

October 2006

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S*T*A*R
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<http://www.starastronomy.org>



October's Meeting

The next STAR meeting will be 8 PM, Thursday, Oct 5, 2006 at King of Kings Lutheran Church, 250 Harmony Rd. in Middletown.

Our program will be "Exploring Mars, the Search for Life, and a Journey in 3-D" by Dr. Ken Kremer, NASA JPL Solar System Ambassador.

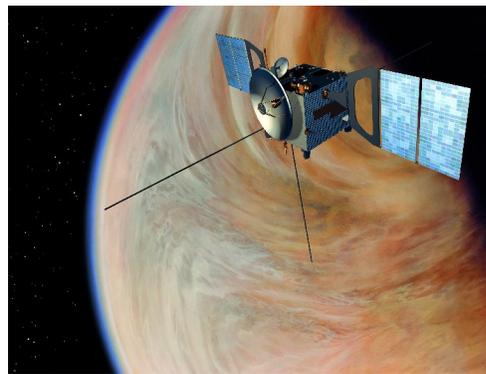
Editor's Corner

A big thanks this month to John Batinsey, Steve Walters, Steve Fedor, and Randy Walton for their submissions. For everyone else, the clarion call goes out: send in articles!

Feedback is always welcome, too. You may notice I've changed the logo again; I'm going to go through a few of them to try to find one that works best.

November Issue

The deadline for the next edition of the *Spectrogram* is Friday, October 27th. Please email any contributions to Daniel_handlin@hths.mcvsd.org. Any and all contributions are welcome!



Venus Express at Venus
Image Courtesy ESA

Calendar

Sep 7, 2006 - -- Clif Aschraft - "Restoring the Tuthill Telescope"

5 Oct - Dr. Kenneth Kremer - "Exploring Mars and the Search for Life"

2 Nov - Dr. Sebestien Lepine - "The Search for Nearby Stars"

7 Dec - Kevin Kilkenny - "New Horizon's Journey to Pluto"

4 Jan - Daniel Kirby - "Pirates of the Solar System Caribbean"

1 Feb - Gavin Warnes - "Collimating your Telescope"

1 Mar - David Britz - "Motions of the Earth and Moon"

5 Apr - TBD

3 May - TBD

7 Jun - No program

Image Courtesy NASA



President's Corner

By Steve Walters

Ah yes, October, my favorite month of the year. The weather starts to cool off - it's not yet cold enough for the winter outfits but it enough to do in the "two M's" - "Mosquitos" and "Moisture". Yep, no more little buggies biting you, that's a joy! But more importantly, the skies tend to begin improving with respect to transparency. In our light polluted region, this is a big plus as less of the NJ light dome gets reflected back into your telescope. So get that old dob out and take a look!

The other thing that's wonderful about October is that the summer Milky Way is still lingering during the early evening and if you stay up late enough, you can see quite a few of the winter objects. And darkness begins earlier each evening. There are many, many classes of objects to look at and image so this is sort of a golden month for astronomers. Don't miss your chance to see something new!

We're gathering steam for our S*T*A*R programs and the year is shaping up very nicely! This year we plan to have some "How To" programs to help you in using your telescope and to understand better the night sky. We'll also continue to have invited speakers from nearby universities but these "How To" programs will supplement those more lofty presentations. The current schedule is shown elsewhere in the *Spectrogram* so take a look at it and let me know if you have any comments.

I also want to mention that Daniel Handlin was awarded 1st place in the Jack Horkheimer Service Awards given by the Astronomical League. This award is given annually to young astronomers (under age 19) who have demonstrated exceptional service. You can read about Daniel's impressive accomplishments on page 14 of the September issue of the "Reflector". Please join me in congratulating Daniel!

During the summer, I attended the East Coast Conference for Astronomical Imaging (ECCAI) in Philadelphia. It was a very good event but was not very well attended. Frankly I have no explanation for this other than it was held in early August and maybe many imagers were vacationing with their families. Anyway, it was a lot of fun and, for me, I got "plugged in" to "wavelet" processing which is now included in the latest release of AIP4Win. The wavelet methods are very useful for bringing out faint details in images (similar to DDP if you know what that is) and it has exceptionally good methods for sharpening and gradient removal. So I ran out and upgraded. I also will attend the Advanced Imaging Conference held in San Jose during November, this will be my third year. Watch for a short report on this event on our discussion board. I've been traveling to Cherry Springs every month possible but I had a broken foot during the mid-summer that kept me away for a while.

Please remember that if you haven't paid your dues already, to get them in. Yes, it's that time of the year again, sorry to be a pest but we really need to be sure we can meet our commitments.

Hope to see you at the upcoming meeting! We will be seeing Mars in 3-D so I hope you'll be there!

Clear Skies!

Steve...



Image courtesy NASA

September Meeting Minutes

By Steve Fedor

The 2006-2007 season of S*T*A*R Astronomy kicked-off at 8:06 pm on 9/7/2006. The meeting was attended by approximately 30 members and non-members. V.P. Gavin Warnes chaired the meeting and began by greeting members and non-members as well as discussing upcoming events.

At 8:15 the evening's lecture "Restoring the Tuthill Telescope" was presented by AAI member Cliff Ashcroft. Cliff spoke in detail about the restoration efforts of AAI (Amateur Astronomers Incorporated) to restore a unique trailer mounted telescope designed and built by the late Roger Tuthill. The talk included the scope's history, awards at Stellaphane, optical design and performance, as well as specific construction details of the primary cell and secondary holder. The talk concluded at 9:10.

Randy Walton displayed astronomy books that were on sale at Barnes and Noble such as "The moons of Jupiter" and "The Solar System."

The meeting was recessed for coffee break. During the break Dan Pontone was selling some of his personal astronomy hardware. The meeting resumed at approximately 9:38 with a sincere thank-you to Ann Silverman and John Armata for supplying the donuts.

Nancy McGuire presented M57, the Ring Nebula, and Sephen's Quintet as Object of the Month.

Gavin Warnes urged everyone to make use of the club's 25 inch Obsession before the weather turns cold.

Randy Walton announced a star party to be held at ASTRA on 9/29. He also mentioned there were free astronomy magazines available at the rear of the meeting area and that he is arranging for a group purchase of Observing Guides and Calendars.

John Batinsey announced the light pollution section of the club's web site would be updated soon and that he is planning a lighting tour of Eatontown.

Dan Pontone mentioned there will be a comet in the same field of view as the Cat's Eye (NGC-6543) on the night of 9/29.

Nancy McGuire received a healthy round of applause after announcing she purchased a 15 inch Obsession. Congrats and best of luck with it Nancy !!

SIG's:

ATM – Gordon Waite announced the Monday night ATM sessions will continue. As usual, Gordon invited everyone to join in the fun of building a telescope, grinding a mirror or working on any astronomy related project at his shop.

Observing. – No report. Doug Berger announced that he will look into holding observing sessions for beginners.

Outreach: Dennis O'Leary said he will try to have S*T*A*R activities announced in the Middletown Recreation Committee newspaper. He suggested contacting your local recreation committees for similar publications as a means of outreach for the club. He also mentioned that new flyers will be printed for distribution in local libraries.

Stephen "Scopehead" Scaravella won the 50/50 drawing which was \$12.00.

The meeting was then adjourned at 10:06pm. Observing took place afterwards through Doug Berger's 8 inch dob.



*Painting of Space Shuttle orbiter
Image courtesy NASA*

Time to Combat Light Pollution

By John Batinsey

I believe it is time to start a monthly light pollution article in the STAR Spectrogram. The STAR web Light Pollution (LP) section has been completely revised to reflect various changes that have been made. Please take the opportunity to read the opening segment: "Light Pollution, It's Time for Action". I think you will hopefully agree that a different and more "legitimate" approach is needed to convince local and state officials that light pollution must be controlled. This will work best if you are understood to represent the "General Public", not a special interest group. The new LP Section now includes an assortment of "Tools" that can help you achieve this goal.

For those who are interested in reducing LP, I'd like to meet in Eatontown during October to kick-around some strategies and show some examples of both good and bad lighting. We can measure the illuminance (fc) with a photometer to illustrate the huge differences that might even surprise you. We can also talk about how to avoid making inaccurate statements that are sometimes made by amateur astronomers. Even with only minimum participation, such as sending protest letters, much can be accomplished.

I'll announce some specific dates in the Events and Observing Plans part of the Discussion Board.

John Batinsey

Staggering Distance

By Dr. Tony Phillips

Tonight, when the sun sets and the twilight fades to black, go outside and look southwest. There's mighty Jupiter, gleaming brightly. It looks so nearby, yet Jupiter is 830 million km away. Light from the sun takes 43 minutes to reach the giant planet, and for Earth's fastest spaceship, New Horizons, it's a trip of 13 months.

That's nothing.

Not far to the left of Jupiter is Pluto. Oh, you won't be able to see it. Tiny Pluto is almost 5 billion km away. Sunlight takes more than 4 hours to get there, and New Horizons 9 years. From Pluto, the sun is merely the brightest star in a cold, jet-black sky.

That's nothing.

A smidgen to the right of Pluto, among the stars of the constellation Ophiuchus, is Voyager 1. Launched from Florida 29 years ago, the spacecraft is a staggering 15 billion km away. It has traveled beyond all the known planets, beyond the warmth of the sun, almost beyond the edge of the solar system itself.

Now that's something.

"On August 15, 2006, Voyager 1 reached the 100 AU mark—in other words, it is 100 times farther from the Sun than Earth," says Ed Stone, Voyager project scientist and the former director of NASA's Jet Propulsion Laboratory. "This is an important milestone in our exploration of the Solar System. No other spacecraft has gone so far."

At 100 AU (astronomical units), Voyager 1 is in a strange realm called "the heliosheath."

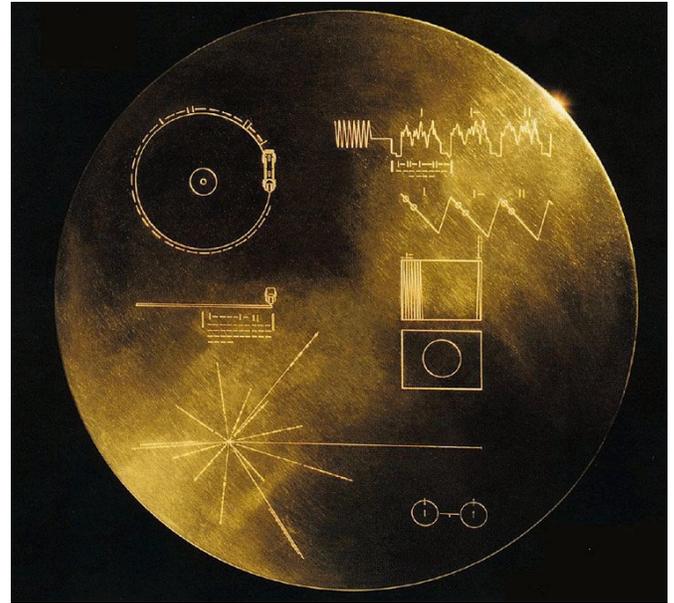
As Stone explains, our entire solar system—planets and all—sits inside a giant bubble of gas called the heliosphere. The sun is responsible; it blows the bubble by means of the solar wind. Voyager 1 has traveled all the way from the bubble's heart to its outer edge, a gassy membrane dividing the solar system from interstellar space. This "membrane" is the heliosheath.

Before Voyager 1 reached its present location, researchers had calculated what the heliosheath might be like. "Many of our predictions were wrong," says Stone. In situ, Voyager 1 has encountered unexpected magnetic anomalies and a surprising increase in low-energy cosmic rays, among other things. It's all very strange—"and we're not even out of the Solar System yet."

To report new developments, Voyager radios Earth almost every day. At the speed of light, the messages take 14 hours to arrive. Says Stone, "it's worth the wait."

Keep up with the Voyager mission at voyager.jpl.nasa.gov. To learn the language of Voyager's messages, kids (of all ages) can check out spaceplace.nasa.gov/en/kids/vgr_fact1.shtml.

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



Caption:

In case it is ever found by intelligent beings elsewhere in the galaxy, Voyager carries a recording of images and sounds of Earth and its inhabitants. The diagrams on the cover of the recording symbolize Earth's location in the galaxy and how to play the record.

Boldly Go... Again

By Daniel Handlin

Last month I wrote about a new project to digitally remaster the original Star Trek with enhanced computer-generated visual effects, digitally re-recorded music and cleaned-up film transfers. This month, the first four episodes aired, and the results are breathtaking. Space shots are enhanced, background scenes have been redone and people added, new shots of the Enterprise are shown, and, most impressively in my opinion, the planets look far more realistic than they ever have before.

Although the only time the show airs in our area is at the ridiculous time of 2:45 AM on WNBC (channel 4) on Monday mornings, it's well worth recording if you have a DVR or TiVO-like device if you were ever a Star Trek fan. Why? Perhaps the best way is to show you. Some comparisons:

Before/After:



Before/After:



Spiraling down to a planet- original/remastered



Image credit: www.trekmovie.com

And some old mistakes have even been fixed:

Before/After:



Images credit: www.trekmovie.com

Overall, the restored Star Trek is extremely impressive, not only for its greatly enhanced visual effects but also for its clearer sound and much clearer and sharper picture. Remastered Star Trek airs once a week for the foreseeable future; details can be found on www.startrek.com. If you've ever enjoyed watching Star Trek, this version is definitely worth a look.

Unless otherwise credited, all images courtesy CBS/Paramount

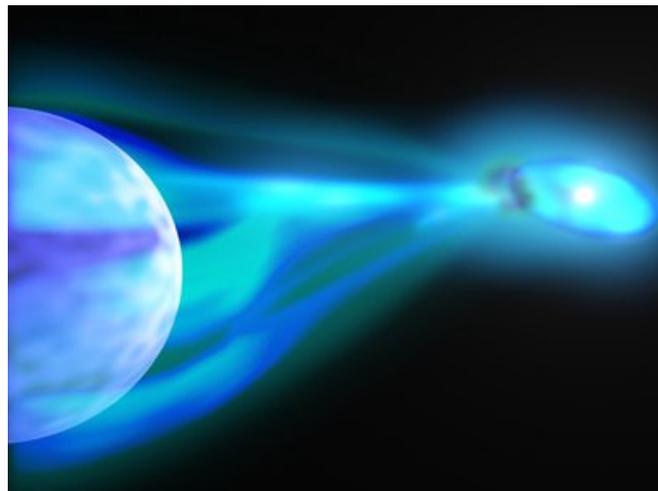
Science Corner: Low-Mass X-Ray Binaries

By Daniel Handlin

A low-mass X-ray binary is a binary star consisting of a normal (typical sun-sized or smaller) star and a compact object (usually a neutron star, can be a black hole). As the solar-mass star evolves into a red giant, it overflows its Roche lobe – the region of a binary star system gravitationally controlled by that star- and starts transferring mass to the neutron star. This mass builds up in an accretion disk around the star. The gas spins extremely fast due to its angular momentum, and friction within the disk can generate temperatures up to 100 million K or more, emitting x-rays we can detect on Earth. The accretion disk is the source of the vast majority of emission from the system.

As the gas spirals down onto the neutron star, it transfers angular momentum to the neutron star, causing it to spin up and become a “millisecond pulsar”, spinning hundreds of times or more per second. As this mass is transferred to the neutron star, the red giant moves outward in its orbit- also because of the transfer of angular momentum – until finally the mass transfer stops, and the system is left as a binary with a white dwarf and an extremely fast-spinning neutron star. The orbit followed by the two stars about their center of mass is typically very circular due to the extensive tidal interactions (which tend to circularize orbits).

LMXBs do not easily form from two stars of masses that are sufficiently different for one to go supernova and the other to go the white dwarf route of death. Scientists believe that many LMXBs formed when a rogue neutron star disrupted a binary system of normal stars, ejecting one star from the system and leaving the neutron star and ordinary star in a binary pairing. This idea is supported by our view of many LMXBs in globular clusters, where such close encounters are very common.



A low-mass X-ray binary, artist's conception. In most cases the donor star will be redder than this, as it will be either a red giant or a main-sequence star less massive than blue O- and B-type stars.

Image courtesy ESA

Moon Phases



October Celestial Events

By J. Randolph Walton (Randy)

Day	Date	Time (LMT)	Event
Fri	6	18:18	Moon Rise
		23:13	Full Moon
Sat	7	02:37	Saturn Rises
		06:35	Venus Rises
		07:02	Sunrise
		18:33	Sunset
		18:45	Moon Rise
		20:10	Jupiter Sets
Sun	8	19:00	Draconid meteors peak
Tue	10	01:00	Moon occults the Pleiades
Fri	13	20:26	Last Quarter Moon
		23:32	Moon Rise
Sat	14	02:20	Saturn Rises

t			
		06:50	Venus Rises
		07:09	Sunrise
		15:09	Moon Set
		18:22	Sunset
		18:30	Mars Sets
		19:15	Mercury Sets
		19:45	Jupiter Sets
Fri	20	06:30	Zodiacal Light in E before morning twilight for two weeks
Sa	21	01:50	Saturn Rises
t			
		07:10	Venus Rises
		07:17	Sunrise
		11:00	Orionid meteors peak (ZHR 20)
		17:46	Moon Set
		18:12	Sunset
		19:03	Mercury Sets
		19:25	Jupiter Sets
Su	22	01:14	New Moon
n			
		07:44	Moon Rise
Sa	28	01:25	Saturn Rises
t			
		07:17	Mars Rises
		07:25	Sunrise
		18:03	Sunset
		18:10	Venus Sets
		18:45	Mercury Sets
		19:00	Jupiter Sets
		22:51	Moon Set
Su	29	02:00	Daylight Saving Time Ends
n			
		13:24	Moon Rise
		16:25	First Quarter Moon

Items for Sale from ASTRA

By Randy Walton

ASTRA is planning to make a group purchase of the following items, price includes shipping to ASTRA:

Item	Reg. Price	Disc. Price
Observer's Handbook 2007	\$31.95	\$20.00
Observer's Calendar 2007	\$19.95	\$14.00
Beginner's Observing Guide	\$25.95	\$23.00

Please make a list of what you want, a check made out to ASTRA, and give it to Randy Walton at the Oct. STAR meeting or mail it to ASTRA, Robert J. Novins Planetarium, Ocean County College, P.O. Box 2001, Toms River NJ 08754-2001 by Oct. 12, 2006. If ASTRA gets a larger discount, money will be refunded when the item is picked up from Randy Walton at a STAR meeting.

Classified

FOR SALE: Stellarvue 4" f/6.9 achromatic refractor OTA, Model # 102D. Focal length 704mm. The objective is partially attenuated meaning visible color is very minimal. I've seen traces of color only on the Moon and brightest planets and stars. Contrast is unusually high. Includes a nesting dewcap and a fully rotating JMI Crayford type tailpiece. Also comes with a 2" mirror diagonal, 1 1/4" adaptor, Stellarvue tube rings, and a soft padded Stellarvue carry case. Combined original cost over \$1175. Sell for \$750.

1) Tele-Vue 1 1/4" mirror diagonal w/compression ring (original design) Like-new condition
Original cost: \$90 now \$40

Call 732-905-0889 (Phil Zollner or pazap@juno.com)

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
Andromeda Galaxy	Galaxy	Andromeda	00h42m44.3s	+41°16'09"	4.3
The Sculptor Galaxy -- NGC 253	Galaxy	Sculptor	00h47m33.1s	-25°17'18"	8.2
NGC 7789	Open Cluster	Cassiopeia	23h57m01.9s	+56°43'42"	7.5
NGC 278	Galaxy	Cassiopeia	00h52m04.4s	+47°33'01"	11.5
NGC 288	Globular Cluster	Sculptor	00h52m38.2s	-26°35'43"	8.9
NGC 247	Galaxy	Cetus	00h47m08.7s	-20°45'38"	9.7
IC 10	Galaxy	Cassiopeia	00h20m23.1s	+59°17'35"	11.8
The Bubble Nebula	Diffuse Nebula	Cassiopeia	23h20m42.0s	+61°12'00"	--
NGC 40	Planetary Nebula	Cepheus	00h13m01.0s	+72°31'19"	10.7
The Blue Snowball	Planetary Nebula	Andromeda	23h25m53.9s	+42°32'06"	9.2
NGC 246	Planetary Nebula	Cetus	00h47m03.3s	-11°52'19"	8.0
NGC 7640	Galaxy	Andromeda	23h22m06.5s	+40°50'45"	11.8
NGC 7606	Galaxy	Aquarius	23h19m04.8s	-08°29'08"	11.7
NGC 128	Galaxy	Pisces	00h29m15.1s	+02°51'51"	12.7
Jn 1	Planetary Nebula	Pegasus	23h35m53.4s	+30°27'36"	15.1
NGC 281	Open Cluster	Cassiopeia	00h52m50.1s	+56°37'17"	7.4
NGC 381	Open Cluster	Cassiopeia	01h08m21.0s	+61°35'00"	9.3
NGC 289	Galaxy	Sculptor	00h52m42.4s	-31°12'22"	11.8
Gamma Cassiopeia Nebula	Diffuse Nebula	Cassiopeia	00h57m30.0s	+61°09'00"	--
Hu 1-1	Planetary Nebula	Cassiopeia	00h28m15.0s	+55°57'54"	13.3
M 2-55	Planetary Nebula	Cepheus	23h31m51.3s	+70°22'11"	--
NGC 7492	Globular Cluster	Aquarius	23h08m28.7s	-15°36'28"	11.2
Hickson 94	Galaxy Group	Pegasus	23h17m18.2s	+18°43'31"	13.1
Gyulbudaghian's Nebula	Variable Reflection Nebula	Cepheus	20h45m54.2s	+67°57'51"	14