



A small but enthusiastic group of OCA members meet for the annual RTMC group photograph. Why not join us next year at this exciting regional gathering? (photo courtesy Craig Bobchin)

OCA CLUB MEETING

The free and open club meeting will be held Friday, July 8th at 7:30 PM in the Irvine Lecture Hall of the Hashinger Science Center at Chapman University in Orange. The featured speaker this month is Scott Roberts of Meade Instruments who will discuss the Meade RCX-400 telescopes, other new products, and the Meade 4M community. Be sure to check out the exciting door prize!

STAR PARTIES

The Black Star Canyon site will be open on July 2nd and July 20th. The Anza site will be open July 9th. Members are encouraged to check the website calendar, for the latest updates on star parties and other events.

Please check the website calendar for the outreach events this month! Volunteers are always welcome!

You are also reminded to check the web site frequently for updates to the calendar of events and other club news.

COMING UP

The next session of the Beginners Class will be held on Friday, July 1st (and next month on August 5th) at the Centennial Heritage Museum at 3101 West Harvard Street in Santa Ana.

GOTO SIG: TBA (contact coordinator for details)

Astro-Imagers SIG: July 19th, Aug. 16th

EOA SIG: July 25th, Aug. 22nd

Astrophysics SIG: July 15th, Aug. 19th

Dark Sky Group (new!): TBA (contact coordinator for details)

July President's message

Welcome to the July edition of the Sirius Astronomer.

Patriotic Month:

July 3rd-4th will bring us an exciting look at Comet Temple as Deep Impact will rudely hit the comet and possibly stir up some dust! Scientist are predicting up to a 5th mag. burst of light could come from the 10th mag. Comet at 10:52 pm Anza time. Located only 27 degrees up during impact, we all should have a chance to witness this cosmic collision. So bring your photos of the event for all to see at the July General meeting.

General Meetings:

Many of you have emailed or called me regarding our general meetings. Most have expressed good thoughts about our main speakers. Yes, this year we have had some really great talks and I am even more excited about our future guest speakers. Our club continues to grow with outside activities which prolong announcements. Why bring this up? Just to say that I appreciate all inputs and thank all of you in understanding the length of our meetings. To help shorten the length of our meeting, we will continue to post "pre-announcements" from 7:15pm to 7:30pm in hopes of keeping our "announced" announcements to a minimum. I really try and keep a tight ship so that our time is not too extended.

Anza Notes:

Idle threats work! What can be said except **THANKS TO ALL** who took the warnings and did your part! May and June brought some of the most activity we have seen in Anza for quite some time. Many Pad & Observatory folks came out and weed whacked their way to a clear horizon. Anza is in far better shape today than we were just a year ago (when the big fire came thru). Biggest contributors (that I saw) were the lower pad folks. Larry McDavid brought equipment and his son which cleared much of the lower pads. Even longtime pad licensees like Bob Fritz joined in the fun. Dick & Sylvia Sligar made great progress in clearing much passed their own area. This is what Anza needed and continues to need in the coming months. Common areas, roads and the Anza house need clearing. If you use any of these, please help us this July Star party (come in the AM!).

Special thanks to Tony Obra and Gary Schones for picking up and hauling off truck loads of trash and weeds. Tony's truck may be available again in July so come help out.

Bees

Witnessed & reported in June was a huge swarm of bees. According to Don and Dan, they saw and heard a swarm of bees attack the Kuhn observatory. They reported a 10-20ft size ball of bees descend near the community bathroom. We brought in a bee expert who installed a "one way" door into their hive. All it did was displaced the bees to the outside of the building where the bees promptly built another hive. According the exterminator, it was the biggest hive he had ever seen! At a cost of \$350 and 3+ hours of eradication, we are bee-free for the moment!

Snakes

What more can be said except – watch your step. It's that time of year again.

Star-B-Que

We are set for the August star party. Please come and join us for this years annual Star-B-Que. OCA brings the plates, utensils, napkins, drinks and Barbeque. BYOM (bring your own meat) and meet the neighbors. Make a dish and show off your cooking skills. We are sending out flyers to our neighbors and the local fire dept.

Trailers at Anza

The month of June runs out any and all agreements to folks with tent trailers. This means that if you have a tent trailer stored at Anza, it will need to be removed or we will do it for you.

Thanks for reading and see you at Anza and the July meeting!

Dave Radosevich
OCA President

AROUND OCA

Barbara Toy

Correction as to AI 2006: It turns out that the City of Brea has a conflict on the weekend I thought we had the Curtis Theatre, which I didn't find out about before the June SA went to press. The dates to mark for the AstroImage 2006 conference are now the following weekend, Friday, August 11 and Saturday, August 12, 2006 – and keep an eye out for further developments!

Update on Antonio Miro: Antonio is doing much better after his surgery, and, as this is written, has been released to continue his recuperation at home. Although he was doing well, he wasn't well enough to come to the June general meeting, so Joe Ewach, a long-time friend, was present on his behalf to accept the plaque that was presented to him by the Board, honoring him for his contributions to the club, and especially for his effectiveness in introducing people to the basics of astronomy and to the pleasures of our hobby. So, congratulations and best wishes, Antonio! We hope to see you back in action among us really soon!

Centennial Heritage Museum

OCA has had a long-standing relationship with the Centennial Heritage Museum (which was the Discovery Museum until about three years ago). We originally had a small building on the museum grounds that we used for various club-related activities and meetings (I'm told the Board and the EOA used to meet there, and that's where the Beginners' Class was originally held). When that building deteriorated too much to be used, we were allowed to use the museum's classroom, and that's where we now have our monthly Beginners' Class and Astrophysics SIG meetings.

For those who may not be familiar with it, the museum actually consists of several buildings, most notably two historic Victorian houses, the Kellog House (built in 1898, moved to the museum grounds in 1981, and currently the museum's centerpiece) and the Maag House complex (which includes the house, built in 1899, the carriage house and the water tower, which were also moved to the museum site around 1981. Maag House is still being restored, but the other two buildings are in active use). The area around the houses contains formal gardens and an orchard, with a blacksmith's shop behind them, and that part of the museum shows what life in Orange County was like a century or more ago.

The back part of the museum has a different focus. That part of the grounds includes a nature walk and restored swamp area, with observation areas so people can see what these environments were like and can observe local wildlife. The classroom is used for teaching about local wildlife, ecology, and other scientific topics – and our meetings there fit in well with that general concept. They get a lot of students coming through both sides of the museum on field trips during the school year, and they have programs for children during the summer, so a lot of young people in particular are exposed to the information the museum provides.

I've been actively involved with both the Beginners' Class and the Astrophysics SIG for quite a while now, so I've become the museum's designated contact person within the club. As one result, I've been talking with museum personnel about expanding the astronomy side of what they do. They are very interested in having a scale model of the solar system on their site, similar to the one that Don Lynn has been setting up at Anza, and have expressed a lot of interest in working with us to develop astronomy-related exhibits, events or programs. This could be a great opportunity to develop an active astronomy program for children, which the club currently lacks, and it could also give us a way of teaching people, particularly young people, about the value of dark skies, as well more typical astronomical topics. If you are interested in working in any of these areas or on any other type of program with the museum, please contact me – btoy@cox.net or 714/606-1825.

The museum has been going through some major changes recently, including the loss of part of their property to the high school that's now under construction behind it, which forced them to move the museum classroom to a new location and to redevelop part of the nature walk, and the loss of a major funding source. They really need an influx of new members – in view of the support they've given to our club over the years and the prospect of an even stronger relationship with the museum in the future, I hope that many of you will consider joining the museum. The cost is only \$25 per year for an individual membership, \$40 for a family membership, and \$100 for a Pioneer membership. For more information about the museum, its programs and facilities, and the benefits that come with different levels of membership, please see the museum's website, <http://www.centennialmuseum.org/>. And, if you happen in that vicinity while the museum is open, do give it a visit!

Memories of RTMC 2005...

As I write this, RTMC is still a recent memory. As usual, there was a lot more going on than any one person could do – and there was decent viewing both Friday and Saturday nights (that's not always the case, unfortunately). Sunday night was so windy that not many people were viewing – though the antique Clark refractor (built in 1875 for the Venus transit of that era, as its owner kindly advised me) was still operating and demonstrating the fine quality of its optics on the available planets (Saturn was pretty low but still looked good) and a few other bright objects. It's a beautiful instrument to look at as well as through, and really made me appreciate why Clark refractors are held in high regard.

Sunday night is always quieter than the other nights, and everything up to early afternoon on Sunday tends to be a lot more hectic. Although I'd originally planned otherwise, most of my time was spent at the OCA booth, which had certain advantages (including good camping and parking spots near the booth). Scott Kardel's Palomar booth was next to ours, so we were able to visit with him quite a bit. The Kool Space Science Productions booth was on the other side of Scott; KSSP is an alter ego of long-time RTMC

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volunteer Charles Morris, who I was at least theoretically assisting in the Annex. A lot of the activities of the RTMC Doorprize Collection Committee were centered at the KSSP booth, and Jean Mueller, a member of that committee and the operator of the 200-inch at Palomar, among many claims to fame, helped run that booth. There was a lot of interaction and cooperation among the three booths (and with the one on our other side), and one of the real plusses for me in this arrangement was the chance to get to know Jean a bit, as she's someone I've heard a lot about and always thought she'd be interesting to know. In fact, she volunteered to cover our booth a while on Sunday to give me a chance to go look at the pictures in the imaging contest and to vote – for which I'm very grateful.

Most of the club members who came to RTMC came by the booth at least once, so those of us running the booth probably saw more of them than we would have if we'd just been roaming around among the vendors, etc., and going to the talks. And we also saw a lot of non-club members, as we were strategically located on the side people seemed to gravitate to naturally as they went from the meeting and eating facilities to the Telescope Field, where most of the big vendors and big telescopes were located. So we sold some books and magazines, and talked to a lot of different people about a lot of different things – a nice way to spend the weekend!

There were many people who helped make the OCA booth a success this year. These are the ones I remember (and please let me apologize up front if I've forgotten anyone or if I get some of the attributions wrong – you can blame it on an aging memory and lack of sleep, or, as we say in my profession, to inadvertence and excusable neglect, certainly not to lack of appreciation!): Bob Buchheim brought the canopy and tables to RTMC, got them set up, and provided the money pouch and seed money that made running the booth a lot easier than it would have been otherwise. Vince Laman and Larry Arnold ran the booth on Friday, and organized the books and magazines that had arrived by then. Vince had to leave by the time I got there Friday, but Larry helped out with the booth until we closed down at dusk Friday night.

Saturday morning, Marilyn Saeed helped me run the booth, and organized the newly arrived magazines by date, to make it easier for customers to find what they were looking for. Alan Smallbone ran the booth most of Saturday afternoon, freeing me up so I could emcee some of the talks in the Annex (which allowed me to justify my status as an RTMC volunteer). John Sanford and James Thorp helped out off and on, as needed, and Craig, Stephen and Michael Bobchin helped out for a while Sunday morning. Garth Buckles brought back the canopy and tables, and Paul Brewer brought back the boxes of unsold books and magazines. A number of people transported boxes of books and magazines to RTMC – the volunteers I know of were Jeff Gortatowski, Craig Bobchin, Sam and Marilyn Saeed, Vince Laman and Larry Arnold. Karen Schnabel did a lot of the advance organizing, including getting the boxes of books, etc., to the various people who agreed to take them out to RTMC. This was truly a joint effort by a lot of different people, and I really appreciate what everyone contributed.

A Couple of Member Updates...

I had the pleasure of talking at some length with both Wayne Johnson and John Sanford at RTMC this year. For those who may not know them, both Wayne and John were very active in the club for many years, and both are past presidents, among many other claims to fame (John, at least, was president more than once. I don't know if the same is true for Wayne – but I'm sure someone out there can enlighten me!). Wayne now lives in Tucson, Arizona, and John lives in Springville, in the Sierras. For those who haven't had a chance to catch up with them recently, here's a brief synopsis of what they told me about their current situations:

Wayne Johnson is working hard, and seems to be enjoying what he's doing for the most part, though it's cutting into the time he'd like spend working on or in the observatory he's been building behind his home. Partly because of this, he hasn't been able to put the roll-off roof on the observatory yet, but he's hoping to get that done in the not-too-distant future. A complicating factor, however, is that he and Arlene now have a cabin in a much darker area – it seems to me that he may be thinking of having a second observatory out by the cabin...

John Sanford is doing well in his astronomical pursuits, and his community of fellow astronomers around Springville is growing. On a sadder note, however, he has been having some health problems, and I am very sorry to report that Wolfy, the dog who has been his companion for many years, died unexpectedly the Wednesday before RTMC, while John was at the SAS Symposium in Big Bear. John was understandably upset and depressed over this during RTMC, but, fortunately, James Thorp had already planned to go back to Springville with him, so he wasn't entirely alone when he got home. I'm sure John has the sympathy of all of his friends for his sad loss, and our best wishes for his health – and if you'd like to let him know directly, I'm sure he'd appreciate it. If you need his email or snailmail address, please let me know.

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For Sale: 8" Coultter (red tube) Dobsonian. The scope is in excellent condition and has only been used a handful of times. \$260.00. Contact Richard Passmore at (714) 558-7714 or RadMD80@aol.com

For Sale: Canon EOS Rebel G, Excellent condition only a few years old. Camera body only. - \$100 o.b.o., Please call Bill Johnson at 714-553-5793 or e-mail at home@byjohnson.com

For Sale: Coronado MaxScope 40, perfect condition, \$1300. Gerald Strong 714-538-2517

20" Obsession F5 w/ Galaxy Primary 96% enhanced coatings, 3.1 Enhanced Secondary JMI, NGC, DSC, installed. Incl. 2" Laser Collimator, Telrad, nylon light shroud. See our web site www.astrospringville.org, Click on Birds Nest. \$4,500.00. David Bird 34675 La Paloma Dr. Springville. 93265 (559) 539-7414.

ASTROSPACE UPDATE

July 2005

Gathered by Don Lynn from NASA and other sources

To find out more on these topics, or those of past months' columns, through the World Wide Web, send your Web browser to our OCA Web site (<http://www.ocastronomers.org>), select Space Update Online, and the topics are there to click on.

MOST (Canadian space telescope) has monitored a planet (called HD209458b) as it passed behind its star. Even though the planet is too small to resolve, the change in light as it disappears tells us how big the planet is and how reflective its atmosphere is. It was found to be 30-40% reflective, which is less than Jupiter. The planet is larger than Jupiter, but orbiting far closer to its star. Further observations will be made to try for information about its weather or atmospheric composition.

MOST has observed the star Tau Bootis, which is known to have a large planet (over 4 times the mass of Jupiter) orbiting it quite closely (about 8 times closer than Mercury is to the Sun), taking only 3.3 Earth days for each orbit. The star was found to rotate exactly in step with the planet orbiting about it. This is the only known case of this, and is surprising since the planet is under 1% of the mass of the star and should not be able exert enough force on the star to cause this. It is possible that only a surface layer is rotating with the planet, like the Earth's tides that rotate with the Moon. The MOST observations detected variations that are probably due to starspots and tidal distortions.

MOST monitored Wolf-Rayet star WR123 in Aquila, a massive type of star known for chaotic brightness variations, and found that it repeats every 10 hours, rather than being chaotic. It is not known yet if this repetition is caused by the star's rotation, vibration, or another object in orbit about it. All 3 theories have major problems (rotating too fast, vibrating contrary to theory, orbiting too close). Wolf-Rayet stars have finished consuming hydrogen and are fusing helium, and produce very strong stellar winds.

Voyager 1 (Jupiter & Saturn mission) has entered the heliosheath, the region beyond the termination shock at the edge of the solar system. The termination shock is where the solar wind, a thin stream of charged atoms blowing out from the Sun, is slowed by pressure from gas between the stars. The slowing causes an increase in magnetic field. Voyager was launched in 1977, and has enough power left to operate at least 15 more years.

double nucleus - Astronomers studying the galaxy M83 spectroscopically have determined that it has 2 mass concentrations near its center, rather than the expected one. These may be twin supermassive black holes, but possibly are only a double galaxy nucleus. M83 is known to have many starburst clusters, and it is possible that having a double nucleus may have triggered some of the excessive star formation. It is also possible that the double nucleus is the result of a past collision of a dwarf galaxy with M83.

planet formation - An analysis of dusty disks found around young stars showed that the region where rocky planets (like our Earth) form is much farther away from the star than previously thought. Dust was found to evaporate rather than collect into planets in the closer area where rocky planets were previously believed to form. Observations for this analysis were made with the Keck Interferometer in Hawaii, which combines the light of the 2 Keck Telescopes.

rocky exoplanet - Astronomers have announced the discovery of the smallest exoplanet yet detected (with the exception of those orbiting a pulsar), having about 7 times the Earth's mass. Its diameter is about double the Earth's, but the distance from its star is nearly 50 times closer than the Earth is to the Sun. This results in the planet being heated by its star to somewhere in the range of 400 to 750 degrees F., even though its star is a small dim red dwarf. Its year is only 2 Earth days long. The mass of the newly discovered planet should allow it to hold a substantial atmosphere, but not enough to become a gas giant like Jupiter. So this is probably the first rocky Earth-like planet known. The red dwarf, Gliese 876, was already known to have two gas giant planets orbiting, but recent improvements in the spectrometer on the Keck Telescope allowed more precise measurements of the star's motion, which uncovered the 3rd planet. Computer modeling was done on the 3 planets' orbital interactions, which allowed determination of the inclination of the new planet's orbit with respect to our line of sight, which in turn allows more precise calculation of the planet's mass. The star is the smallest mass star known to have planets.

exoplanet by lensing - A planet was found orbiting a star by its microlensing effect - that is, the relativistic bending by gravity of the light from a background star when the planet and its star passed in front. The team of astronomers around the world who monitored the microlensing event around the clock included 2 amateur astronomers in New Zealand, using 10 and 14 inch scopes. The planet is roughly 15,000 light-years away, one of the most distant known. The technique should theoretically work for much smaller planets than the usual method

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of discovering exoplanets, that of spectroscopically looking for wobble in the motion of a star caused by the gravity of a planet in orbit about it.

supernova – The supernova in the Large Magellanic Cloud seen in 1987, the only naked-eye supernova in the last 3 centuries, has been extremely well studied. But the neutron star or black hole that should have been left afterwards has never been found, not even by a recent search with the Hubble Space Telescope. The gas and shock waves thrown off by the star before, during and after the explosion are easily found. Theories to explain this are: the neutron star has not had enough time to build up its pulsar activity, or not enough matter is falling into it to create a bright accretion disk. Further observations will be made.

supernovae and gamma-ray bursts – The best theory to explain longer gamma-ray bursts (ones less than 2 seconds appear to have a different cause) is that they occur as part of a type Ic supernova, the collapse and explosion of a very massive star after its nuclear fuel has been consumed. One of the biggest objections to this theory is that gamma-ray bursts appear to have more energy than could possibly be generated by a supernova. Theorists think they have now explained this by claiming that the gamma rays are released only over the spin poles of the supernova, not in all directions, so that the total gamma-ray energy is much less than if the observed gamma rays were emitted in all directions. This requires that the supernova collapse occurs so as to flatten the star into a ring along its spin equator, which can be checked observationally by looking spectroscopically for matter spinning at the predicted speed after the explosion. This was done with the Subaru and Keck Telescopes on the type Ic supernova SN 2003jd, and the expected spin was found. It was indicated by red shift (from the part rotating away) and blue shift (from the part rotating towards us) that split the oxygen spectral lines into double lines. A gamma-ray burst was not seen from SN 2003jd, but this is to be expected, since the ring is oriented nearly along our line of sight, so the poles that emit gamma rays are pointing nearly 90 degrees away from us.

Cassini (Saturn mission) has obtained the most detailed information ever on Saturn's rings by passing the spacecraft radio signal through the rings on its way to Earth. Three different radio frequencies were used simultaneously, since different frequencies are affected differently by different size particles in the rings. Particle sizes from under 2 inches to several yards were found. The different rings were composed of predominantly different size particles, with the largest ones in the midst of the B ring. The widths of individual rings and the gaps between them varied, with the widest ring in the center of the B ring. More than 40 density wave regions were found in the A ring, and a few in the B ring, apparently caused by the moons orbiting nearby. This radio ring experiment will be repeated several times.

Cassini has spotted an area in infrared and radar images of Saturn's moon **Titan** that appears to be an ice volcano. It has a dome that is surrounded by flows of varying color, and presumably age. Methane dissolved in the water flows from within the moon could be the source of methane discharged into the atmosphere, needed to replace the methane known to be leaking into space from the atmosphere.

Mars rover Opportunity escaped from the sand dune where it had been stuck for almost 5 weeks. Much of the time was spent carefully testing every move on Earth before commanding the rover on Mars to move, and then imaging the wheels, sand and progress after each move. During the effort, it spun its wheels about 200 yards while moving forward only one yard. After escape, the rover took a lot of observations of the dune to determine how it is different from all the similar dunes that it drove over without trouble.

The other rover **Spirit** has been exploring the layered and tilted bedrock on Husband Hill, while imaging the area to find a safe route to the top of the hill. Ilmenite, a mineral found in volcanic rock, was found for the first time. Most of the rock on this hill is found to consist of layers of water-altered explosive debris, probably volcanic. Spirit recently celebrated its 500th (Martian) day on the planet. Not bad considering it was designed to last 90 days.

Martian polar cap – It has long been known that the south polar cap of Mars is about 90 miles off center from the rotational pole, but this was unexplained until now. Two large craters nearby create wind patterns that keep a low-pressure area on one side of the pole, and a high-pressure area on the other. This causes snow to preferentially fall on the low-pressure side, resulting in the polar cap being there. The high-pressure side tends to form black ice, that is, clear ice through which the underlying soil can be seen.

Mars Global Surveyor (MGS) – Not satisfied with having found the lost Mars Polar Lander (as reported in this column last month), the operators of MGS have imaged the 2 Viking landers and Pathfinder on the surface of Mars, and Odyssey and Express in orbit about Mars. There is some controversy over whether one of the Viking images is the correct tiny light dot, but the other sightings seem well documented.

Mars Express (European orbiter) has for the first time detected nighttime aurora on Mars. This was somewhat unexpected, since auroras on Earth and all the gas giant planets occur around the magnetic poles, and Mars has no magnetic poles. However, there are places on Mars where a weak magnetic field has frozen into the surface, left over from a time in the past when the planet had a strong magnetic field. The aurora was found over one of

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WAA Board Meeting Notes

Tim Hogle, OCA WAA Representative

WAA had a good presence at RTMC. As I said in my previous WAA announcement, the G. Bruce Blair medal was awarded to David Crawford, PhD, Executive Director of the International Dark Sky Association for his longstanding and very successful crusade against light pollution. In addition, WAA had a booth at RTMC to introduce the organization and solicit donations for the Blair fund. Many people stopped by to find out more about the umbrella organization.

At a Board meeting during RTMC, the club representatives voted to offer sponsorship to the upcoming Astronomical Association of Northern California (AANC) conference on August 26, 2005 and to loan them startup money to get the project going. This has been one of WAA's traditional roles, to assist member organizations financially in getting conferences off the ground when the organization does not have the resources to do so on their own. The sponsorship component of this is similar to that provided for the OCA's AstroImage seminar last year.

For more info about the AANC conference, go to their web site:
<http://www.aanc-astronomy.org>.

The production of the actual G. Bruce Blair medal has been a source of difficulty in the last few years, as it is a solid metal medallion, deeply etched with the medal insignia and the name of the recipient, then gold plated. I'm happy to report that a die master for the medal has been created in AutoCad, and a supplier has been found to make a quantity of blank medals for a reasonable cost. A trivia note is that the company that does the gold plating for the medal is the same one which has been doing this for 50 years. And WAA is one of their first customers, and the only one still with an account. They value this relationship enough that they are still charging us the same amount of money to plate a medal each year as they were 50 years ago!



I also mentioned before that WAA is looking to replace our rather dated logo. Two candidate logos were put forth at this Board meeting; both are nice but we feel that there certainly is room for additional ideas. If anyone out there (Helloooooo?) has artistic skills and is interested in helping out with this, contact me. We offer no money, but full recognition and credit will be given to immortalize the effort of the selected design.

The next WAA Board meeting has not been firmly established, but will likely be held at John Sanford's home in January or early February next year. Visitors are welcome; contact me (back of the SA) if interested.

For more info about WAA, log on to the Web site at <http://www.waa.av.org>.

International Dark Sky Association Fall Meeting

information provided by Charlie Oostdyk

IDA is holding its Fall Meeting this year on Sept. 16 - 18th in the Yellowstone National Park in Wyoming, USA. Meeting details and registration are online at :<http://www.darksky.org/meetings/yellowstone/agmfall05.html>.

The Fall meeting will be focusing on wildlife and ecology issues, park lighting, dark sky preserves, lighting zones, and other light at night topics. There will of course be active participation and involvement of the National Park Service and Yellowstone Staff. Come join us at this amazing locale. We hope to see all of you there!

We would also like to encourage you to book your rooms immediately as the room block ends on July 15th. After July 15th it will be very difficult to find a room or campsite anywhere inside the park. To make your reservations call (307) 344-5437.

We are also accepting submissions for oral presentations and various levels of sponsorship. Please check the Web site at www.darksky.org or call the IDA office at 520-293-3192 for more information.

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these weak magnetic areas. This makes the aurora on Mars different than on any other planet. There is weak daytime aurora on Mars caused by the solar wind striking the atmosphere.

Deep Impact (comet impact mission) is impacting Comet Tempel 1 late the night of July 3 (Pacific time zone). Many Earth-bound and space telescopes are watching to see if it kicks up a visible cloud of material from within the comet. It will certainly be visible from the non-impacting portion of Deep Impact, which observes with cameras and spectrometers from 300 miles away. The Planetary Society held a contest to guess the size of the crater made by the collision. A good guess is the size of a football field, but with the exact nature of the comet material unknown, the true size could be almost anything. The relative size of the impactor compared to the comet nucleus is about the same as the relative size of a mosquito to a 747 jet, but mosquitoes don't hit at 23,000 mph.

star shape – Gravitational lensing was used for the first time to determine the shape of a star that is flattened by its rapid spin. It was the background star of the lensing event, and is about 16,000 light-years away. The foreground star was a double star.

solar flare – The most intense burst of solar radiation in 50 years was emitted from a solar flare last January. The shower of particles arrived at Earth only about 15 minutes after the flare, instead of the usual two or more hours of delay. This may require revision of solar proton theory, since it does not allow arrival of protons at Earth that quickly after a flare. The spectrum of gamma rays measured by the RHESSI spacecraft did not match theory for solar flares either. It may also require revision of safety plans for astronauts beyond the Earth's protective magnetic field (which hasn't happened since Apollo 17, but may happen again in a few years).

Chandra (X-ray space telescope) has found 2 white dwarf stars orbiting each other so closely that they are expected to merge in the near (astronomically speaking) future. The orbital period appears to be about 5 minutes, but this will have to be confirmed. This is probably the smallest orbit of any known binary system. The pair is calculated to be losing energy at a prodigious rate by emitting gravity waves, and their period is changing consistently with this energy loss.

quasar jets – The Very Long Baseline Array radio telescope observed the jets of material spurting out of the quasar 3C273 and found their structure did not fit the theory of how such jets are shaped by twisted magnetic fields. Theory says that the radio waves emitted by the jets should be most strongly polarized at the center of the jets, but the observations showed the strongest polarization at the edges of the jets. Theorists are scrambling to repair their jet theories.

Galex (ultraviolet space telescope) – While pursuing Galex's main mission of observing galaxies in ultraviolet light, 84 ultraviolet flashes have been accidentally observed. Most have been found to be caused by flare stars, dwarf novae or pulsating stars located within our Milky Way galaxy. One such flash was observed in April involving a red dwarf star that abruptly brightened by a factor of at least 10,000. It was the brightest flare ever seen in ultraviolet light. Flare stars, such as this, occasionally produce flares much like the ones sometimes seen on our Sun, but far brighter. They have often been observed from the ground in visible light, but Galex offers the first chance to see substantial numbers of them in ultraviolet.

Spitzer (infrared space telescope) has observed a light echo in the supernova remnant Cassiopeia A that indicates a burst of light occurred about 50 years ago. Since the supernova explosion occurred about 325 years ago, it was not expected that any bursts of light should have been produced so recently. One explanation would be that the neutron star left from the supernova might be a magnetar, that is, a neutron star with an extremely strong magnetic field, since magnetars occasionally erupt bursts of gamma rays.

Ultracam – The Very Large Telescope in Chile has begun use of a high-speed movie camera, dubbed the Ultracam, which will take images as fast as 500 per second in 3 colors. It will be used for eclipses, transits, oscillations, flares, outbursts and occultations of asteroids, exoplanets, black holes, pulsars, white dwarfs, cataclysmic variables, brown dwarfs, ordinary stars, active galactic nuclei and gamma-ray bursts. It has already produced results with transiting exoplanets and outbursts from the accretion disk of a black hole.

Instant AstroSpace Updates:

Using a prototype for a new high-tech radio telescope, astrophysicists have found very bright (1000 times brighter than the Sun) and brief (well under a microsecond) **radio flashes**, which had gone largely unnoticed before. They were found to be caused by the impact of cosmic ray particles on our atmosphere, so the phenomenon may be used to study cosmic rays.

NASA has announced a **competition** to build a device to extract oxygen out of simulated lunar rock. \$250,000 will be awarded to the first to produce 11 pounds in 8 hours within certain mass and power limits.

Scientists have found that the width of the Sun's chromosphere can be used to predict the speed of **solar wind**, even though the solar wind blows from the corona, much higher in the Sun's atmosphere. Apparently the chromosphere and the solar wind are connected by magnetic effects.

Astronomers using the Submillimeter Array Telescope in Hawaii have measured for the first time the **mass** of dust in many of the Orion **proplyds** – spots within the nebula – and found that they are massive enough to form planetary systems like our solar system. Since most Sun-like stars form in conditions like the Orion Nebula, this suggests that the formation of planets is common.

Spitzer (infrared space telescope) has imaged the nebula around Eta Carinae, one of the most massive stars in the Milky Way, and it clearly shows how the radiation and winds from the star have shocked the surrounding cloud of gas and dust to cause new stars to form out of the cloud.

Geologists have scoured images from **Mars Odyssey** looking for **river channels**, and have found about 20 new ones. Analysis of them shows they could have been formed by rain of about an inch per day, but it appears that water in them ran only briefly in the history of the planet, and probably billions of years ago.

Astronomers using the Keck and Isaac Newton telescopes to map the motions of stars in the halo of the **Andromeda galaxy** have found that some of those stars (about 3000 of those measured) are orbiting as part of the disk, making the disk of the galaxy about 3 times the size previously known. This may require revision of galaxy formation theories, which don't predict such big disks.

Astronomers studying old data from the Galileo spacecraft showed that Jupiter's moon **Amalthea** has a density less than water ice, like several small moons of Saturn that were recently studied by the Cassini spacecraft. This means that the moon is a rubble pile of ice pieces, with large void spaces inside, which is not what would be expected if Amalthea formed at its current orbit at the same time as other Jupiter moons.

Chandra (X-ray space telescope) observed planetary nebula NGC 40 showing how high-velocity material thrown into the nebula by its central star late in the nebula formation process collides with earlier material and strongly heats it to produce X-rays. This will help theorists explain exactly how planetary nebula form.

NASA approved launch in summer 2007 for **Mars Phoenix**, a non-wheeled polar lander with a robotic arm that has a digger. In many ways it will replace the Mars Polar Lander that crashed in 1999 and the next lander after that, which was canceled to reorganize the Mars program.

NASA chose the next mission in the New Frontiers series of medium-priced spacecraft to be **Juno**, which after launch in 2010 will study Jupiter from a polar orbit about it. Goals are to study Jupiter's core; the water, methane and ammonia in the atmosphere; temperatures, convection and wind at various depths in the atmosphere; the magnetic field; and the magnetosphere over the poles.

Messenger (Mercury mission) is making its first of its 6 gravity assist flybys that will get it in position to go into orbit (using its rocket engine) about Mercury in 2011. This is the only flyby of Earth, and the spacecraft took images of the Earth and Moon, looking rather small and lonely in the blackness of space.

Mars Express is scheduled in late June to deploy its second radar boom, but with a prewarming phase, to avoid problems encountered with deploying the first. After the 3rd boom is deployed, it will begin its radar observations.

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