would not succeed. Instead, I'm going to try to bring my own unique style to the Spectrogram. So you may see a few (small!) changes to the Spectrogram in the next few months; I'll be experimenting with different graphics and layouts (you may notice the new Spectrogram logo this month; it will probably be changing too). Please feel free to tell me if you like (or don't like!) any changes you may see. I'll be your editor for this year, and then I'll have to hand off the baton again, since I'll be off to college next fall. But in the meantime, I hope you have some fun with the mostly the same, hopefully somewhat improved Spectrogram. I'll mainly be trying to add some nice photos in the first few months; I'll also try to throw in a few interesting things on astronomy I might find here or there. I may be adding some new features I hope you like; again, feedback is very welcome!

October Issue

The deadline for the next edition of the *Spectrogram* is Friday September 29th. Please email any contributions to Daniel_handlin@hths.mcvsd.org, Any and all contributions are welcome!

Calendar

Sep 7, 2006 – "***Restoring the Tuthill Telescope***" – Clif Aschraft

Oct 5, 2006 – ***TBA***

Nov 2, 2006 – ***TBA***

Dec 7, 2006 - ***TBA***

Jan 4, 2007 – ***TBA***

Feb 1, 2007 - ***TBA***

Mar 1, 2007 - ***TBA***

Apr 5, 2007 – ***TBA***

May 4, 2007 – ***TBA***

Jun 7, 2007 – AGM

Image Courtesy NASA

President's Corner

By Steve Walters

Welcome to another fall season and the start of S*T*A*R meetings for 2006-2007! It has not been a very good summer for observing so I, for one, am glad to see the fall season approach! During the fall, there are so many great objects to see. So brush off your eyepieces and get out there!

This summer our club had yet another great picnic thanks to Steve Fedor! In spite of taking his family to florida the day after the picnic, Steve and his wife graciously arranged everything for the picnic. We really owe them a debt of gratitude so the fantastic job they did.

I have been a little lax in arranging programs for the year. The September program is set, Clif Ashcraft will be describing the restoration of Roger Tuthill's relay lens cassegrain telescope. I have invitations out to about 7 other speakers but am still waiting to hear from them. This year, we will have several presentations by club members on topics that will help you at the telescope, such as collimation, how to clean your optics and some basic astronomy talks.

As each new S*T*A*R season begins, it is time to pay dues. So please bring yours to the meeting. See Paul Nadolny, our Treasurer, during the coffee break and help keep S*T*A*R financial viable. We're depending on you to keep our club solvent! Thanks for your support!
Clear Skies

Steve

Image courtesy NASA

June Meeting Minutes

By Steve Fedor

The annual 2006 business meeting of S*T*A*R Astronomy began on 6/1 at 8:10 pm. President Steve Walters, with a recently broken foot, presided. The meeting was attended by 23 members and non-members.

It was determined there was enough members (21) for a quorum since the election of club officers was to be held. Steve began by welcoming two first time attendees.

Larry Campbell gave the membership a sensational slide show of his trip to the Keck observatories at Mauna Kea, Hawaii.

Doug Berger presented the intervals of darkness based on the rise and set times of the sun and moon for the upcoming months.

Nancy McGuire presented the "Object of the Month." This month's objects were Jupiter and Mars in the Beehive cluster on 6/15 and the Bug Nebula.

The meeting continued with Committee reports.
ATM – Gordon Waite announced there would be an ATM meeting at his shop on 6/5.
Observing – No report. Steve W. stressed the need for more local observing sessions.
Imaging – Steve W. announced that due to time constraints the imaging SIG will not be held until further notice.
Light Pollution – No report. Steve W will contact J. Batinsey for updates.
Outreach – No chairperson at the present time. Steve W. stressed the need for a chairperson so the club can continue to grow and prosper. All S*T*A*R members are strongly encouraged to participate in these efforts.
Beginners - Nancy McGuire stated she intends to plan a date for a local observing session to assist the newcomers to astronomy.

The meeting continued with Events and Announcements.
Randy Walton – Announced A.S.T.R.A will hold a star watch on 6/30. He asked for a second QO to assist him with the club's 25 inch Obsession.
Dave Britz – Announced a star party at the Neptune school. (Has since been cancelled due to weather). Dave also announced he did the Turkey Swamp event and suggested the club purchase a tent for Outreach events.
Charles Kirby – Announced a star party in Atlantic Highlands on the second Tuesday in July for 8 & 9 year olds.
Gordon Waite – donated an extra copy of the recent S&T magazine.
Gavin Warnes – Announced that Daniel Handlin will now be the editor of the Spectrogram and encouraged members to submit articles.
Steve Walters - Discussed the annual club picnic. Steve Fedor stated there will be a picnic and he will begin the planning soon. The need for volunteers was indicated for help with food purchases and entertainment. The possibility of doing Q.O training for the club scope at the picnic was also discussed.

Randy Walton – Displayed four books including "The Universe in 3D" and "3D Star Maps." These books utilized 3D viewers and glasses to give stunning views of astrophotos.

Awards were presented to those members who made substantial contributions of time and effort to the club.
Gordon Waite – For his extreme generosity in hosting the Monday night ATM sessions.
Dennis O'Leary – For his fine management of the Club's 25 inch Obsession.
Gavin Warnes – For his dedication to the job of Spectrogram Editor.
Mike Lindner – For his continued efforts as a brilliant Webmaster to the club.
Randy Walton and Charles Kirby – For their untiring support of meeting logistics.

At this time (9:18 pm) coffee break was held. The meeting resumed at 9:33.

The membership in attendance after coffee break was recounted as 20. This met the 1/3 membership required for a quorum.

Steve Walters did the "Year in Review" which noted the many happenings the club has experienced since the previous business meeting.

Dennis O'Leary discussed all the changes and upgrades to the Club's 25 inch Obsession.

Paul Nadolny presented the Treasury Report. Copies of the report were made available. It should be noted that Gordon stated he will continue hosting the club's web site free of charge. For this Gordon received a nice round of applause.

Steve Walters discussed the need to grow the membership or the club will face financial hardships in the future. The club's membership has declined this season. If the current trend continues the club may be forced to use funds currently held in other club budgets to meet operating expenses.

Steve Walters then discussed the need for the membership to become actively involved in obtaining speakers for the meetings. He asked that any perspective speakers be referred to a board member rather than individual members to avoid scheduling confusion.

Election:
It was voted that the current discretionary spending level of the Board remain as $250. for capitol or non-capitol expenditures.

Ken Legal acted as the nominating committee and presented the current list of candidates.
Steve Walters – President
Gavin Warnes – Vice President
Paul Nadolny – Treasurer
Steve Fedor – Secretary
Doug Berger – Member-at-Large

A motion by Larry Campbell to close the nominations was passed. The club voted unanimously to elect the above candidates.

The meeting was adjourned.

Getting Back on Track: How to fix up a CG5 mount and restore your sanity

By Gavin Warnes

Back in 2003 I became interested in doing webcam astrophotography to capture Mars at its closest approach for 60,000 years. I bought a Philips Toucam Pro and started to do some experiments. I was new to astronomy then and had much to learn. It quickly became obvious that a tracking mount was essential. The trouble was I didn't have one. I was trying to use a 6" and 15" dob. The chip size of webcam is very small, so getting Mars on the chip was hard enough. When I tried to focus the planet would soon zoom off the chip and I'd struggle to get it back again. By the time I had set up the laptop to record the video, it would be gone. Oh yes, the mosquitoes didn't help either. Passers by would wonder who the nutcase was in his front yard cursing at his laptop in the middle of the night, and what was the cannon he was pointing. Clearly I was a dangerous lunatic.

Dan Pontone came to my rescue and loaned me his equatorial platform. It worked like a champ once I figured out that the Polaris was some way from magnetic north. I still had some residual drift but it was much better than before I could take some pictures. My nerdy work colleagues now thought I was a genius. I bought a kit to make my own equatorial platform, but as with many ATM projects it is still half completed.

As Mars came close again in 2005, I wondered what I would do for this apparition based on my learnings last time around. By this time Stephen Scaravella (Scopehead) had joined the club and I had helped him collimate his telescopes. He very kindly gave me a CG5 mount that he never used. He mentioned that the motors didn't work, but maybe I could fix them. At last I was in the tracking business! For those of you unfamiliar with the CG5, it is a Synta made Chinese clone of the venerable Vixen GP equatorial mount. Over the years various changes have been made including adding 'Goto' and better polar finders. The

SkyView Pro from Orion is very similar. However, the build quality of these mounts is nowhere near that of the Vixen, but neither is the price. Chances are many club members have owned one of these mounts at some time.

As I started to experiment with the mount I found it was very, very stiff. This is a common problem with CG5s which are typically lubricated with a thick grease that flows like combination of ear wax and bitumen (I don't know if this is the case with recent versions – hopefully not). In the cold they can set stiff and the drive motors strip the worm gear. This had started to happen with Stephen's CG5. Thankfully I had found a site on the net called www.astronomyboy.com. For those who are willing to get their hands dirty this site gives great step by step instructions and photos on stripping down a CG5 mount. So, one Sunday afternoon I decided to give it a shot.

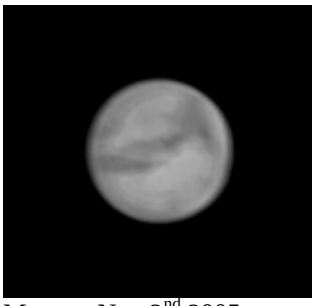
Armed with disposable gloves, rolls of kitchen towels, allen wrenches, a notepad, camera and a can of mineral spirits I started to take the mount to prices. I'm not very mechanically minded so this took a leap of faith. I carefully followed the instructions – they were fairly accurate but clearly there have been modifications so I took photos and notes as I went. As I took out each part I cleaned off all the ghastly grease with copious quantities of mineral spirits. CG5s contain what appears to be a random number of transparent plastic washers. You have to make sure you have found all of them and cleaned them up. I put them in numbered baggies so could remember where they came from.

Once the CG5 is disassembled it's clear that some of the internal metal parts are quite roughly machined. I had some fine wet and dry paper so I smoothed off the rough edges and surfaces as described on the website. I then re-greased the parts with a tube of white lithium grease from the hardware store. If you try this yourself, don't try to trial fit the metal parts without any lubricant like I did once. They fit tightly so will stick and are then very difficult to separate. Once everything was re-greased, I put the mount back together. It is best to completely do one axis and then the other as the www.astronomyboy.com instructions describe. The whole process took me an afternoon. Here are some pictures of the innards of a CG5.

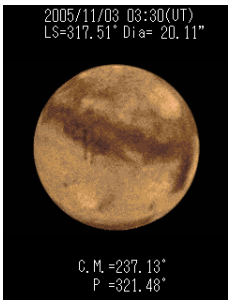
Well, what a difference! The mount now moves very smoothly. There is now so much less friction that the stepper motors can actually move the mount – what a concept! I bought a few accessories to finish of the mount – some mounting plates and tube rings so my scopes from Orion, a set of wooden tripod legs from Astromart and a CG5 polar finder I found on the web somewhere. Even when roughly polar aligned, the mount will keep objects in the field of view for an hour for visual use. For webcam astrophotography at high magnification I need to align more

carefully, but one I have it right Mars at 200x stays on the chip for minutes at a time at least. I'm sure I can align it better but this is good enough for my purposes. It's easy to get it back with a few presses of the drive buttons. Focusing is still tricky so for my 6" f/8 I bought an electric focuser from Orion which helps me focus without introducing too much vibration (some image shift though).

So does it work? Well, here are some pictures I have taken with new setup with a humble 6" f/8 apart from the solar shot. I still have plenty to learn, but I am less likely to be incarcerated while trying. Thanks to Stephen for the CG5 and to Dan for the equatorial platform in 2003.



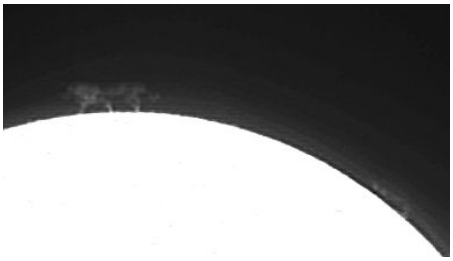
Mars on Nov 2nd 2005



Simulation

Crater Gaessendi

Saturn



Solar Prominences through Coronado PST

Deadly Planets

By Patrick L. Barry and Dr. Tony Phillips

About 900 light years from here, there's a rocky planet not much bigger than Earth. It goes around its star once every hundred days, a trifle fast, but not too different from a standard Earth-year. At least two and possibly three other planets circle the same star, forming a complete solar system.

Interested? Don't be. Going there would be the last thing you ever do.

The star is a pulsar, PSR 1257+12, the seething-hot core of a supernova that exploded millions of years ago. Its planets are bathed not in gentle, life-giving sunshine but instead a blistering torrent of X-rays and high-energy particles.

"It would be like trying to live next to Chernobyl," says Charles Beichman, a scientist at JPL and director of the Michelson Science Center at Caltech.

Our own sun emits small amounts of pulsar-like X-rays and high energy particles, but the amount of such radiation coming from a pulsar is "orders of magnitude more," he says. Even for a planet orbiting as far out as the Earth, this radiation could blow away the planet's atmosphere, and even vaporize sand right off the planet's surface.

Astronomer Alex Wolszczan discovered planets around PSR 1257+12 in the 1990s using Puerto Rico's giant Arecibo radio telescope. At first, no one believed worlds could form around pulsars—it was too bizarre. Supernovas were supposed to destroy planets, not create them. Where did these worlds come from?

NASA's Spitzer Space Telescope may have found the solution. Last year, a group of astronomers led by Deepto Chakrabarty of MIT pointed the infrared telescope toward pulsar 4U 0142+61. Data revealed a disk of gas and dust surrounding the central star, probably wreckage from the supernova. It was just the sort of disk that could coalesce to form planets!

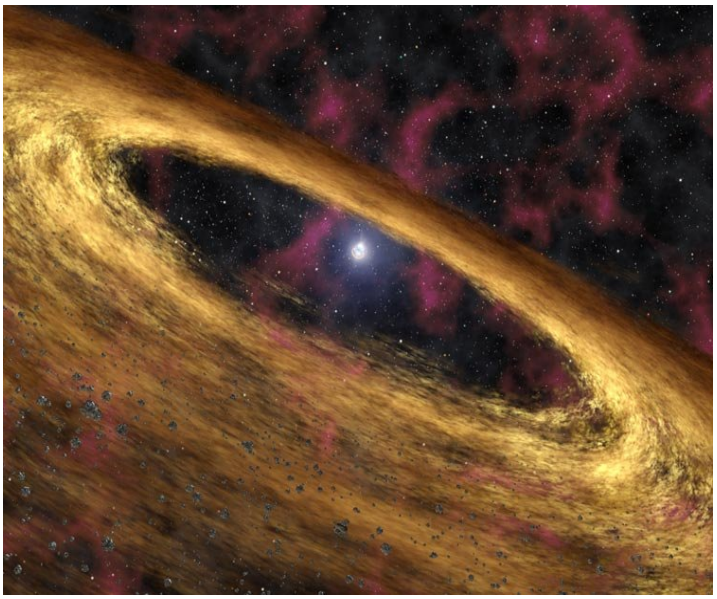
As deadly as pulsar planets are, they might also be hauntingly beautiful. The vaporized matter rising from the planets' surfaces could be ionized by the incoming radiation,

creating colorful auroras across the sky. And though the pulsar would only appear as a tiny dot in the sky (the pulsar itself is only 20-40 km across), it would be enshrouded in a hazy glow of light emitted by radiation particles as they curve in the pulsar's strong magnetic field.

Wasted beauty? Maybe. Beichman points out the positive: "It's an awful place to try and form planets, but if you can do it there, you can do it anywhere."

More news and images from Spitzer can be found at http://www.spitzer.caltech.edu/ . In addition, The Space Place Web site features a cartoon talk show episode starring Michelle Thaller, a scientist on Spitzer. Go to http://spaceplace.nasa.gov/en/kids/live/ for a great place to introduce kids to infrared and the joys of astronomy.

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



Caption:
Artist's concept of a pulsar and surrounding disk of rubble called a "fallback" disk, out of which new planets could form.

40 Years of Boldly Going

By Daniel Handlin

This month, Star Trek celebrates its 40th anniversary. Why is this important? Why do we care about a sci-fi TV show that only lasted three seasons and spawned a few sequels? In my opinion, Star Trek deserves some note for two major reasons: it was the first serious science fiction show of its time, and it inspired an extremely large number of people to go into the sciences or engineering.

At the time Star Trek was being made, the idea of science fiction was in shows like "Lost in Space" or "The Time Tunnel", which today would not be considered serious treatments of sci-fi. "Lost in Space", for example, had a famously ridiculous episode entitled "The Great Vegetable Rebellion" in which the cast faced off against a man in a giant carrot suit, who purported to be an enormous carrot who was leading his army of vegetables in rebellion. Star Trek's stories were a far cry from this. Other than The Twilight Zone and to some extent The Outer Limits, there had been no other successful sci-fi TV shows at that time; the genre was dominated by cheap shows with silly plots and was generally not taken very seriously. And even these two successful shows were anthologies- that is, they had no continuing characters or settings by design. The problem was to depict a future planet or setting every week would have been inordinately expensive for television shows of the time. This is where Gene Roddenberry, Star Trek's creator, had his breakthrough – *set the show on a ship*, which you can reuse every week and can take you from one planet to another and also far into space.

Star Trek was very different from the beginning. The networks rejected Gene Roddenberry's original Star Trek pilot for being "too cerebral", but took the almost unheard-of step ordering a second pilot. The original crew, featuring the characters Captain Pike, Dr. Boyce, and others, were replaced by the Captain Kirk, Dr. McCoy, and others that

Star Trek fans know and love today (Spock was an original member of the cast). This pilot was accepted and Star Trek aired for three seasons. At the end of each of its first two seasons, the network had planned to cancel it, but an unprecedented letter-writing campaign was mounted to save the show, with hundreds of thousands of fans writing in to demand more seasons of Star Trek – something that made the networks notice that it was a potential money-maker. The show never rose very high in the ratings, and it is generally thought today that the rating system was inadequate and that Star Trek was, indeed, reaching its target audience- as evidenced by the incredible number of letters received on its behalf.

What made Star Trek so different from its predecessors, though? It treated science fiction seriously, and this is because it drew on the best science fiction writers of its time. Famous authors including Harlan Ellison, Theodore Sturgeon, Jerome Bixby, Samuel Peeples, and Richard Matheson all penned stories for Star Trek. Rather than stories about giant carrots, it was the first show to bring into the homes of Americans and make common concepts like alien beings, faster-than-light travel, evil computers, teleportation, time travel, and other civilizations. Today these concepts are a cornerstone of modern science fiction, but Star Trek was the trailblazer for these ideas. It also made strong social commentaries on the times, with one famous episode ridiculing racism with two characters, one of whom was black on the right side and white on the left, and one of them white on the right side and black on the left, hating each other solely for that reason.

Star Trek has also inspired lots of astronomers and scientists to go into science. Martin Cooper, inventor of the cellular phone, originally got the idea from Star Trek's communicators. The show's tricorder was the original inspiration for the Palm Pilot's creator Rob Haitani. Dr. Marc Rayman, now chief engineer at JPL, says he was inspired to go into engineering by Star Trek's Scotty, and claims to have memorized all Scotty's lines. Dr. Mae Jemison, the first black woman in space, was driven to become an astronaut and an engineer by her childhood hero, Lt. Uhura. Dr. Seth Shostak is the chief astronomer for SETI- and he, too, was first interested in alien beings by watching Star Trek. NASA's first shuttle was named *Enterprise.* And the list goes on.

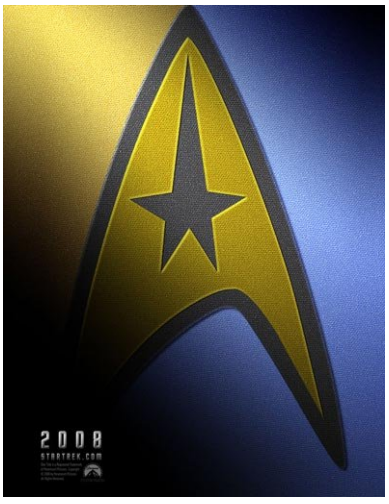
Today Star Trek is as strong as ever. Work is proceeding on the 11th feature film, to be released in 2008 and probably to feature a young Captain Kirk and Mr. Spock. There have been five TV shows (though generally the later shows decreased in quality in my opinion), a cartoon series, hundreds of novels and video games. This year, to celebrate the 40th anniversary, a special set of commemorative novels are being written in addition to the usual novels released every year.

In the fall, CBS, which now owns Star Trek rights, has announced that Star Trek will be returning to syndication with all-new digitally remastered music, high-defintion video, and CGI special effects. The show will include new high-quality computer-generated exterior shots of the Enterprise, new graphics for the opening sequence of the show, including 3-D planets and stars; new shots of the galaxy through the Enterprise viewscreen; new battle scenes and better views of alien ships and planets, and new backdrops for the planets explored by the Enterprise crewman with better lighting and atmospheric effects. The remastering will be overseen by Mike Okuda, who was responsible for much of the graphic design seen on Star Trek: The Next Generation (if you're interested in watching, locally the remastered Trek will be carried on WNBC starting on September 16th; see http://www.startrek.com/startrek/view/news/article/23775.html for details).

The remastered Enterprise

Image courtesy CBS

Even after 40 years, the voyages of the starship Enterprise continue to boldly go where no man has gone before…



First poster for Star Trek XI

Image courtesy Paramount

A Celestial Whack

By Daniel Handlin

As this newsletter was going to "press", the European SMART-1 probe impacted the Moon near Lacus Excellentiae at 1:42 AM ET on September 3, almost exactly when predicted.

The impact was expected to produce a 5-10 m crater on the lunar surface. Amateur astronomers on the west coast were unable to see the flash. The CFHT infrared telescope in Hawaii recorded this image of the impact:

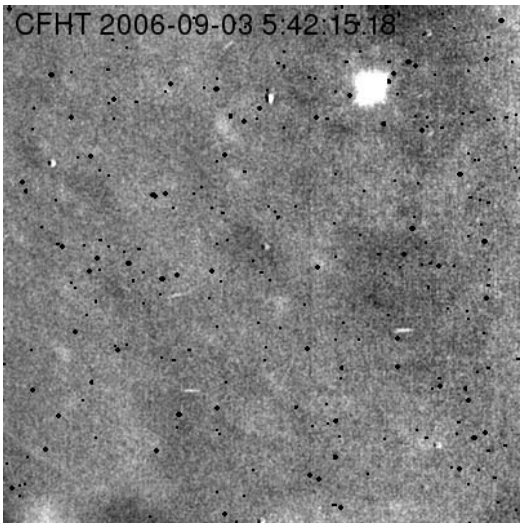


Image courtesy CFHT

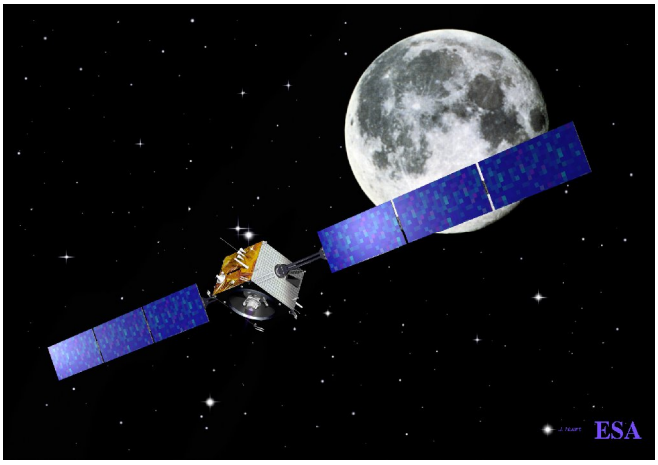
This impact is a practice in some sense for NASA's LCROSS mission, a secondary payload which will hitch a ride to the Moon with the Lunar Reconnaissance Orbiter in 2008 and impact the Moon near its South Pole in a search for water ice.

Artist's conception of the impact

Image courtesy NASA/MSFC

Image taken by SMART-1 shortly before impact

Image courtesy ESA



The SMART-1 spacecraft

Image courtesy ESA

Moon Phases

September Celestial Events

By J. Randolph Walton (Randy)

Day	Date	Time (LMT)	Event
Sat	2	04:37	Saturn Rises
		05:15	Venus Rises
		06:29	Sunrise
		16:17	Moon Rise
		19:30	Sunset
		20:12	Mars Sets
		22:10	Jupiter Sets
Thu	7	14:42	Full Moon
		19:28	Moon Rise
Thu	14	07:15	Last Quarter Moon
		14:54	Moon Set
Sat	16	03:50	Saturn Rises
		05:40	Venus Rises
		06:42	Sunrise
		16:33	Moon Set
		19:07	Sunset
		19:35	Mars Sets
		19:37	Mercury Sets
		21:20	Jupiter Sets
Wed	20	06:00	Zodiacal Light in E before morning twilight for two weeks
Fri	22	06:51	Moon Rise
		07:45	New Moon, Annular Solar Eclipse not visible in US
Sat	23	00:03	Fall Equinox
		03:30	Saturn Rises
		06:03	Venus Rises
		06:48	Sunrise
		18:56	Sunset
		19:19	Moon Set
		19:20	Mars Sets
		19:35	Mercury Sets
		20:55	Jupiter Sets
Sat	30	03:05	Saturn Rises
		06:17	Venus Rises
		06:55	Sunrise
		07:04	First Quarter Moon
		18:44	Sunset
		19:03	Mars Sets
		19:25	Mercury Sets
		20:35	Jupiter Sets
		23:52	Moon Set

Are you a S*T*A*R Member?

S*T*A*R is a member of United Astronomy Clubs of New Jersey (UACNJ) and the International Dark Sky Association (IDA). Meetings are the first Thursday of each month, except July and August, at 8:00 PM at the King of Kings Lutheran Church, 250 Harmony Rd. in Middletown . Meeting generally consist of lectures and discussion by members or guest speakers on a variety of interesting astronomical topics.

Memberships: ( )Individual....$25
( ) Family...$35

Name_____

Address_____

City_____State___Zip_____

Phone_____

Email_____
Make checks payable to: STAR Astronomy Society, Inc. and mail to P.O. Box 863, Red Bank, NJ 07701

In the Eyepiece

Here is a list of objects for this month. This is reproduced from www.skyhound.com with the kind permission of its creator and author of SkyTools Greg Crinklaw.

Object(s)	Class	Con	RA	Dec	Mag
61 Cyg	Variable Star	Cygnus	21h06m54.6s	+38°44'31"	6.0
NGC 7027	Planetary Nebula	Cygnus	21h07m01.7s	+42°14'10"	10.4
Cygnus X-1	Black Hole/Variable Star	Cygnus	19h58m21.7s	+35°12'06"	8.8
NGC 6781	Planetary Nebula	Aquila	19h18m28.3s	+06°32'23"	11.8
NGC 6946	Galaxy	Cygnus	20h34m52.8s	+60°09'14"	9.7
NGC 7008	Planetary Nebula	Cygnus	21h00m32.8s	+54°32'35"	13.3
Saturn Nebula	Planetary Nebula	Aquarius	21h04m10.8s	-11°21'48"	8.3
NGC 6819	Open Cluster	Cygnus	19h41m18.8s	+40°11'05"	9.5
NGC 6751	Planetary Nebula	Aquila	19h05m55.5s	-05°59'31"	12.5
Veil/Cirrus	Diffuse Nebula	Cygnus	20h45m42.0s	+30°43'00"	7.0
Gamma 2 Del	Multiple Star	Delphinus	20h46m39.5s	+16°07'27"	3.9
NGC 6934	Globular Cluster	Delphinus	20h34m11.0s	+07°24'18"	8.9
NGC 7006	Globular Cluster	Delphinus	21h01m29.0s	+16°11'18"	10.6
NGC 6905	Planetary Nebula	Delphinus	20h22m23.0s	+20°06'16"	11.9
M 72	Globular Cluster	Aquarius	20h53m28.0s	-12°32'12"	9.2
Hickson 88	Galaxy Group	Aquarius	20h52m22.8s	-05°45'29"	12.2
Cheeseburger Nebula	Planetary Nebula	Cygnus	21h06m18.6s	+47°51'08"	12.7
Crescent	Diffuse Nebula	Cygnus	20h12m00.0s	+38°21'00"	--