



THE W.A.S.P. NEWSLETTER

THE [WARREN ASTRONOMICAL SOCIETY](http://www.warrenastronomicalsociety.org) PAPER

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IN THE PRESIDENT'S FIELD OF VIEW



➔ *President Bob Berta* recently sent this message to Harrold Ardis of the Grosse Pointe Schools in recognition of the work done by the students at Grosse Pointe North High School with their Radio Telescope Project:

"The Warren Astronomical Society has approved a \$100 honorarium in recognition of the wonderful AND impressive presentation that the RATS did for our club. We would like this to go to the RATS for their various projects. I know it is near the end of the year so they may not be able to use it this year...but they can pass it on to the RATS next year as their legacy. Since they may finish the school year before the check gets there...I would appreciate your telling the club that it is coming so they can feel good about their efforts.

Editors Note: We hope you like the new look. This effort to update the WASP will be an ongoing process over the next several months. We are asking for your input on design, articles you write and wish to be included, as well as links to interesting website articles. For correspondence, please include "WASP" in the subject line of e-mails you send. E-mails can be sent to: 52poppa@excite.com



Our members thoroughly enjoyed their presentation, and I am sure it gives a real sense of pride to the students to know their efforts are recognized."

Bob Berta
President Warren Astronomical Society

ASTRO CHATTERby *Larry Kalinowski*

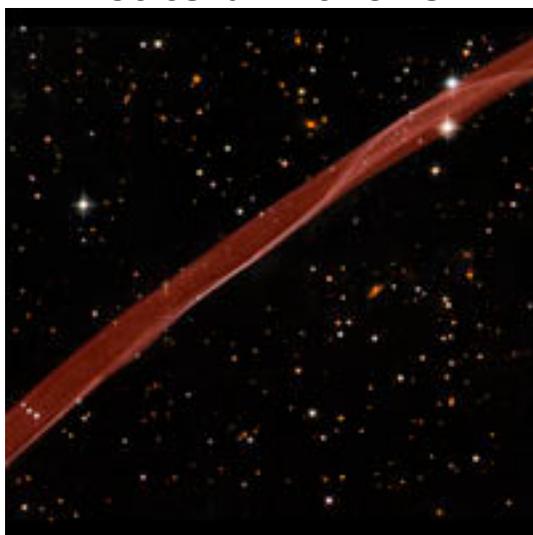
This space reserved for Larry Kalinowski. Get well soon.



-Warren Astronomical Society

IN THE NEWS

Hubble Sees Stars and a Stripe in Celestial Fireworks



A delicate ribbon of gas floats eerily in our galaxy.

A contrail from an alien spaceship? A jet from a black-hole? Actually this image, taken by NASA's Hubble Space Telescope, is a very thin section of a supernova remnant caused by a stellar explosion that occurred more than 1,000 years ago.

On or around May 1, 1006 A.D., observers from Africa to Europe to the Far East witnessed and recorded the arrival of light from what is now called SN 1006, a

tremendous supernova explosion caused by the final death throes of a white dwarf star nearly 7,000 light-years away. The supernova was probably the brightest star ever seen by humans, and surpassed Venus as the brightest object in the night time sky, only to be surpassed by the moon. It was visible even during the day for weeks, and remained visible to the naked eye for at least two and a half years before fading away.

It wasn't until the mid-1960s that radio astronomers first detected a nearly circular ring of material at the recorded position of the supernova. The ring was almost 30 arcminutes across, the same angular diameter as the full moon. The size of the remnant implied that the blast wave from the supernova had expanded at nearly 20 million miles per hour over the nearly 1,000 years since the explosion occurred.

In 1976, the first detection of exceedingly faint optical emission of the supernova remnant was reported, but only for a filament located on the northwest edge of the radio ring. A tiny portion of this filament is revealed in detail by the Hubble observation. The twisting ribbon of light seen by Hubble corresponds to locations where the expanding blast wave from the supernova is now sweeping into very tenuous surrounding gas.

The hydrogen gas heated by this fast shock wave emits radiation in visible light. Hence, the optical emission provides astronomers with a detailed "snapshot" of the actual position and geometry of the shock front at any given time. Bright edges within the ribbon correspond to places where the shock wave is seen exactly edge on to our line of sight.

Today we know that SN 1006 has a diameter of nearly 60 light-years, and it is still expanding at roughly 6 million miles per hour. Even at this tremendous speed, however, it takes observations typically separated by years to see significant outward motion of the shock wave against the grid of background stars. In the Hubble image as displayed, the supernova would have occurred far off the lower right corner of the image,

The Warren Astronomical Society Paper (WASP) is the official monthly publication of the Society. Each new issue of the WASP is e-mailed to each member and/or is available online at warrenastronomicalsociety.org. Requests by other Astronomy clubs to receive the WASP, and all other correspondence should be addressed to the Publications Director, Larry Phipps, at 52poppa@excite.com. Articles for inclusion in the WASP are strongly encouraged and should be submitted to the editor by the 28th day of each month. Any format of submission is accepted, however, the easiest forms for this editor to use are plain text files. Most popular graphics formats are acceptable. The preferred method of submission is electronically via e-mail with attachment to the editor. Alternative submissions include printed form delivered in person, or via US mail. Disclaimer: The articles presented herein represent the opinions of the authors and are not necessarily the opinions of the WAS or the editor. The WASP reserves the right to deny publication of any submission.

and the motion would be toward the upper left. SN 1006 resides within our Milky Way Galaxy. Located more than 14 degrees off the plane of the galaxy's disk, there is relatively little confusion with other foreground and background objects in the field when trying to study this object. In the Hubble image, many background galaxies (orange extended objects) far off in the distant universe can be seen dotting the image. Most of the white dots are foreground or background stars in our Milky Way galaxy.

This image is a composite of hydrogen-light observations taken with Hubble's Advanced Camera for Surveys in February 2006 and Wide Field Planetary Camera 2 observations in blue, yellow-green, and near-infrared light taken in April 2008. The supernova remnant, visible only in the hydrogen-light filter was assigned a red hue in the Heritage color image.

<http://hubblesite.org/newscenter/archive/releases/2008/22/>

Herschel Spacecraft Acoustic and Vibration Tests

[Monday, June 30, 2008] Herschel will be the largest space telescope of its kind when launched. It will launch on an Ariane-5 rocket from the Guyana Space Centre, Kourou, French Guyana, in early 2009. Herschel's 3.5 meter diameter mirror will collect long-wavelength infrared radiation from some of the coolest and most distant objects in the Universe. Herschel will be the only space observatory to cover the spectral range from far-infrared to sub-millimeter wavelengths. Herschel will investigate the history of how stars and galaxies formed and to study how they continue to form in our own and other galaxies. Herschel will observe at wavelengths never covered before. The Herschel spacecraft is now undergoing a series of mechanical tests at ESA's ESTEC. The tests are carried out to ensure that the spacecraft can withstand the acoustic and vibration loads that it will encounter during launch.

FULL STORY:

http://www.esa.int/esaSC/120390_index_0_m.html

Cartwheel Coronal Mass Ejection

Imagine a billion-ton cloud of gas launching itself off the surface of the sun and then... doing a cartwheel. That's exactly what happened on April 9, 2008, when a coronal mass ejection or "CME" pirouetted over the sun's limb in full view of an international fleet

of spacecraft. Even veteran solar physicists were amazed.

FULL STORY:

http://science.nasa.gov/headlines/y2008/27may_cartwheelcme.htm

Strange Ring Found Circling Dead Star

NASA's Spitzer Space Telescope has found a bizarre ring of material around the magnetic remains of a star that blasted itself to smithereens.

The stellar corpse, called SGR 1900+14, belongs to a class of objects known as magnetars. These are the cores of massive stars that blew up in supernova explosions, but unlike most other dead stars, they have tremendously strong magnetic fields.

FULL STORY:

http://science.nasa.gov/headlines/y2008/29may_magnetar.htm?list1076889

(Thanks to Bob Berta for pointing us to these articles)

WHAT DO WE KNOW ABOUT MARS' ATMOSPHERE?

The Boston Globe put together a nice site dedicated to showing 17 images of Mars and its varying atmosphere, taken by various spacecraft over the past several years.

http://www.boston.com/bigpicture/2008/06/martian_s_kies.html

(Thanks to Guy Maxim for pointing us to this article)

Astronomers Weigh the Coldest Brown Dwarfs with Astronomy's Sharpest Eyes

Astronomers have used ultra sharp images obtained with the Keck Telescope and Hubble Space Telescope to determine for the first time the masses of the coldest class of "failed stars," a.k.a. brown dwarfs.

<https://www.keckobservatory.org/article.php?id=193>

Spitzer Finds Clarity in the Inner Milky Way

As inhabitants of a flat galactic disk, Earth and its solar system have an edge-on view of their host galaxy, like looking at a glass dish from its edge. From our perspective, most of the galaxy is condensed into a blurry narrow band of light that stretches completely around the sky, also known as the galactic plane. More

than 800,000 frames from NASA's Spitzer Space Telescope were stitched together to create an infrared portrait of dust and stars radiating in the inner Milky Way. http://www.nasa.gov/mission_pages/spitzer/multimedia/20080603.html

Stephen's Ramblings

<http://suitti.livejournal.com/>

Thursday, June 19th, 2008

Plutoid because we needed another solar system object name.

http://iau.org/public_press/news/release/iau0804/

Earliest genetic material may have come from the stars. But don't get too excited about panspermia. That just pushes back the question of how life evolved, anyway. This is just about materials, not life.

http://eurekalert.org/pub_releases/2008-06/icl-sct061308.php

Sea level and sediment tied to mass extinctions.

http://eurekalert.org/pub_releases/2008-06/uow-eaf061308.php

A Trio of Super-Earths found. About one third of all solar-like stars have either super-Earth or Neptune-like planets with orbital periods shorter than 50 days.

<http://eso.org/public/outreach/press-rel/pr-2008/pr-19-08.html>

Black holes big and small feed about the same way.

http://eurekalert.org/pub_releases/2008-06/cxc-bhh061808.php

Similar sized twin stars not twins in Orion nebula. One must have formed first, and much earlier. Very unexpected.

http://nsf.gov/news/news_summ.jsp?cntn_id=111724&org=NSF

Earths form from dust well, it's a lot more complicated, so read the article.

http://eurekalert.org/pub_releases/2008-06/ci-ccp061608.php

Lava iron isotopes reveal planetary formation.

http://eurekalert.org/pub_releases/2008-06/uoc-lfh061708.php

GLAST in orbit. Gamma Rays make Hulk strong! (but for most people, they'll cause cancer.)

http://www.nasa.gov/mission_pages/GLAST/news/safe_orbit.html

And, of course, the Phoenix lander has gotten stuff into an oven. Details and more details at The Planetary Society Blog.

<http://planetary.org/blog/>

Wednesday, June 11th, 2008

Phoenix Landing

The funniest thing said in all the Phoenix mission coverage so far is that Phoenix didn't lithobrake. Kinda like saying that they wanted to use something weaker than electrostatic forces to slow them down.

From grade school: If my vocabulary is too copious for your diminutive comprehensibility, I will endeavor to elucidate more explicitly. I still remember looking up all the words.

Tuesday, June 10th, 2008

Yellowstone-like hot springs found on Mars by Spirit. They've run dry by now, of course.

<http://astronomy.com/asy/default.aspx?c=a&id=6968>

New Red Spot on Jupiter. Some are calling it Global Warming on Jupiter. It's doubtful that the Galileo probe had anything to do with it. Please, no flame wars over Global Warming. It's hot enough as it is.

<http://astronomy.com/asy/default.aspx?c=a&id=6969>

Phoenix landed on Mars. And has started digging in the dirt. Phoenix adds taste and smell to astronomy.

<http://astronomy.com/asy/default.aspx?c=a&id=6992>

LMC star has belt and like mine, it's expanding. Very cool interferometry result from the VLT.

<http://astronomy.com/asy/default.aspx?c=a&id=6996>

Milky Way has lost weight in new estimates. I could use a new estimate myself.

<http://astronomy.com/asy/default.aspx?c=a&id=6995>

Fastest Rotating Asteroid. It makes your head spin.

<http://astronomy.com/asy/default.aspx?c=a&id=6997>

Stellar Metallicity of 2.5 million Milky Way stars measured.

<http://astronomy.com/asy/default.aspx?c=a&id=7006>

Ring of Material around Magnetar.

<http://astronomy.com/asy/default.aspx?c=a&id=7005>

1572 Cas A Supernova light echo imaged in xrays.

<http://astronomy.com/asy/default.aspx?c=a&id=7009>

Small planet detected: 3x Earth More amazing gravitational microlensing results.

<http://astronomy.com/asy/default.aspx?c=a&id=7019>

Galaxy Spirals Related to Central Black Hole Mass so black holes at 8 billion light years away can be weighed.

<http://astronomy.com/asy/default.aspx?c=a&id=7018>

Super Bright Super Novas consistent with Quark-Nova's.

<http://astronomy.com/asy/default.aspx?c=a&id=7037>

I need a new "You Are Here" T-shirt. The structure of the Milky Way has been updated.

<http://astronomy.com/asy/default.aspx?c=a&id=7039>

Black Holes stop star formation They just throw their weight around.

<http://astronomy.com/asy/default.aspx?c=a&id=7043>

I didn't pick on Astronomy Magazine for any really good reason.

Warren Astronomical Society 2008 Presentations

DATE	LOCATION	PRESENTER	SUBJECT
7 - July	Cranbrook	Diane Hall	Echoes Of Ancient Seas
17 - July	Macomb	G.M. Ross	Bruce P. Sidell Memorial Lecture
4 - Aug	Cranbrook	Jim Shedlowski	Astronomic Metrics
21 - Aug	Macomb	Committee Of The Whole	Norman's World
8 - Sept	Cranbrook	Philip Martin	Astronomy For Gearheads
18 - Sept	Macomb	Ken Bertin Dave D'Onofrio	Eclipse 2008 Adaptive Optics
6 - Oct	Cranbrook	Dale Partin	The Search for Exo-Planets
16 - Oct	Macomb	Norm Dillard	Giant Stars
3 - Nov	Cranbrook	Gary Gathen	Constellations of H. A. Rey
20 - Nov	Macomb	Michael Foerster	T.B.D.
1 - Dec	Cranbrook		Astro Film Festival
18 - Dec	Macomb	Mark John Christensen	Dawn Of The Shuttle (Folly)

Please contact the 1st V.P. (program chairperson) to:

- 1: Schedule new presentation.
- 2: Alter scheduled presentations.
- 3: Add a subject title to your presentation.
- 4: Change the subject title of your presentation.

2008 Stargate Observatory Open House Schedule



NOTE: Depending on weather at the time, open house dates are:

Jul. 12, Aug. 09, Sep. 06, Oct. 04, Nov. 08, Dec. 06

1. Normal closing time will depend on events, weather, and other variables.
2. The observatory may be closed one hour after opening time if no members arrive within the first hour.
3. Contact me for other arrangements, such as late arrival time.
4. An alternative person will be appointed to open the observatory if I cannot attend a scheduled date or opening time.
5. Members may arrive before or stay after the scheduled open house time.

- 6. Dates are subject to change or cancellation depending on weather or staffing availability.
 - 7. An e-mail will be posted no later than 2 hours before starting time incase of date change or cancellation.
 - 8. It is best to email me up to 2 hours before the posted opening with any questions you may have. I will not be able to receive e-mail after 2 hours before open time.
- Generally only strong rain or snow would prevent the open house...even if it is clouded over I plan on being there. Often the weather is cloudy but clears up as the evening progresses.

Marty Kunz
 W.A.S. 2nd V.P. (2008)

WAS Meetings scheduled for 2008

Cranbrook Meetings: Every 1st Monday
 Jul. 7 Aug. 4 Sep. 1 Oct. 6 Nov. 3
 Dec. 1

Macomb Meetings: Every 3rd Thursday
 Jul. 17 Aug. 21 Sep. 18 Oct. 16 Nov. 20

Dec. 18 (Banquet Date)

ONLINE SOFTWARE TOOLS

Sunspot Plotter
 (Java support required)

This Java applet allows you to plot 11 years worth of sunspot number centered on any date between 1755 and the present. Using the pull-down menus, enter the date of interest, and hit "Refresh". "Click" on the page for a plot of all monthly-averaged sunspot numbers from the year 1749 through the present.



www.spaceweather.com/java/archive.html

SOLAR UPDATE

The National Association for Amateur Radio maintains a website to promote interest in Amateur Radio communications and experimentation, represents US Radio Amateurs in legislative matters, and maintains fraternalism and a high standard of conduct among Amateur Radio operators. Interestingly enough, a major influence on how radio waves propagate in other than straight line paths is electromagnetic radiation; both in Earth's atmosphere, and solar-terrestrial interactions. As the Sun's activity has a great influence on our electromagnetic field, amateur radio enthusiasts monitor sun activity regularly. For more information concerning radio propagation, visit the ARRL Technical Information Service Propagation page <http://www.arrl.org/tis/info/propagation.html>. To read this week's Solar Report in its entirety, which includes updates on sunspots, solar flares, and Coronal Mass Ejections (CME), check out the W1AW Propagation Bulletin page <http://www.arrl.org/w1aw/prop/>.

Propagation Forecast Bulletin
 From Tad Cook, K7RA
 Seattle, WA May 23, 2008

(Thanks Norman Dillard for pointing us to this information)

ASTRONOMICAL EVENTS: JULY, 2008

Date	Date
1 Mars 0.7N of Regulus	10 Mars 0.6S of Saturn
1 Mercury greatest elong	14 Moon at apogee
1 Moon at perigee	14 Antares 0.3N of Moon
1 Moon furthest North (27.5)	15 Moon furthest South (-27.5)
3 NEW MOON	17 Jupiter 2.6N of Moon
3 Venus 1.7S of Moon	18 FULL MOON
3 Pollux 4.4N of Moon	20 Neptune 0.7S of Moon
4 Earth at aphelion	22 Uranus 3.7S of Moon
6 Regulus 1.4N of Moon	22 Mercury 5.6S of Pollux
6 Mars 2.3N of Moon	25 LAST QUARTER
6 Saturn 3.1N of Moon	29 Moon furthest North (27.6)
7 Venus 5.6S of Pollux	29 Mercury superior conjunction
9 Jupiter at opposition	29 Moon at perigee
10 FIRST QUARTER	31 Pollux 4.4N of Moon
10 Spica 2.7N of Moon	

GREAT LAKES STAR GAZE

By JON BLUM

The registration form for the Great Lake Star Gaze in Gladwin, Michigan, September 25-28, 2008, is now available at

<http://greatlakesstargaze.com/pdf/glsgreg2008.pdf>

I have attended this event the past two years, had a great time, and plan to go again this year. Here are my photos from last year:

www.jonrosie.com/astromy/gls2007

and from the year before

www.jonrosie.com/astromy/gls

Warren Astronomical Society

Minutes of Board Meeting

June 2, 2008

Cranbrook

The meeting was called to order at 6:40 PM.

Attendance: Bob Berta, Gary Ross, Marty Kunz, Stephen Uitti, Jonathan Kade, Larry Phipps.

Guests: Riyad Matti

Officers' reports:

Bob thanked the officers for filling in for him the previous month and Lee Hartwell and Dave Bailey for helping with the Macomb Country Library for the Blind and Handicapped presentations.

Gary reported that preparations are complete for the winter's special event. He asked that we donate an honorarium of one hundred dollars to the Grosse Pointe High Schools RATS in gratitude for their presentation to us. Marty motioned to accept the proposal, Stephen seconded it, and the board voted unanimously in favor.

Marty reminded the board that the club picnic was the following Saturday. He noted that we had to buy food to serve – hamburgers, hot dogs, chips, and soda – and should ask the membership to bring dishes to pass. Marty reported that a neighbor of his, a tax lawyer, would look into the club's current 501(3)(c) status and help us establish it if it is not already done. Marty is looking for donations of equipment for the club. Stephen reported that the bank account control updates were complete. He reported the treasury at \$5711.89.

Old business:

Paul Goldsmith talk – things are still proceeding well.

Eyepiece purchase request – The board discussed the request to buy a set of eyepieces requested by Bill Beers for club member use (rather than public demonstration use) with the Big Dob. The board agreed that purchasing the whole set at once would overly strain the budget, but that purchasing one or two should be possible. They discussed various focal lengths before bringing to vote the 13mm Televue Ethos eyepiece used at the 2007 spring star party. Marty motioned that we purchase it and Larry seconded it. The board voted three in favor and three opposed. It was agreed that after further research the matter would be discussed at the next meeting. To encourage member use of the Big Dob, the board informally resolved that the Dob should always be reassembled when being returned to the shed after members borrow it.

New business:

Jonathan proposed that Brian Klaus be given a lifetime membership in recognition of his years of service to the club. Gary motioned in favor. The board voted to accept the proposal, with five in favor and one abstaining.

Riyad Matti requested that the club purchase NASA's JOVE amateur radio telescope (or the kit) for member use and public demonstrations. He suggested that Dale Partin might be willing to head up a radio astronomy subgroup to build, learn, and teach club members how to use the device. Jonathan proposed that we purchase the kit and offer Dale the right of refusal to head the subgroup. Gary motioned to accept the proposal. The board voted to accept the proposal, with five in favor and one abstaining.

The board meeting was adjourned at 7:32 PM.

Warren Astronomical Society

Minutes of General Meeting

June 2, 2008

Cranbrook

The meeting was called to order at 7:40 PM.

Visitors: Steve Legett, who is interested in becoming an amateur astronomer and doesn't have a telescope yet. A number of members offered to sell.

Officers' reports:

Bob Berta announced that he, Lee Hartwell, and Dave Bailey presented to a group of developmentally challenged adults at the Macomb Library for the Blind the previous Thursday. It was a very successful

presentation. They would be presenting there on the coming Thursday as well.

Gary Ross announced that the presentation schedule had one spot left – already provisionally full – and asked that presenters supply the titles for their upcoming presentations, if they have not done so already.

Marty Kunz reminded members that the club picnic would be the following Saturday (food at 3PM) and asked that members bring dishes to pass to supplement the usual barbeque fare.

Marty thanked Astronomy Day volunteers. He reported that he was alone at the last open house; he showed some scouts Saturn before clouds came in. He then accomplished some preparatory work towards replacing the observatory roof. He announced the next open house for June 14 and reminded members that the Solar Day event at Wolcott Mill was the same day. He announced that Mike O'Dowd had donated a 17" telescope to the club.

Stephen Uitti reported approximately \$5711.89 in the treasury.

Jonathan Kade announced that the club was looking into producing a new run of WAS jackets, and passed around a sign-up sheet. He gave a recap of the board meeting and the previous meeting.

Larry Phipps announced that the new issue of the WASP contained a survey about what members want to see as the newsletter moves ahead in the new format. Please fill in the survey and give Larry any other feedback you can. Contributors are still needed, but people have been stepping up - Mike Narlock of Cranbrook, in particular, contributed an article called "Behold, the Power of the Sun." It was suggested that Larry produce a low-resolution version of the WASP to email out and a high-resolution one to post on the website.

Interest groups:

Discussion – Gary Gathen reported that the discussion group covered the end of the universe, the polar orientation vs. climate question posed by Norm Dillard, and sleight-of-hand tricks and puzzles (including Moebius strips).

Radio – Riyad Matti announced that the board voted to purchase the JOVE radio telescope kit, establish a ra-

dio astronomy subgroup, and has offered Dale Partin the leadership of the new group. Dale accepted it.

General meeting:

In The News:

Claims that dark energy was imaged, the discovery of a new exoplanet three times the mass of the earth, plans for inflatable spherical Mars probes (balloon robots!), a supernova imaged by SWIFT in the act of exploding that showed the theorized x-ray flash, and the photo taken by the Mars Global Surveyor of the Phoenix probe descending on its parachute made for a really exciting news review.

Intermission: 8:30-8:40p

Presentation:

Mike Foerster, the JPL's finest, presented an overview of humankind's accomplishments in space exploration: "To Infinity and Beyond: The Future of Exploring Space Fifty Years After Sputnik." He gave a detailed personal look at the programs and people who expanded our borders past the atmosphere – engineers and bureaucrats, politicians and scientists, and of course the astronauts and cosmonauts who put their lives on the line. The often funny but intermittently tragic history gave members a unique view of the past and future of the international space programs.

35 people attended the meeting.

The meeting adjourned at 10:02 PM.

Warren Astronomical Society

Minutes of General Meeting

June 19, 2008

Macomb

The meeting was called to order at 7:37 PM.

Visitors: Milt Antonick, a former member who visits occasionally.

Officers' reports:

LARRY KALINOWSKI RETURNS. To much-deserved applause!

Bob Berta reported on the club picnic: a fair number of members and their families visited, though turnout could have been a little better. He noted that at the month's first meeting the board had voted to purchase the JOVE radio telescope kit, and that it would be assembled by members of the new radio astronomy subgroup headed by Dale Partin. Diane Hall has not

yet received a response from the AWESOME radio telescope group about the larger device the board hoped to install at Cranbrook.

Gary Ross announced that the presentation schedule for the year is FULL. He asked that presenters whose talks are soon and whose titles are TBD start D-ing already.

Substituting for Marty Kunz, Bob reviewed recent public outreach events. He reported on the June open house, which saw over one hundred attendees – three Cub Scout troops and an Oakland Community College astronomy class, among others (including Larry K.). Jon Blum gave an impromptu talk on choosing a telescope, and the Big Dob was used to show Saturn and M81 and M82 to the crowds of people - a huge outreach success all around. Earlier that day, Bob had brought his solar scope to the Solar Day event, which drew a great deal of interest as well. The next open house is July 12.

Jonathan Kade gave a recap of the month's Cranbrook meeting.

Stephen Uitti reported the club's treasury balance at approximately \$5711.89. He announced that the club has a new loaner telescope: a 10" Orion Dobsonian on "extended loan" from Ken Bertin.

John Kriegel reported that he had spoken to a high school principal interested in bringing WAS speakers in (and perhaps offering observing access) as a reward to the high school math tutors at his school in the next school year.

Old business:

Paul Goldsmith talk: Bob Berta reported that Paul Goldsmith is tentatively scheduled to speak at Cranbrook October 17, the day after the normally scheduled Macomb meeting. This will not replace that meeting.

Macomb Library presentations: Bob announced that he, Lee Hartwell, and Dave Bailey presented a second time at the Macomb County Library for the Blind and Handicapped.

New business:

Big Dob eyepieces: Jonathan reported on the board's discussion of the member request to buy eyepieces deserving of the Big Dob and noted that after research and discussion a new vote would be taken at the July meeting.

Interest groups:

Library – Stephen Uitti announced that the third volume of Stephen J. O'Meara's Deep Sky Companions series, Hidden Treasures, was donated to the WAS library. He asked that members take his books – please – and that they keep them for as long as they possibly can.

Solar – Gary R. reported that a single sunspot, three days previous, was the only point of interest on the sun. He suggested that legal recourse be pursued.

Discussion – Gary Gathen reminded members that the next discussion group meeting was the following Thursday and asked that they send in suggestions of topics – tricks and puzzles was one popular topic from the previous meeting.

Special Events – Dave D'Onofrio gave an overview of prominent upcoming star parties: the Two-Hearted Star Party July 10-14 (five nights in Paradise...), the Great Lakes Star Gaze in Gladwin September 25-28, and of course the Kensington Astronomy at the Beach event September 5-6. He noted that the new (though temporary) location of the event is at Maple Beach, due to the scheduled demolition and reconstruction of the Martindale beach pavilion.

General meeting:

Observing Awards – Larry K. asked that members who have completed observing goals present him with their logs for their official WAS observing award badges. He also asked that members who have multiple levels of badges return their lower-level awards. The observing award requirements are published on the WAS Yahoo group and soon on the website, and can be obtained in print by request from board members.

Observation Reports – Bill Beers, Jim Shedlowski, and Dave D. reported on their Texas Star Party experience. For the first time in their experience, they had six wonderful clear nights. The naked-eye awesomeness of the Milky Way was singled out as the most memorable quality of the sky. There were interesting presentations from Bob Berman of Astronomy magazine and from Doug Welch of Canada's McMaster University on light echoes. Bob Lennox, a former WAS member, saw the WAS bumper sticker on Jim's truck and got into contact with our delegation.

In the News – The demotion of TWO of the Milky Way's arms to "minor arms" led the news, along with reports from Phoenix, radio signals dissipating the Van Allen belt, the christening of the categoroid "Plutoid"

(on this more hereafter), the imaging of a light echo from the "Tycho's Star" supernova (for which one Doug Welch was partly responsible), and NASA's probable delay of the retirement of the Space Shuttle. Also mentioned was astronaut, Michigan native, and last year's Kensington keynote speaker Andrew Feustel's assignment to the Hubble servicing mission later this summer.

Break: 8:45-9:00

Presentation:

Dave Bailey, credited with making the modern WAS by our program chair, opened his talk with a brief explanation of how light echoes work. With that out of the way, he took on selected topics from his prepared notes on the topic, "What is a planet?" These included the cultural clashes between working astronomers and the IAU's classification corps, orbits of solar system objects, and "objective" definitions of "star" and "planet", with good humor and passion. The presentation was extremely up-to-date, even including the classification of the brand-new term "Plutoid" into the class of "categoroid" – something that looks like a category but isn't.

Twenty-six people attended the meeting.

The meeting adjourned at 10:00 PM.

A CALL FOR ARTICLES!

There's lots you can contribute: observing reports, recommendations, accounts of astronomy travel, astrophotos (not necessarily new!), sketches (ditto!), photos from club events, astronomical tidbits, puzzles, quizzes, you name it. If you're looking to get rid of equipment, you'll probably go to astromart.com, but send a note to Larry anyway and maybe you'll get rid of your stuff and help a fellow member.

We've had a lot of fairly well-attended events lately: the Seventh Annual Spring Star Party at Bill Beers (unfortunately, the weather wasn't very photo-friendly), the Astronomy Day event (I have pics from Cranbrook), the Grosse Pointe North visit (which multiple people have submitted pictures for -thanks!). If it's recapped in the minutes, write it anyway and we can cut it down to a sentence or less in the minutes. If you're attending a club event, consider bringing a camera. We're not Sky&Tel and our standards aren't

(pardon) astronomical - what's important is conveying and recording the club's personality.

Submissions are due by the 28 of the month to allow completion of the editing process and make it available for the members on the first of the month. Please contribute to the WASP, and help strengthen the Society. (Visa, Master card, and American Express NOT accepted.)

-Jonathan Kade

IMPORTANT NOTICE:

PLEASE NOTE: *Sky and Telescope* has changed their policy. They no longer want the WAS treasurer to renew subscriptions. Just send in your renewal at the club rate (\$32.95), being sure to indicate that you are a member of WAS. Once a year they send the treasurer a list of people who have subscribed to *Sky & Telescope* for verification. This takes effect Immediately.

THE SWAP SHOP

This column is for those who are interested in buying, trading or selling items. At the present time, you may submit ads of items for sale to Larry Phipps, 313.532.4451 (52poppa@excite.com). The ad will run for six months. The month and year the ad will be removed is also shown.

FOR SALE: Coulter mirror tube including diagonal mirror & mount. The tube has some scuffs but should paint up nicely. It measures 75" long x 19.75" ID. \$10.

Picture avail. by E-mail (astro88848@yahoo.com) 248/528-9235 (Glenn).

WASP Survey

WAS members are invited to participate in a survey re: topics YOU would like to see covered in the WASP. Of the following topics, please indicate **ALL** topics of interest. Your editor will make every attempt to include as many as will fit. Send your choices to the editor, Larry Phipps at: 52poppa@excite.com.

- President's Field Of View
- AstroChatter / In The News
- Solar Updates
- Online or new software tools / applications
- Board Meeting Minutes
- "Swap Shop"
- Astronomical Events

- Presentations and Meeting Schedule
- NASA's Space Place
- Deep Sky observing
- WAS Sub Groups
- Moon Calendar
- Upcoming events: Star Parties, Picnics, etc.
- Astronomy Quiz, puzzles, etc.
- Other (Please list)



Space Buoys

By Dr. Tony Phillips

Congratulations! You're an oceanographer and you've just received a big grant to investigate the Pacific Ocean. Your task: Map the mighty Pacific's wind and waves, monitor its deep currents, and keep track of continent-sized temperature oscillations that shape weather around the world. Funds are available and you may start immediately.

Oh, there's just one problem: You've got to do this work using no more than one ocean buoy.

"That would be impossible," says Dr. Guan Le of the Goddard Space Flight Center. "The Pacific's too big to understand by studying just one location."

Yet, for Le and her space scientist colleagues, this was exactly what they have been expected to accomplish in their own studies of Earth's magnetosphere. The magnetosphere is an "ocean" of magnetism and plasma surrounding our planet. Its shores are defined by the outer bounds of Earth's magnetic field and it contains a bewildering mix of matter-energy waves, electrical currents and plasma oscillations spread across a volume billions of times greater than the Pacific Ocean itself.

"For many years we've struggled to understand the magnetosphere using mostly single spacecraft," says Le. "To really make progress, we need many spacecraft spread through the magnetosphere, working together to understand the whole."

Enter Space Technology 5.

In March 2006 NASA launched a trio of experimental satellites to see what three "buoys" could accomplish. Because they weighed only 55 lbs. apiece and meas-

ured not much larger than a birthday cake, the three ST5 "micro-satellites" fit onboard a single Pegasus rocket. Above Earth's atmosphere, the three were flung like Frisbees from the rocket's body into the magnetosphere by a revolutionary micro-satellite launcher.

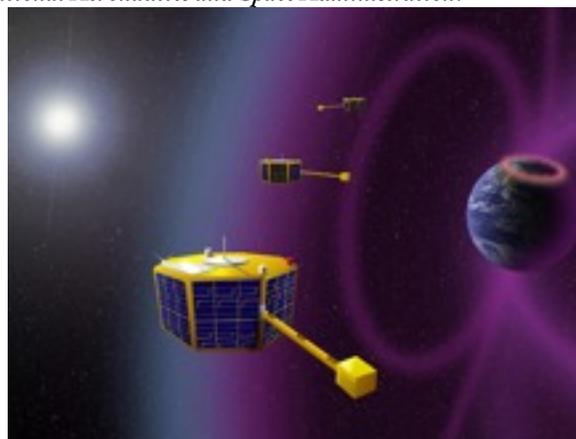
Space Technology 5 is a mission of NASA's New Millennium Program, which tests innovative technologies for use on future space missions. The 90-day flight of ST5 validated several devices crucial to space buoys: miniature magnetometers, high-efficiency solar arrays, and some strange-looking but effective micro-antennas designed from principles of Darwinian evolution. Also, ST5 showed that three satellites could maneuver together as a "constellation," spreading out to measure complex fields and currents.

"ST5 was able to measure the motion and thickness of current sheets in the magnetosphere," says Le, the mission's project scientist at Goddard. "This could not have been done with a single spacecraft, no matter how capable."

The ST5 mission is finished but the technology it tested will key future studies of the magnetosphere. Thanks to ST5, hopes Le, lonely buoys will soon be a thing of the past.

Learn more about ST5's miniaturized technologies at nmp.nasa.gov/st5. Kids (and grownups) can get a better understanding of the artificial evolutionary process used to design ST5's antennas at spaceplace.nasa.gov/en/kids/st5/emoticon.

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



The Space Technology 5 micro-satellites proved the feasibility of using a constellation of small spacecraft with miniature magnetometers to study Earth's magnetosphere.