diablo Moonwatch

Mount Diablo Astronomical Society

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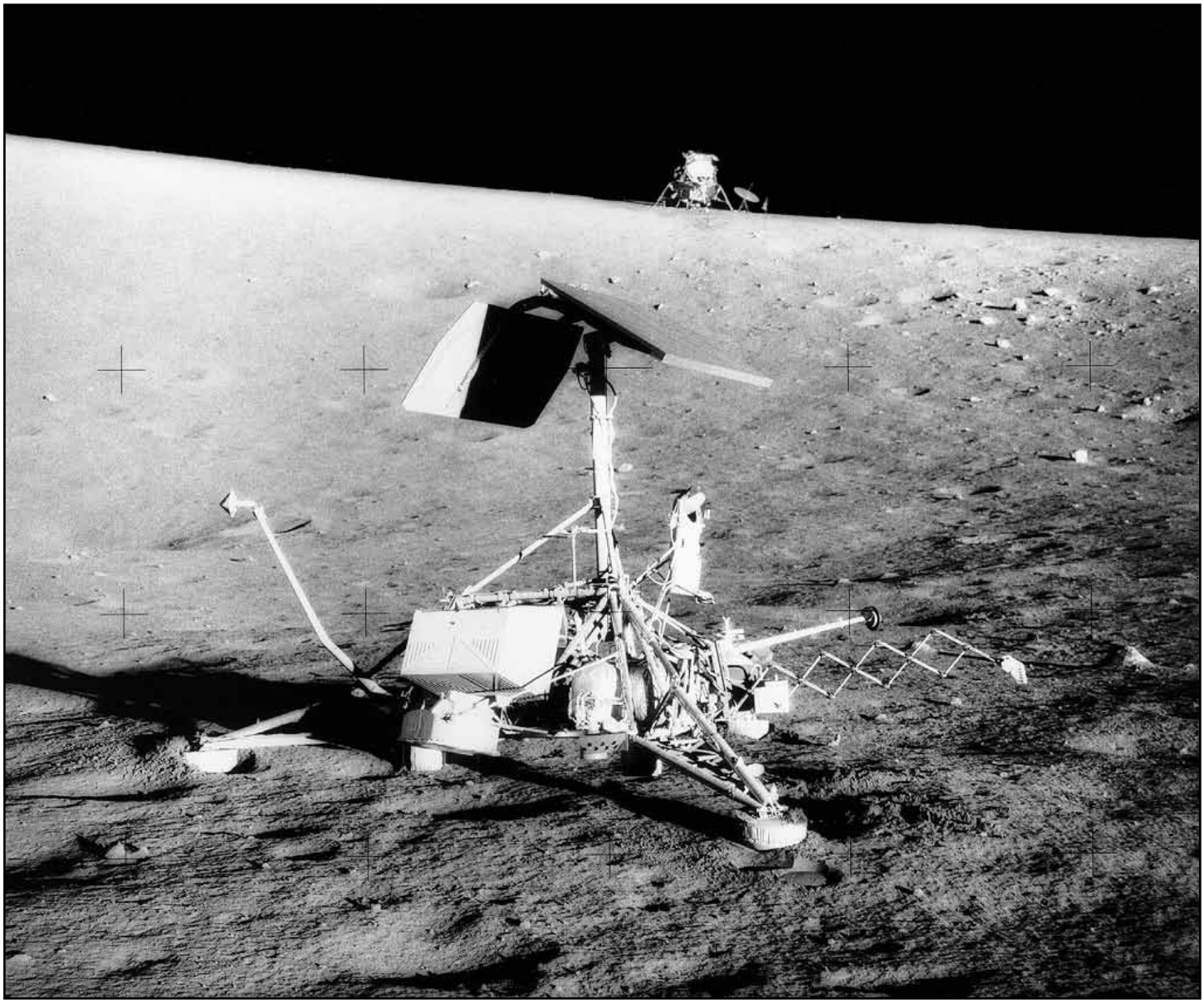

Apollo 12: Surveyor 3 and Intrepid

On April 20, 1967, NASA's robot spacecraft Surveyor 3 landed on the moon, touching down on the inside slope of a small lunar crater in the Ocean of Storms. Over 2 1/2 years later, on November 19, 1969, the lunar module Intrepid, piloted by Apollo 12 astronauts Pete Conrad and Alan Bean, flew overhead and landed nearby in the second visit by humans to the lunar surface. Intrepid touched down about 600 feet away and the moon walking astronauts were easily able to reach the Surveyor and examine the remote explorer that had preceded them. Intrepid is seen in the background of this striking high resolution picture of Surveyor 3. Surveyor's leftmost foot pad appears dug in while its foreground foot pad has made two distinct imprints in the powdery lunar soil - clear indications that the Surveyor slid and bounced on landing. Using bolt cutters, the astronauts removed Surveyor's TV camera (the cylinder shape at the right of the tall solar panel mast) and its sampling scoop (on the arm extended to the right), returning them to Earth for study.

The Jantar Mantar Observatory

Stargazing landmark in Jaipur, northwester India

President's Corner

Liede-Marie Haitsma

The U.N. World Heritage Committee, an independent inter-governmental body that designates important cultural and natural sites around the world, in July 2010, placed the Jantar Mantar Observatory into the World Heritage Sites.

In the early 18th century the Indian astronomer-king Maharaja Jai Singh II of Jaipur built five astronomical observatories having been inspired by the 15th-century Afghani ruler Ulughbek's observatory at Samarkand. Like so many amateur astronomers, Jai Singh had a curiosity about the heavens. Observing a six-minute difference between the predicted and the observed start of a lunar eclipse made him wonder what might have gone wrong. While Ulughbek had compiled a set of astronomical tables used for eclipse prediction, they had become obsolete by Jai Singh's time. To correct these tables, he set out to build a large observatory in Delhi. He made careful observations from the Jantar Mantar for seven long years to prepare a new and accurate star catalogue. The updated catalogue of 1018 stars was called Zij Muhammad Shahi after the Mughal ruler Muhammad Shah.

The King Maharaja Jai Singh II had a structural approach to Astronomy. The Jantar Mantar, begun in the 1720's, bears an array of masonry instruments that were used to predict time, measure the position of a celestial body and the latitude. Instruments at Delhi include the Brihat Samrat Yantra, the Rama Yantra and the Jai Prakash Yantra. The largest of these is the Brihat Samrat Yantra, a massive sundial that that dominates the observatory while giving the accurate local time.

The Rama and Jai Prakash Yantras were designed by Jai Singh to measure precise positions of celestial bodies in the night sky. The Rama Yantra has a pillar in the center like ancient shadow clocks. When the sun is high in the sky, the pillar casts a shadow either on the vertical well surrounding the pillar or the raised floor segments radiating from the pillar. These segments

and the walls have fine graduations. Positions of the sun, moon, planets and stars can be measured using this instrument. Most were constructed in pairs to correct for and errors in the individual instruments.

So why did Jai Singh build instruments of brick and concrete when his contemporaries in Europe like Galileo used telescopes? Jai Singh himself answered this question in Zij Muhammad Shahi: "It should be maintained that these instruments (of the Europeans) were not large and, therefore, the calculation and observations were somewhat inaccurate, since the atmospheric conditions had a strong influence on those instruments; we explained that the inadequate accuracy of the observatories and measurements by Hipparchus, Ptolemy and others indicated this."

But historians believe that the reason Jai Singh built these large fixed instruments without any optical devices had more to do with Hindu philosophy than astronomy. The astronomer-king stands at the crossroads of astronomy in India as a link between the ancient cosmic world and the new scientific order. More than 250 years after the publishing his Zij Muhammad Shahi, Jai Singh's tables continue to be in use even today. "The traditional Rajasthan tribal Pachang (Hindu calendar) is based on Jai Singh's data.

For more information:

http://www.crystalinks.com/indiastronomy.html

http://www.ouramazingplanet.com/two-stargazing-landmarks-attain-star-status-0439/

http://www.art-and-archaeology.com/india/jaipur/jan1.html

http://www.judypat.com/india/jantar.htm

Ancient, Distant, Violent Beyond Comprehension - Quasars!

MDAS September Meeting - What's Up?

Dick Flasck

We're all familiar with observing nearby eye-candy such as M13, the Andromeda Galaxy, Saturn and the Veil Nebula to name a few, observing quasars dazzles the mind more than the eye. For the past decade, I have sought to answer the question: "How far can I see with my telescope?" That seemingly simple question belies delightful complexities just below the surface. Distance, space, velocity, and red shift are not the simple popularized astronomy concepts as commonly understood.

The oldest, most distant, and unimaginably violent objects amateur astronomers can observe are quasars. The methodology for hunting them down and observing them, however, is a bit more challenging than punching "M-22" into a goto keypad and watching your scope slew over to the intended target.

This "What's Up" ponders the meaning of the basic distance question, the current understanding of quasars, and the observing techniques you can use to bag one of these elusive enigmas for yourself.

For more information:

Wikipedia: Quasars
http://en.wikipedia.org/wiki/Quasar

Frequently Asked Questions About Quasars
http://www.phys.vt.edu/~jhs/faq/quasars.html

Gene Smith's Astronomy Tutorial: Quasars & Active Galaxies
http://cass.ucsd.edu/public/tutorial/Quasars.html

Chasing Shadows: NASA's Kepler Mission

MDAS September Meeting - Main Speaker: Dr. Edna DeVore of the SETI Institute

Marni Berendsen

In September, the Summer Triangle is high overhead. With an unaltered gaze, NASA's Kepler Mission is staring at over 100,000 stars in the area between Vega and Deneb. Its purpose? To detect the slight dimming of any distant Sun-like star when one of its planets passes in front of it.

Edna DeVore of the SETI Institute will join us on September 28th to explain the Kepler Mission and how its instruments are collecting evidence of Earth-sized planets orbiting in the habitable zone of stars similar to our Sun. Kepler is a high precision photometer, and uses the transit method to discover planets.

DeVore will discuss the spacecraft technology, scientific goals, discoveries and public access to Kepler data. DeVore is a co-investigator on the Kepler Mission, and manages education and public outreach programs for Kepler.

Don't miss our meeting on September 28th for the latest news on the search for another Earth.

Upcoming programs:
October 26: Dr. Robert Piccioni, "Einstein for Everyone"
November 16: Jeff Adkins, NASA Workshop

For more information:

Edna DeVore / SETI Institute
http://www.seti.org/Page.aspx?pid=416

Extreme Environment .com
http://www.extremeenvironment.com/2002/team/devore.htm

Free Go StarGaze iPhone App!

Marni Berendsen

NEW! Go StarGaze, a free iPhone app that helps people find astronomy events & clubs within seconds. You can search for events near your current location or find out what public astronomy events are happening across the U.S.A.

Our club gets publicity, for free, for all our public events listed on the Night Sky Network Events Calendar. Any event listed on the NSN Events Calendar (http://nightsky.jpl.nasa.gov/event-calendar.cfm) is automatically listed in Go StarGaze.

In the first month since its release, the Go StarGaze iPhone app had over 3,000 downloads.

Help MDAS publicize our events! Install the app on your iPhone, iPad, or iPod Touch now. Take a minute to rate Go StarGaze with 5 stars and write a review, and then tell your friends about the app. Even if you don't have an iPhone, you can spread the word. Thanks for helping promote our club.

Get Go StarGaze: http://itunes.apple.com/us/app/go-stargaze/id380833895?mt=8

Got Volunteer Hours ?

Marni Berendsen

Be sure to log your volunteer hours serving the club and at our outreach events. It helps us to keep track of who is contributing to the club and allows us to properly recognize our dedicated members!

It also allows you to keep track of mileage driven for tax purposes.

How to log your hours and mileage:

1. Log into our club on the Night Sky Network: http://nightsky.jpl.nasa.gov/login.cfm
2. Select "My Volunteer Hours" under the heading of "My Member Information"
3. Put a check mark in the box (left-hand column) that says "Include Events for which I have not entered volunteer hours" and press Search.
4. Look for the events in the list where you helped out and press "Add" under Volunteer Hours.

The board adopts an important "What's Up." Policy.

Jim Scala

If you're looking at this image of the 30 hour old Moon, I've got your attention.

Please read about the board's "What's Up" policy.

Starting with the September 28th meeting the board has placed some requirements on the "What's Up" presentation. The speaker should speak formally for 15 minutes and use no more than 10.5 slides. You might ask, "What's an 0.5 slide?" It's a title slide. Indeed, the board requested the speaker use only 8.5 slides, but in the end we settled on 10.5 maximum because sometimes they're just pretty pictures. Most people spend about 1.5 minutes on each slide and with an introduction, 15 minutes is gone. It's more than enough slides to make your point and, even more importantly, it leaves at least five minutes for questions. Questions bring out important aspects and help to clarify any confusion.

MDAS meetings begin at 7:15 with a few announcements and we try and get the "What's Up" speaker on by 7:20 or 7:25 at the very latest. That always gives us 20 minutes before the break. Hence the board policy is designed to keep the meeting on time with a break and honor our commitment to get the main speaker on at 8:00 PM. Although, not quite as important, it also lets the meeting end at a reasonable time meeting our requirement to vacate the meeting hall at a reasonable time. After all, we have a really good deal with the Concord Police Academy...

Our main speaker, usually a bay area local scientist and August's speaker was typical since he lives on the Peninsula. Hence he faced up to an hour and a half drive home. The least we can do is to get them started at 8:00 PM as promised in our invitation letter. Honoring our commitment is important in being able to get speakers.

What's the "What's Up" all about?

This image of M-33 by Geoff Collins brings out the star forming regions better than most.

Now, please read more about our "What's Up" history..

Thanks to our "What's Up" MDAS monthly meeting are unique among bay area astronomy clubs. The name "What's Up" suggests that when the club was formed it was a way of communicating what was currently visible and easily observed in the current night sky. It segued into a way of communicating member's interests to each other and often emphasized telescope making information since most members made their own. For example at August's meeting Rick Linden told us what's new in Dobsonian telescopes which will help members planning a new telescope.

In addition to being informative, the"What's Up" has always accomplished three very important functions. First, they allowed stragglers to come into the meeting before the main speaker went on. Second they helped members to become better acquainted with each other and to get to know each others areas of interest. Third, they help keep the notices short and get into information that focused on astronomical interest. Most other astronomical societies don't have the "What's Up" and I've heard notices drone on for 45 mind numbing minutes. No speaker should be forced to endure that.

In contrast, our speaker planning to go on at 8:00 PM is treated to something he or she is bound to find interesting, informative and definitely not boring. We know this because the speaker very often asks a question of the "What's Up" speaker. By any measure it's important and makes our club meeting better. So, it's important that we have a policy that keeps it to the fifteen minutes speaking time and five minutes for questions, so we can take the break and get the speaker on by 8:00 PM.

Thank you for following the policy and making MDAS even better in the future.

A Few Considerations on SETI

Nathaniel Bates

I want to comment a little bit more on the question of SETI, piggy-backing on Dr. Jim Scala's excellent article in the August newsletter. It is probably true that we have never had a true signal, but we should at least look at the so-called "Wow" signal of August 15, 1977. Professor Jerry Ehman of Columbia University found this signal while volunteering for SETI at the Big Ear telescope at Ohio State University. Specifically, he found an ominous yet wondrous string amidst the signal, written as "6EQUJ5". The signal lasted 72 seconds, and was considered mysterious enough by the SETI scientist who studied it to write "wow!" It was interpreted as being well outside of the range of background noise, although the whole event was ultimately put aside for lack of conclusive evidence. Even so, the "Wow" signal was definitely a possible signal, and remains controversial to this day.

What is truly odd about the "Wow" signal is that it was received at 1420 MHz., which is exactly where scientists assumed that a signal would be found. 1420 Mhz. is the frequency of hydrogen, the most common baryonic element in the Universe. 1,420 MHz. is the lower end of the so-called "water hole" radio frequencies which exist between the frequency of hydrogen, 1,420 MHz, and the frequency of hydroxyl, which is around 1,666 MHz. That range of radio frequencies is relatively free of galactic noise and other forms of interference. The Water Hole would be an ideal range to find a signal. And, also, in my view it would be an ironic place considering that life as we understand it is dependent upon water.

What if hydrogen is some kind of known frequency for galactic communication just given the fact that it is so common and thus recognizable? Hydrogen might be particularly relevant to civilizations that perhaps have not mastered any form of quantum tunneling or wormhole. It is an intriguing idea in its own right. I do not say that the "Wow" signal is a definitive signal, but I think that it is premature of scientists to dismiss it. Even SETI scientists themselves lay low over it, perhaps to avoid conflicts with colleagues. Personally, I find the possibility of planets sharing scientific information on a known frequency to be exciting and inviting. It is a tantalizing possibility, however, and inconclusive. Weaker anomalies have been received, but none as out of normal range as the "Wow" signal. As it is, we have had no conclusive signal from another world, but we cannot say that we are certain no signal has come.

Now, I would like to comment on another argument against the existence of aliens, the Fermi paradox, which posited that if alien intelligence is real they presumably must have come here by now. Presumably, they would be here now due to the speed at which self-replicating machines explore the galaxy since any intelligent civilization would presumably use such machines. My response is multi-fold. We really do not even know if machines can be self-replicating in the way that life can be. Also, even the idea of intelligent machines might be suspect if some doubters are correct. Mathematician Roger Penrose seems to doubt that Artificial Intelligence could ever match the human brain. Finally, we do not know enough about how really advanced worlds would behave to know how they might cloak themselves should they come to Earth, or if they would even contact us via official channels. Perhaps they could study us just fine from beyond the orbit of Pluto, even to the point of monitoring every square millimeter of this planet from the Oort Cloud. We don't know enough to dismiss any possibility.

As a new technological species, we are best to be humble and listen. I would certainly listen a bit longer before concluding that we are the first technological civilization, that other intelligent civilizations are rare, or even that we are all that intelligent as of yet. Perhaps a little time spent at the Water Hole would do us some good until we wizen up as a species.

2010 Yosemite Star Party

Richard Ozer

Here is a photo taken during the thunderstorm on Saturday afternoon at the 2010 Yosemite Star Party. The photographer is Jamie Lent (http://www.flickr.com/photos/jameslent/). He joined my daughter and I on the trip this year.

Cool Astro Links

Night Sky Network: Club Member Login
http://nightsky.jpl.nasa.gov/login.cfm

Night Sky Network: Astronomy Clubs
http://nightsky.jpl.nasa.gov/

Astronomy Picture of the Day
http://antwrp.gsfc.nasa.gov/apod/

NASA - Home
http://www.nasa.gov/

Jet Propulsion Laboratory
http://www.jpl.nasa.gov/

ESA Portal
http://www.esa.int/esaCP/index.html

JAXA | Japan Aerospace Exploration Agency
http://www.jaxa.jp/index_e.html

Main Hubble Page
http://hubble.nasa.gov/

HubbleSite:
Out of the ordinary...out of this world
http://hubblesite.org/

Universe Today
http://www.universetoday.com/

Bad Astronomy
http://blogs.discovermagazine.com/badastronomy/

SpaceWeather.com: News and information about the Sun-Earth environment
http://www.spaceweather.com/

Cloudy Nights
http://www.cloudynights.com/

Astromart
http://www.astromart.com/

The Planetary Society
http://www.planetary.org/home/

Astronomical Society of the Pacific
http://www.astrosociety.org/

AANC: Astronomical Association of Northern California
http://www.aanc-astronomy.org/

Mount Diablo Astronomical Society
http://www.mdas.net/

Astro Classifieds

I have a **Konusmotor 114** (4.5", 900mm, f/8) equatorial reflector telescope with tripod available for sale. I got it in August 2008, but have never set it up or used it.

After attending some star parties, I realized rather quickly that I was more interested in stargazing with the naked eye.

I wonder if anyone might be interested in purchasing it.

Thanks for your help.

Nancy Brown - ndowdsbrown@hotmail.com

Rubylith, red, clear, transparent, huge 24" x 36" sheets. For flashlight lens, laptop covers, car lights, etc.

$5.00 per sheet, can be picked up at my home in Oakland, or at an EAS or MDAS meeting or viewing night that I attend.

But if you want shipping, you have to order here:
http://dragonflybridge.com/Rubylith/

Jon Steel
510-531-6218
jonlee@aol.com

President:
Liede-Marie Haitsma, stfrncis@ix.netcom.com
Vice President:
Chris Ford, cford81@comcast.net
Treasurer:
Wil Roberge, wil@donahue.com
Secretary:
Malinda "Moon" Trask, metallicamoon@sbcglobal.com

Board members:
Publicity/Member-At-Large: Steve Jacobs
llasjacobs@astound.net

Meeting Program Chair: Dick Flasck
rflasck@aol.com

Membership Coordinator: Marni Berendsen
berendsen@aol.com

What's Up? Program Chair: James Scala
jscala2@comcast.net

Outreach Program Chair/Member-At-Large/AANC Rep:
Jim Head - outreachinfo@mdas.net

Observation Activities Chair/Member-At-Large: Richard Ozer
info@mdas.net

WAA Representative: Jon Wilson
jwilson8721@sbcglobal.net

Web Design: Glenn Spiegelman
webinfo@mdas.net

Newsletter Editor: Rob Haitsma
sjshark2@ix.netcom.com

Mailing address:
MDAS
P.O. Box 4889
Walnut Creek, CA 94596-3754

Meetings are held:
Fourth Tuesday every month,
except on the third Tuesday in November and December.
Refreshments and conversations are at 6:45pm.
Meetings begin at 7:15pm.
Where:
Concord Police Association Facility
5060 Avila Road, top of the hill.
Take Avila Road from Willow Pass Road.
Directions to facility:
http://nightsky.jpl.nasa.gov/club-view-directions.cfm?Address_ID=18

MDAS Meetings and Viewing Events in September 2010

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Sunday	Monday	Tuesday	Wednesday
29	30	31	1
5	6 Labor Day	7	8
12	13 7:30 PM Board Meeting	14 7:00 PM MDAS Imaging SIG	15 7:30 PM WCI Astronomy Night
19	20	21	22
26	27	28 7:15 PM GenMtg: Kepler Mission	29

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Thursday	Friday	Saturday
2	3	4 Society Observing Sunset: 7:35 PM
9	10	11 7:00 PM CENTER OF THE GALAXY Sunset: 7:24 PM
16	17	18 InOMN Sunset: 7:13 PM
23	24	25 Sunset: 7:02 PM
30	1	2

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