SIRIUS ASTRONOMER

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The Newsletter of the Orange County Astronomers

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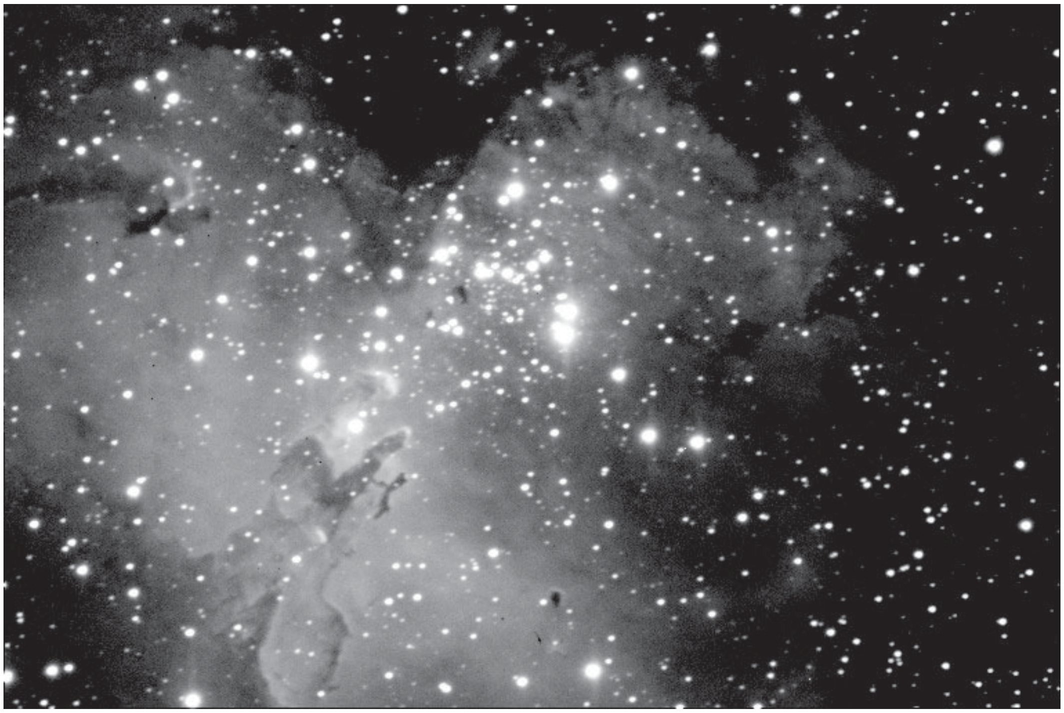
MESSIER MARATHON MARCH 17TH! OCA BANQUET APRIL 28TH!



Dave Radosevich captured this image of the Eagle Nebula (M16) in January 2005 using an 8-inch Maksutov. Note the famous 'Pillars of Creation' near the left-center of the picture. See this object and the other 109 Messier objects during our annual Messier Marathon on March 17th! As the marathon falls on Saint Patrick's Day this year, may the luck of the Irish be with you! (But don't be drinkin' too much o' the green beer when ye do it, or ye'll be seein' more than Messier objects, me boyo!)

OCA CLUB MEETING

The free and open club meeting will be held Friday, March 9th at 7:30 PM in the Irvine Lecture Hall of the Hashinger Science Center at Chapman University in Orange. The scheduled speaker is Dr. Gary Petersen, who will be discussing the cryogenically cold world of Triton, Neptune's largest moon.

Next General Meeting: April 13th

STAR PARTIES

The Anza site will be open this month on March 17th. The Black Star Canyon site will be open this month on March 10th. 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, March 2nd (and next month on April 6th) at the Centennial Heritage Museum at 3101 West Harvard Street in Santa Ana.
GOTO SIG: TBA (contact coordinator for details)
Astrophysics SIG: Mar. 16th, Apr. 20th
Astro-Imagers SIG: Mar. 20th, Apr. 17th
EOA SIG: Mar. 28th, Apr. 25th
Dark Sky SIG: TBA (contact coordinator for details)

President's Message
By Barbara Toy

For those who may be missing the hyperactivity of the November-December holiday season – fear not! We've got busy times ahead as we move into spring: the Messier Marathon's in March, specifically the March Anza star party. Astronomy week is coming up on April 15-21, ending with Astronomy Day on April 21, and National Dark Sky week is April 17-24. The club banquet is on Saturday, April 28, and RTMC is coming up on Memorial Day weekend, at the end of May. Along with all this, we have our regular meetings, outreaches, star parties and other activities – there's a lot to do, even if you don't happen to have a graduation, wedding or other life-changing event going on in your family!

However, on the subject of life-changing events…

Jim Benet Retires!

Jim Benet has been a long-time member of the club, and was a member of the club's Board as Trustee for several years. When he left that position, he volunteered to be the Coordinator for the Outreach Program, which he's done very capably since at least 1999 (I happen to know because he was the coordinator when I joined the club). The program has grown steadily since then, thanks to the efforts of Jim and his outreach crew, and it's still one of the easiest ways for new members to really get involved in the club. Beyond that, of course, it's a great resource for us, the schools and our general community.

At the beginning of February, Jim began a new phase of his life, when he formally retired from his position as an engineer for Boeing. As anyone who has spent much time around him knows, Jim is very energetic, and most unlikely to sit around wondering what to do with his time. It was therefore no surprise to find that he already had a lengthy list of plans for what to do in his retirement well before the big day actually arrived – these include such diverse items as learning Adobe Photoshop, learning more about classical music, creating a website for a friend, and, of course, doing more astronomy!

We in the club are getting a direct benefit from this change in Jim's life, as he has kindly agreed to take on the job of organizing the club banquet, in addition to all of his other astronomy and outreach activities. So, regarding the banquet…

The 2007 OCA Banquet

Calendar April 28 at 7:00 p.m. at the Orange County Mining Company for the 2007 Orange County Astronomers banquet – we have only around 70 spots available, so be sure to get your tickets early!

Why should you come to the banquet? Well, of course there are the standard reasons – they're a lot of fun, they give you a chance to socialize with fellow club members and their families in very convivial surroundings, they give you the chance to bring your own loved ones to a club event they may find more appealing than many of our activities, the food at the Mining Co. is excellent, the view from there is great, there are door prizes, it's a way to show support for your club, and so on. This year, we have the additional excellent incentive that this is the club's 40th anniversary and this banquet will in part commemorate the club's history and the people who helped make it the great organization it is today. And, of course, the evening includes a really good speaker – Dr. Laura Woodney, whose research specialty is comets, talking about current comet science and what they learned from Deep Impact (that's the very successful project where they sent a probe into the core of a comet to learn about what it was made of and how it was held together).

Tickets are only $45.00 dollars each, and you can get them from Charlie Oostdyk. Don't delay – you don't want to miss out on this year's banquet!

OCA's 40th Anniversary

As I mentioned earlier, 2007 marks the 40th anniversary year of Orange County Astronomers as an organization. The club started in 1967 and was formally incorporated as an educational nonprofit corporation under its original name, the Orange County Amateur Astronomers Association (OCAAA) in 1972. The name was changed to Orange County Astronomers (OCA) in 1974. I've been told that the legal side of the incorporation was overseen by Byron Groves, and we all have good reason to thank him for getting the club off on a good footing.

Even though they were among the original members of the club forty years ago, we still have three charter members on our membership list: Tim Hogle, Arthur LeBrun and Chuck LeBrun. We have a lot of other long-time members – Chris Butler joined in 1983, Wayne Johnson in 1984, and Dave Kodama in 1993, to give a few better-known examples; the membership list doesn't give the dates when people joined before 1981, so I don't have the years when club luminaries such as John Sanford, Charlie Oostdyk and Don Lynn actually joined, but it looks like they and many others who are still active members joined in the 1970s. It's great to know that we still have a lot of members who have been with the club for over two decades!

A glance at our calendar confirms that we have a lot of different activities going on in the club these days. That was true in times past, as well, but I understand that there were some significant differences. For instance, several people have suggested in the last few years that we have a telescope-making group in the club – no one has volunteered to organize such a group, but I'm told that we once had an active telescope-making group that even had a mirror-grinding/optics lab thanks to some donated space that is no longer available. For many years, the club also held a lot of activities in space we were allowed to use at the Boys Club, and held meetings and other activities in a shed at what was then the Discovery Museum (now the Centennial Heritage Museum). Groups from the club went on eclipse trips to Catalina and Chile (and probably other places as well), and there was at least one club field trip to Kitt Peak. Past outreach activities included showing astrophotos at various malls and bringing telescopes to the Orange County fair. Club meetings in the early days were held at the Santa Ana library, though we have been fortunate to have had the use of the auditorium at Chapman University for many years now. Before we had access to the current storage for the club library at Chapman, it had to be brought to every meeting – a major inconvenience, which undoubtedly helped keep the collection small!

One of the club's early viewing sites was from a location reached from the Ortega Highway. The club actually owned another piece of property before it purchased the Anza property; I'm told that it was a smaller piece of land in the San Bernardino Mountains that wasn't as suitable overall for observing as our Anza site has proved to be. When we got the Anza property, the surrounding area was very sparsely populated, and it took a lot of effort to put in the well, pump, cistern and associated plumbing that gives us water and such amenities as flush toilets on site, to bring in power and telephones, and to build the club Observatory (and, of course, the Kuhn telescope it houses) and everything else that has made the Anza site the convenient and comfortable viewing site it is. Those who, like me, joined the club long after all this was done owe a lot to the members whose efforts made it all a reality!

This just touches the surface of our club's history. I am very happy to report that one of our newest board members, Shelia Cassidy, plans to write a history of the OCA so that we will have a better record of all that has gone before. She needs names, dates, stories and other information, as well as pictures – if you can provide any of these things, please contact Shelia at rivme@pacbell.net or 951/360-1199.

Since this is our 40th anniversary year, we want to commemorate and celebrate the past as well as plan for future. If you have ideas for what we can do to properly commemorate our past, or would like to be involved in the planning and organizing such activities, please contact me (btoy@cox.net or 714/606-1825). In particular, we would like to salute our past at our banquet, and could really use any pictures or other things you might have relating to the club and its activities in past years, as well as anecdotes of prior times. If you can help out with any of these things, please let me know. If you want to donate items from our past, we would appreciate them as valuable additions to the club archives; if you want to keep them but are willing to make them available, we would be happy to scan or photograph them and return the originals to you.

Messier Marathon

Changing gears a bit, there are two periods each year, right around the equinoxes, when all 110 Messier objects can be seen in one night – at least theoretically. The lineup in the spring seems better than the fall, and the spring equinox is the traditional time for the Messier Marathon. This is an event where people try to see as many of the 110 Messier objects as they can in one night, starting as soon as objects can be seen after sunset and ending when the dawn sky becomes too bright to see anything else.

This year's Messier Marathon will be the night of the March Anza star party. That's the club's formal marathon, but you don't have to be at Anza to participate, and you don't have to do it on the night of the Anza star party. What you need is a place to view from, which could be your back yard or driveway, and something to view with, which can range from binoculars through small telescopes to the largest telescopes in the club, and your list of objects that you mark off as you find them, to keep track of them, and you need to do your marathon over a single night.

There are a lot of marathon lists available on the Internet and in books, listing the Messier objects in an order that makes it easier to see all of them in one night. Different lists order things slightly differently, but they all start with objects furthest to the west right at sunset and end with the objects coming up in the east at dawn. The club has a Messier Marathon list that was originally compiled by Doug Millar and has recently been revised by Jim Benet to correct some errors and add more information. We will be posting this list on our website and will have copies available at Anza at the March star party, as well. We generally have some available Anza house and in the Observatory, so please check at either location if you need a copy. *(a copy is also included on pages 10 and 11 of this newsletter if you are unable to attend the meeting or the star party - Ed.)*

Please be sure to fill in your name and the other information requested on the form, and turn it in at the Observatory or Anza house, or at the next general meeting. We want to give certificates to those who do the marathon – even if you don't get all 110 objects this year, please turn your form in so we'll know people are interested in doing this! After all, you can always try for all 110 objects again next year....

The e-Bay Fundraiser Continues!

This is the time of year when a lot of people clean out closets, garages and storage units, and find that they have a lot of things they no longer need. If you are one of these people – and to give you a nudge if you might on the verge of becoming one of these people – our e-Bay fundraiser is alive and well and can help you get rid of unwanted items in a way that gets you a tax exemption and gives the club some needed income, benefiting all concerned.

Larry McManus continues to coordinate this program, and you can make arrangements to turn donations over to him at the club's

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AstroSpace Update

March 2007

Gathered by Don Lynn from NASA and other sources

AURA (atmosphere and climate satellite) has been observing heavy water vapor over the Earth's atmosphere. Heavy water has more neutrons than usual, and naturally occurs in very small quantities. Various processes in nature (evaporation from oceans, "exhalation" from plants, etc.) favor heavy water in different amounts, so the new measurements show exactly what process brought the water vapor to each place on Earth. This has produced the first global understanding of the water cycles. Water vapor is the most abundant greenhouse gas in the atmosphere (those gases that cause retention of Sun's energy and so raise the atmospheric temperature). Findings are that: more water is released into the atmosphere from land than theory predicted, especially in the Amazon region; thunderstorms contribute more water than thought; 20 to 50% of rain evaporates before it reaches the ground; vegetation interacts with climate more than thought.

Unusual Kuiper Belt object (KBO) – 2003 EL61, a small body in the Kuiper Belt beyond Neptune, is football-shaped and spins once every 4 hours. It has 2 moons, so measurement of their orbits has allowed calculating the mass of this KBO. The moons were found and tracked in their orbits with the Keck telescope in Hawaii, using its laser guided adaptive optics system. Though about 10% of the Kuiper Belt objects have been found to have a moon, only Pluto and 2003 EL61 have 2 or more known moons. The moons are small compared to 2003 EL61, about 1% or less of its mass, and take 34 and 49 days to orbit. Knowing the spin rate and the shape allows calculation of the size, constituent material and density. The result is that the long dimension is about that of Pluto, but it is only 32% of Pluto's mass, even though it is mostly made of rock. A theory has been proposed to explain most of the properties of this KBO, and that is that it formed originally as a Pluto-sized object, and was soon after that struck obliquely by another object, which caused the fast spin, the relatively high density (knocked off lighter material), and formed a debris cloud that coalesced into the moons. Further study is needed to validate the theory.

Dark matter – Using a map of more than 4000 quasars in the distant universe, scientists from the Sloan Digital Sky Survey II (SDSS-II) have shown that quasars are strongly clumped, with huge quasar superclusters separated by vast stretches of empty space. The clustering shows that the quasars lie within massive concentrations of dark matter. The galaxies containing quasars would not cluster so much without the gravitation of dark matter. Before the SDSS, only a few hundred quasars had been discovered so distant that their light took over 11 billion years to reach us, but the survey found 4000 more of these. Such numbers are needed to calculate where mass must lie, most of which is dark matter that cannot be directly measured.

Cassini (Saturn mission) has imaged a giant cloud half the size of the United States near Titan's north pole. This area has been in shadow because it is winter there, so as spring breaks this has been the first opportunity to see the region. The cloud extends from the pole down to about 60 degrees latitude, and is roughly 1500 miles across. This cloud is probably raining ethane and methane that forms the lakes that were recently discovered by Cassini's radar.

Integral (European orbiting gamma-ray telescope) periodically monitors the many gamma-ray emitting objects near the center of our Milky Way galaxy. In January the area was found to be particularly quiet, since most of the major sources, irregularly variable stars, happened to be in quiet periods. Integral is making further observations to take advantage of this opportunity. It is hoped to find dimmer objects that may have been overwhelmed by the bright ones. These could include dimmer variable stars, molecular clouds interacting with supernova remnants, or material falling into the supermassive black hole there, which has not been seen in gamma rays. Most of the usually bright sources in this area are X-ray binaries, which consist of a white dwarf, neutron star or black hole that is gravitationally pulling material off of a companion star. The material falling in is heated frictionally to millions of degrees, producing large amounts of X-rays and gamma rays.

Comets colliding – Rowdy comets are colliding and kicking up dust around a dead star, according to new observations made by the Spitzer infrared space telescope. The dead star is the white dwarf at the center of the Helix Nebula. Near the end of its life as a normal star, this star threw out the material now making up the Helix. Spitzer observations showed a disk of dust surrounding the white dwarf. This was surprising because when the star expelled the nebula that should have blown away all the dust that may have been in the vicinity. The most likely explanation is that the dust is newly created by collisions among the bodies in the planetary system of that star that survived the nebula formation. Inner planets would have been destroyed, while comets should have survived, being farther away. Comets should also have been disturbed in their orbits, causing them to collide with each other more often, and hence the newly formed dust. This is the second time Spitzer has found dust around a white dwarf star, but the other disk was far smaller and so may have a different cause. The new Spitzer observation may explain a mystery about the Helix's white dwarf. Previous observations with X-ray telescopes showed it was throwing off high-energy X-rays, but no mechanism for generating them was known. Accretion of material from a companion star was suggested, but no companion star has been found. Dust from the newly discovered disk could fall into the star at such a rate as to create the observed X-rays.

New Horizons (Pluto mission) will have passed Jupiter by the time you read this. The reason for going to that massive planet is to obtain a gravity slingshot to speed the spacecraft toward distant Pluto. Even with the added speed, it will take 8 more years to reach Pluto. As long as it is in the vicinity, New Horizons is making about 700 observations of Jupiter, its rings and its 4 largest moons. Much of the data should arrive at Earth in early March. New Horizons reached Jupiter from Earth in only 13 months, a record set due to its fastest-ever launch speed. Because of the exit direction after the slingshot, the spacecraft is making the first-ever trip through the long tail of Jupiter's magnetosphere, a stream of particles extending tens of millions of miles beyond the planet.

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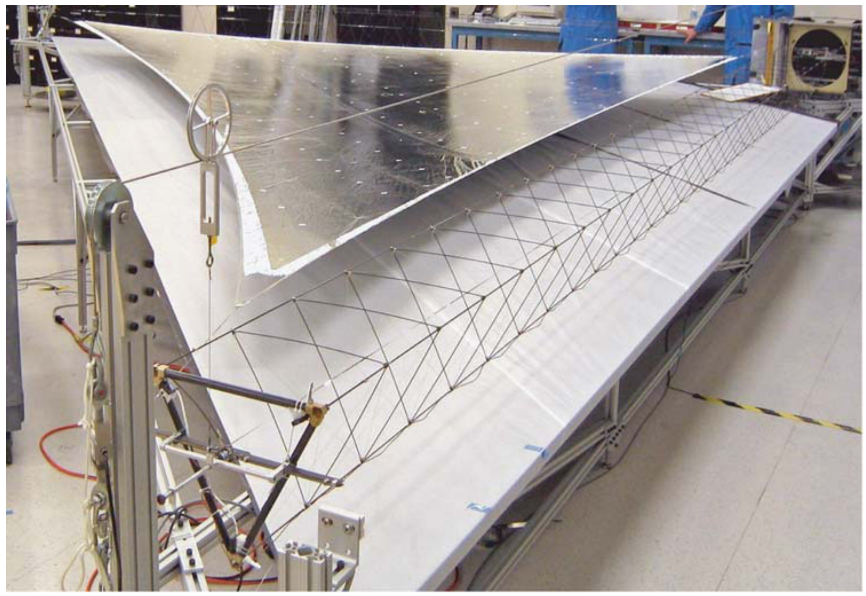
NASA's Space Place

Even Solar Sails Need a Mast

by Patrick L. Barry

Like the explorers of centuries past who set sail for new lands, humans may someday sail across deep space to visit other stars. Only it won't be wind pushing their sails, but the slight pressure of sunlight.

Solar sails, as they're called, hold great promise for providing propulsion in space without the need for heavy propellant. But building a solar sail will be hard; to make the most of sunlight's tiny push, the sail must be as large as several football fields, yet weigh next to nothing. Creating a super-lightweight material for the sail itself is tricky enough, but how do you build a "mast" for that sail that's equally light and strong?



SAILMAST is the thin triangular truss in front of the picture. It is attached to a section of a silver foil solar sail section shown here in a laboratory test. The mast in the picture is 2m (6 ft) long. The Space Technology 8 mission will test the SAILMAST, which is 20 times longer.

Enter SAILMAST, a program to build and test-fly a mast light enough for future solar sails. With support from NASA's In-Space Propulsion Program to mature the technology and perform ground demonstrator tests, SAILMAST's engineers were ready to produce a truss suitable for validation in space that's 40 meters (about 130 feet) long, yet weighs only 1.4 kilograms (about 3 pounds)!

In spite of its light weight, this truss is surprisingly rigid. "It's a revelation when people come in and actually play with one of the demo versions—it's like, whoa, this is really strong!" says Michael McEachen, principal investigator for SAILMAST at ATK Space Systems in Goleta, California.

SAILMAST will fly aboard NASA's Space Technology 8 (ST8) mission, scheduled to launch in February 2009. The mission is part of NASA's New Millennium Program, which flight tests cutting-edge technologies so that they can be used reliably for future space exploration. While actually flying to nearby stars is probably decades away, solar sails may come in handy close to home. Engineers are eyeing this technology for "solar sentinels," spacecraft that orbit the Sun to provide early warning of solar flares.

Once in space, ST8 will slowly deploy SAILMAST by uncoiling it. The truss consists of three very thin, 40-meter-long rods connected by short cross-members. The engineers used high-strength graphite for these structural members so that they could make them very thin and light.

The key question is how straight SAILMAST will be after it deploys in space. The smaller the curve of the mast the more load it can support. "That's really why we need to fly it in space, to see how straight it is when it's floating weightlessly," McEachen says.

It's an important step toward building a sail for the space-mariners of the future.

Find out more about SAILMAST at nmp.nasa.gov/st8. Kids can visit spaceplace.nasa.gov/en/kids/st8/sailmast to see how SAILMAST is like a Slinky® toy in space.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with

(continued from page 4)
James Webb Telescope (future space telescope) – A new technology has been developed for the James Webb Telescope, which is scheduled for launch in 2013: microshutters. It consists of over 60,000 tiny shutters that can individually be opened or closed to allow light to pass through (or not) to the telescope's light detectors. A closed shutter can be used like an occulting disk in a solar telescope that blocks out the Sun's light to allow looking at the dim corona next to it. But the microshutters can block out all the bright stars in any field of view to allow looking at dim objects next to them. The Sun itself is too bright for the Webb Telescope. The shutters can also be used to allow only a few objects in the field of view to be observed when the image is passed through a spectrograph. Thus the spectrum of dozens or even a hundred objects can be taken in a single exposure without the adjoining objects overlapping. The microshutter device will be placed in front of an 8 megapixel detector in the infrared spectrograph and camera. Masks (patterns to be set in the microshutters) will be designed for a particular field of view before its observation, using information from ground-based images of the field. The microshutters are designed to open and close at minus 388 degrees, the temperature at which the detector will be kept for optimum sensitivity, and recently passed a test in this environment.

THEMIS (magnetic storm mission) is scheduled to launch by the time you read this, and will study where and when substorms (sudden brightenings of the Northern Lights [aurora]) form. The mission consists of 5 separate identical spacecraft, launched at once, which will line up along the Sun-Earth line and observe such storms from multiple viewpoints. They will continuously map the magnetic field over North America, and will coordinate with 20 ground stations measuring the aurora and electric currents.

Hubble Space Telescope (HST) suffered a failure in the power supply for its Advanced Camera for Surveys (ACS), the most sensitive camera with the largest field of view on the HST. This was the only backup supply, and the original power supply failed last June. Operations with the other cameras and spectrographs continue. A review board was formed to investigate the failure. It seems unlikely that the ACS can be brought back to life remotely, and unlikely that the planned HST repair mission (September 2008) could accomplish replacement of the power supplies deep inside the ACS.

HST has studied for the first time the **layers of atmosphere** of a planet (designated HD209458b) orbiting another star. This is possible because the planet happens to pass in front of (transits) its star as seen from Earth, so the starlight passing through the planet's atmosphere can be studied. HST discovered a dense upper layer of hot hydrogen gas where the super-hot planet's atmosphere is bleeding off into space. The planet orbits so close to its star that it gets very hot from the star's ultraviolet radiation, hot enough to lose atmosphere in a comet-shaped tail streaming outward. Loss of atmosphere was measured at 10,000 tons per second, more than 3 times the water flowing over Niagara Falls. It will still take about 5 billion years for the planet to lose its entire atmosphere. The planet orbits 20 times closer to its star than Earth's distance from the Sun, and completes an orbit every 3.5 Earth days. Such "hot Jupiters", that is gas giant planets orbiting quite close to their stars, appear to be quite common, constituting 10 to 15% of the planets known.

Mars Reconnaissance Orbiter (MRO) has experienced problems with 2 of its instruments. Some detectors in the high resolution camera have been producing a little more noise than previously. The impact on image quality is small, but the camera performance will be carefully monitored for any further deterioration. It has been determined that warming the camera before taking images lessens or eliminates the noise problem, so pre-warming is being done now. The Mars Climate Sounder instrument maps the temperature, ice clouds and dust distribution in Mars's atmosphere. The device that positions the instrument has been found to occasionally skip a step, and so the instrument has been commanded to stop collecting data while spacecraft controllers investigate the problem.

Mars Global Surveyor (MGS) – NASA has formed an internal review board to examine why MGS went silent last November. Two possibilities are 1) that the support arm on one solar panel, which was damaged during launch a decade ago, finally failed, or 2) that the rechargeable batteries attached to that solar panel overheated and failed.

Mars rover Opportunity has completed a 10K (10 kilometer) run in just 1080 Martian days, somewhat slower than I personally run a 10K, but still a record for a rover on another planet. The original plan for Opportunity was to rove 0.6 K in 90 days, so it has by far exceeded expectations. Opportunity is continuing its clockwise trip around the rim of Victoria Crater, taking images and spectra of each portion of rim it passes.

Spacewalks – Astronaut Sunita Williams has set the female records for number (4) and duration of spacewalks during her February activities to assemble the International Space Station. Astronaut Michael Lopez-Alegria is scheduled to set male astronaut records for number (10) and duration of spacewalks in his station assembly activities in April. By July he will hold the astronaut record for longest time in space (which is still short of the cosmonaut record). Williams is staying on the station when Lopez-Alegria leaves in July, so she will surpass his record soon after he sets it. The spacewalk on February 8 was the 80th spacewalk made during assembly of the space station.

Instant AstroSpace Updates

The **Gemini-South telescope** in Chile has found that hydrogen deficient stars and R Coronae Borealis stars have a much larger percentage of the isotope oxygen-18 than normal stars do. This supports the theory that such stars form when certain types of white dwarf stars collide and merge, since the theorized types can generate oxygen-18 before such a merge.

A new study of the effects of radiation on life has concluded that bacterial **life on Mars (if it exists)** would be killed by radiation to a depth of several yards below the surface. The implication is that any future Mars mission looking for life would have to dig very deep, or look in an area where material from depths has come to the surface (recent impact craters, recently formed gullies, etc.)

Mars Reconnaissance Orbiter turned its high-resolution camera toward Jupiter and took an image that is better than most images taken from the surface of the Earth. It is the most powerful telescope that has ever been launched beyond Earth orbit.

MRO has sent to Earth, as of February, more science data than any other planetary spacecraft, the equivalent of a thousand CDs. The record was previously held by Mars Global Surveyor, which took 10 years to send that much data.

Come One, Come All!

(And bring your loved ones with you!)

Celebrate our 40th Anniversary at the

2007 OCA Banquet!

At the Orange County Mining Co.

Great company!

Wonderful (and plentiful) food!

Convenient and picturesque location!

*Excellent speaker – **Dr. Laura Woodney**, Comet Researcher!*

Who Could Ask For More?

*Calendar the date: **4/28/07 at 7:00 p.m.***

Only $45.00 per ticket – Available from Charlie Oostdyk

See you there!

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general meetings or at other events he plans to attend. He can also pick up bulky items, and he's open to working out other arrangements as needed. You can call him at 714/731-5542 or e-mail him at lmcmanus@clearpointadv.com to make arrangements that work for both of you.

Donations can be anything that is likely to sell on eBay, not limited to astronomical goods. If you have a question about whether a particular item is appropriate for a donation, please call Larry to check it out. In the past, people have donated various types of sports and other memorabilia, office equipment, computers and related items, cameras, antiques, sports equipment, tools, pictures, and all kinds of other items. A visit to the eBay site will show you what a wide variety of items offered for sale there – it seems that anything that someone that might find some use for or want to collect has some type of market through that website.

So, you can be rid of all those items that are no longer useful to you and are taking up needed space, get a tax deduction, and help the club get some income – truly, a winning situation for all concerned!

Astronomy Week and Dark Sky Week

International Astronomy Day is April 21, 2007, the last day of International Astronomy Week, and National Dark Sky Week overlaps it, running from April 17 through 24. We haven't done much to celebrate either of these in the past, mainly because it seems we forget about them until they're just around the corner, and then people are too busy to come up with good activities and there's too little time to get the word out. We're hoping to do better this year – as one of the largest astronomy clubs in the world, we really should be at the forefront of local activities to raise public consciousness about astronomy and the many benefits of eliminating excessive outside lighting.

Please let me know if you would like to be involved with organizing some activities for these two events and/or participating in them – wouldn't having a great set of programs for this period in April be a wonderful way to celebrate our club's 40th anniversary? ■

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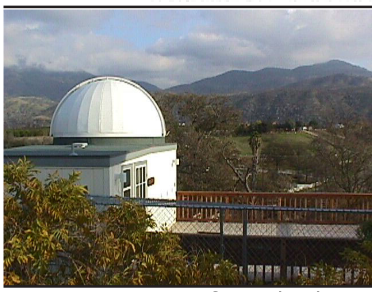

HOME WITH OBSERVATORY FOR SALE by former OCA member. 2700 square feet, 5 acres fenced for horses or livestock with barn, spa, pool and storage space. For more information, go to http://www.cfsmithrealty.com (reference 'Tule Oak Property') or contact Billie Chandler at 555-539-0900/

FOR SALE: 6x8-foot shed, vinyl w/metal frame, excellent condition. Perfect for conversion to observatory or storage. $200 O/B/O. Contact Steve Condrey at startraveler68@yahoo.com with 'Shed for Sale' in the subject line.

Pad License For Sale: Located on **Jupiter Ridge**, second pad from top. The pad includes spacious pad area, a long gravel driveway, electrical outlets, redwood work bench and is assessable for pier mounting. Light breaking bushes nearby. Will sell pad for what it cost to build. Please call Bob at (949) 215-3541.

FOR SALE: Achromat Triplet Objective in thick lens cell, 1602mm Focal Length, 188mm Diameter (f/8.5). Weighs 10lbs. It comes with a certificate. Asking price $600.00. Contact Vittal at badithenv@sbcglobal.net.

FOR SALE: Coulter Odyssey 13.1" f/4.5 Dobsonian w/Telrad. Very good condition. $450. Contact Steve Bird at 562-234-2157

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Observing a Conjunction of Planets: The Pleasures Of An Early Morning Look At The Sky

Mike Bertin

Early on a Sunday morning a few months ago (December 10, 2006) Jupiter, Mercury and Mars aligned within 1 degree of each other in the sky just before sunrise. It was the closest conjunction of three planets since October 24, 1974 when Venus, Mars and Uranus were 45 arc minutes apart. But in 1974 the planets were close during daylight hours and faint Uranus was lost in the Sun's glare at sunrise and sunset. December 2006 marked the closest conjunction of three bright planets between 1971 and 2029. I saw a lovely June 2005 sunset grouping of Venus, Mercury and Saturn about 1½ degrees apart; this conjunction was even closer.

Here in Irvine it rained all night on Saturday before the conjunction and into the early morning hours on Sunday. By 5:30 AM the rain had stopped but heavy clouds still lay over the eastern horizon. I decided to have a look anyway. I picked up my trusty 10x50 binoculars and drove to the Yale Avenue freeway footbridge. From the crest of the bridge I could see almost to the horizon.

At 6 AM Jupiter should have been visible just above the far treetops, but heavy, dark clouds blocked my view. A gentle breeze was blowing the clouds north. I scanned the horizon for breaks in the clouds, on the lookout for bright points of light. Good luck! At 6:08 a patch of clear sky appeared low in the east and there was Jupiter blazing away at magnitude -1.7. Mercury, about a magnitude dimmer, was just above. I could see them with my naked eye, 12 arc minutes apart. Mars wasn't naked-eye visible in the cloudy, moisture-laden sky, but in my binoculars it was clear, 1 degree south and perhaps half the brightness of Mercury. Because Mars was quite far from Earth that day and the viewing conditions were less than ideal I couldn't make out Mars' ruddy red glow, but it was enough to see the 3 planets aligned in a small right triangle on the horizon. Very pretty.

The bright double star Graffias, Beta Scorpii, was just 15 arc minutes above Mercury that morning, but the sky was already too bright to see this magnitude 2.6 star, even in my binoculars. [I should have brought my telescope!]

Unfortunately there wasn't much time to enjoy the view. By 6:12 the dark clouds covered the planets again and I started back to my car. As I walked I glanced up at the waning gibbous Moon, high overhead in the south. It was flanked on either side by bright points of light. My star charts showed that the Moon was in Leo that night. The star 4 degrees to the left was Regulus, one of the four first magnitude stars near the ecliptic (Antares, Spica, and Aldebaran are the others). The star to the right was no star at all — it was Saturn, twice as bright as Regulus. My hand-held binocs weren't enough to see Saturn's rings or its moon, Titan, but the binocular view of Earth's Moon was quite lovely. The Oceanus Procellarum and some of its bright craters were well lit, and the craters of the southern highlands showed nice shadows near the terminator. It was an exciting climax to the morning's viewing.

There are so many celestial wonders to be enjoyed, even in our light filled urban and suburban skies, even without a telescope. A pair of binoculars, the will to get up early, and a short drive was all I needed to see four of the planets known to ancient stargazers. Brilliant Venus was the evening star that day and I at dusk I picked it out on the western horizon … all five naked eye planets in one day! The conjunction of Jupiter, Mercury and Mars was lovely and the Moon and Saturn provided an unexpected surprise. Ah … the pleasures of an early morning look at the sky. ■

Orange County Astronomers
Messier Marathon Form
Date ____________ Location________________

Name _________________ Age* ______ Messier Objects Viewed______ Photographed______
Viewing Equipment: Telescope______ Binoculars______ Naked Eye_____ Camera______
Location Method: Star-hopping______ Setting Circles______ Computerized System______

Scope/Binocular/Camera Size and Description: ____

The following is a list of the Messier objects in the order you might want to view them. The first objects listed set the soonest. The first object is usually visible as the sun sets. Fill in the time at which each object was viewed. Place an “x” in the “P” column for objects that you photographed.

M	Time	P	RA	Dec	Con	Type	Mag		M	Time	P	RA	Dec	Con	Type	Mag
77			02:42.7	00º01'	Cet	Gx	8.9		48			08:13.8	-05º48'	Hya	OC	5.5
74			01:36.7	15º47'	Psc	Gx	9.4		44			08:40.1	19º59'	Cnc	OC	3.7
33			01:33.9	30º39'	Tri	Gx	5.7		67			08:50.4	11º49'	Cnc	OC	6.1
31			00:42.7	41º16'	And	Gx	3.4		95			10:44.0	11º42'	Leo	Gx	9.7
32			00:42.7	40º52'	And	Gx	8.1		96			10:46.8	11º49'	Leo	Gx	9.2
110			00:40.4	41º41'	And	Gx	8.5		105			10:47.8	12º35'	Leo	Gx	9.3
52			23:24.2	61º35'	Cas	OC	7.3		65			11:18.9	13º05'	Leo	Gx	9.3
103			01:33.2	60º42'	Cas	OC	7.4		66			11:20.2	12º59'	Leo	Gx	8.9
76			01:42.4	51º34'	Per	PN	10.1		81			09:55.6	69º04'	UMa	Gx	6.9
34			02:42.0	42º47'	Per	OC	5.5		82			09:55.8	69º41'	UMa	Gx	8.4
45			03:47.0	24º07'	Tau	OC	1.6		97			11:14.8	55º01'	UMa	PN	9.9
79			05:24.5	-24º33'	Lep	GC	7.7		108			11:11.5	55º40'	UMa	Gx	10
42			05:35.4	-05º27'	Ori	DN	4		109			11:57.6	53º23'	UMa	Gx	9.8
43			05:35.6	-05º16'	Ori	DN	9		40			12:22.4	58º05'	UMa	Ast	8.4
78			05:46.7	00º03'	Ori	DN	8.3		106			12:19.0	47º18'	CVn	Gx	8.4
1			05:34.5	22º01'	Tau	DN	8.4		94			12:50.9	41º07'	CVn	Gx	8.2
35			06:08.9	24º20'	Gem	OC	5.3		63			13:15.8	42º02'	CVn	Gx	8.6
37			05:52.4	32º33'	Aur	OC	6.2		51			13:29.9	47º12'	CVn	Gx	8.4
36			05:36.1	34º08'	Aur	OC	6.3		101			14:03.2	54º21'	UMa	Gx	7.9
38			05:28.4	35º50'	Aur	OC	7.4		102			15:06.5	55º46'	Dra	Gx	9.9
41			06:46.0	-20º44'	CMa	OC	4.6		53			13:12.9	18º10'	Com	GC	7.6
93			07:44.6	-23º52'	Pup	OC	6		64			12:56.7	21º41'	Com	Gx	8.5
47			07:36.6	-14º30'	Pup	OC	5.2		3			13:42.2	28º23'	CVn	GC	6.2
46			07:41.8	-14º49'	Pup	OC	6		98			12:13.8	14º54'	Com	Gx	10.1
50			07:03.2	-08º20'	Mon	OC	6.3		99			12:18.8	14º25'	Com	Gx	9.9

Messier Marathon Form
Page 2

M	Time	P	RA	Dec	Con	Type	Mag		M	Time	P	RA	Dec	Con	Type	Mag
100			12:22.9	15º49'	Com	Gx	9.3		9			17:19.2	-18º31'	Oph	GC	7.7
85			12:25.4	18º11'	Com	Gx	9.1		4			16:23.6	-26º32'	Sco	GC	5.6
84			12:25.1	12º53'	Vir	Gx	9.1		80			16:17.0	-22º59'	Sco	GC	7.3
86			12:26.2	12º57'	Vir	Gx	8.9		19			17:02.6	-26º16'	Oph	GC	6.8
87			12:30.8	12º24'	Vir	Gx	8.6		62			17:01.2	-30º07'	Oph	GC	6.5
89			12:35.7	12º33'	Vir	Gx	9.8		6			17:40.1	-32º13'	Sco	OC	5.3
90			12:36.8	13º10'	Vir	Gx	9.5		7			17:53.9	-34º49'	Sco	OC	4.1
88			12:32.0	14º25'	Com	Gx	9.6		11			18:51.1	-06º16'	Sct	OC	6.3
91			12:35.4	14º30'	Com	Gx	10.2		26			18:45.2	-09º24'	Sct	OC	8
58			12:37.7	11º49'	Vir	Gx	9.7		16			18:18.8	-13º47'	Ser	OC	6.4
59			12:42.0	11º39'	Vir	Gx	9.6		17			18:20.8	-16º11'	Sgr	DN	7
60			12:43.7	11º33'	Vir	Gx	8.8		18			18:19.9	-17º08'	Sgr	OC	7.5
49			12:29.8	08º00'	Vir	Gx	8.4		24			18:16.9	-18º29'	Sgr	Ast	4.6
61			12:21.9	04º28'	Vir	Gx	9.7		25			18:31.6	-19º15'	Sgr	OC	6.5
104			12:40.0	-11º37'	Vir	Gx	8		23			17:56.8	-19º01'	Sgr	OC	6.9
68			12:39.5	-26º45'	Hya	GC	7.8		21			18:04.6	-22º30'	Sgr	OC	6.5
83			13:37.0	-29º52'	Hya	Gx	7.6		20			18:02.6	-23º02'	Sgr	DN	9
5			15:18.6	02º05'	Ser	GC	5.6		8			18:03.8	-24º23'	Sgr	DN	6
13			16:41.7	36º28'	Her	GC	5.8		28			18:24.5	-24º52'	Sgr	GC	6.8
92			17:17.1	43º08'	Her	GC	6.4		22			18:36.4	-23º54'	Sgr	GC	5.1
57			18:53.6	33º02'	Lyr	PN	8.8		69			18:31.4	-32º21'	Sgr	GC	7.6
56			19:16.6	30º11'	Lyr	GC	8.3		70			18:43.2	-32º18'	Sgr	GC	7.9
29			20:23.9	38º32'	Cyg	OC	7.1		54			18:55.1	-30º29'	Sgr	GC	7.6
39			21:32.2	48º26'	Cyg	OC	4.6		55			19:40.0	-30º58'	Sgr	GC	6.3
27			19:59.6	22º43'	Vul	PN	7.4		75			20:06.1	-21º55'	Sgr	GC	8.5
71			19:53.8	18º47'	Sge	GC	8.2		15			21:30.0	12º10'	Peg	GC	6.2
107			16:32.5	-13º03'	Oph	GC	7.9		2			21:33.5	00º49'	Aqr	GC	6.5
12			16:47.2	-01º57'	Oph	GC	6.7		72			20:53.5	-12º32'	Aqr	GC	9.3
10			16:57.1	-04º06'	Oph	GC	6.6		73			20:58.9	-12º38'	Aqr	Ast	9
14			17:37.6	-03º15'	Oph	GC	7.6		30			21:40.4	-23º11'	Cap	GC	7.2

Types: OC=Open Cluster, GC=Globular Cluster, PN=Planetary Nebula, DN=Diffused Nebula, Gx=Galaxy, Ast=Asterism

Fill in the information at the top of the form. *Include age if under 18 years old. Please turn your completed form in to the Messier Marathon Coordinator or to Barbara Toy, or mail it to: Orange County Astronomers/Messier Marathon, P.O. Box 1762, Costa Mesa, CA 92628.

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