SEPTEMBER 2011

Madison Astronomical Society

Capitol Skies

The Newsletter of the Madison Astronomical Society

From the president's desktop

by John Rummel

October 7 - Moon over Monona Terrace

MAS first hosted this event with the Monona Terrace Convention Center in September of 1999. This year will be our 13th Moon Over Monona Terrace event, and though we have been weathered out a few times, this annual fall event has become the cornerstone of MAS' public outreach activities. I hope all MAS members will consider joining us this October 7 (8th rain date).

What:	13th annual Moon over Monona Event
Where:	Rooftop gardens, Monona Terrace Convention Center
When:	October 7 (rain date Oct 8)

(details in the article)

This year more than any other, we need the help of every MAS member. In the past we have invited members with telescopes to come out and share their love of astronomy with the public. While that is still the case this year, we are also making a special plea to those without telescopes to come out as well. **We have an acute need for people to staff two information tables to carry out important duties**: Welcome the public, answer questions about the club or about astronomy, and hand out our literature.

We can start setting up as early as 5:30 PM. Members bringing equipment may use the loading dock located on the northeast end of the Convention Center. The drive-up entrance to the loading dock is at the traffic lights on John Nolan Drive just to the northeast of the Monona Terrace parking ramp tunnel. When turning from John Nolan Drive at the traffic light intersection, make an immediate hard right turn. The dock will be in plain sight. Members may use the large cargo carts in the dock area to transport their equipment to the rooftop by way of the service elevator (located right in the dock area).

If there are no other large events that interfere, MAS members will be allowed to leave their cars in the loading dock area for the evening. If this is not possible, we'll have to revert to paid parking in the Monona Terrace lot.

If weather is inclement a mutual go/no-go decision will be made at 4:00 PM by MAS and Monona Terrace Community and Convention Center. The weather decision can be checked by calling the Monona Terrace events number 261-4042, or John Rummel at 698-5977. Should the event be canceled due to clouds or high winds (the Monona Terrace rooftop can get really, really windy), the following evening, Saturday October 8th, has been announced as the weather date. The same weather announcement procedure will be used.

We hope to see you all at Moon Over Monona. It's easily our most enjoyable event of the year.

If you can be available to help in either capacity, please call me to let me know, or to ask questions. My email and phone contact information are on the back page of this newsletter.

From the observatory director

by Les Phelps

We have made excellent progress on the DGRO project to date, despite this summer's uncooperative warm weather.

We completed the building excavation a couple of weeks ago. As Tim Ellestad predicted, we hit rock 2 to 3 feet below the surface in all but one footing hole. Undaunted volunteers persisted however, using tamper bars, sledge hammers and a jackhammer. We drove all of the footings and the two pier holes down to 4 feet. It occurred to me as we were finishing this phase that this is probably another reason that New Mexico and Arizona are popular with astronomers. Observatory footings and Piers in the Southern states only have to go down a couple of feet!

Following the excavation, we spent a day building a frame for the DGRO to sit on and placing sonotubes for the concrete telescope piers.

On Friday August 27th, we poured the footings for the buildings and the piers for the telescopes. I have been looking forward to getting the concrete poured for two reasons. First, it means that the YRS site is ready for the move. Second, we are past the heaviest labor of the project.

It's been rewarding to see the dedication of MAS members to YRS and the club. A number of people have come out regularly to move this project forward. I'd like to thank Dan Strome, Tom Ferch, John Rummel, Jeff Shokler, Chris Zeltner, Dave Odell, and Ed Proctor for their help on the project so far.

This past weekend, Dan Strome, John Rummel and I met at the DGRO in Evansville to prepare the building for its move to YRS. We removed the roof rails, removed all the pillar supports except the four corner posts, and then removed those posts and jacked the building up on blocks. We installed a runner system to facilitate moving the building onto a flatbed truck and then off the truck at YRS onto its new home. We then secured the rolling roof to minimize the possibility of damage during transport.

Additional work needed includes the move, trenching and running the electrical service to the building and installing the roof rails. I will continue to send out work detail emails to people who have expressed an interest in helping with the project. If you would like to be included in these notices, let me know at lesphelps@tds.net.

Photos by Tom Ferch

Removing the KMO

Late last year, the MAS Board voted to demolish the Koster Memorial Observatory, fearing that further dilapidation of the building could force costly maintenance costs down the road. This decision was made with a heavy heart, given the important place this building, and its namesake, occupies in the history of the club. Fortunately, before any demolition could take place, member Tom Ferch had a happy conversation with a couple from Jefferson, WI who looked the building over and told us they would take it off our hands! The move happened on Monday, August 29th and was handled relatively well, despite the fact that the movers did not understand that there was a sizable cement pier standing in the middle of the structure! Several hours later (plus five big guys, a sledge hammer and MAS' own jackhammer), the pier was whittled down to a nub, and the building was lifted onto the trailer and ready to roll.

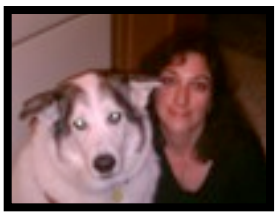
The home-made (by Art Koster) cassegrain telescope has been removed from the KMO and is being stored temporarily at YRS until the club decides what to do with it.

The new owners of the KMO have expressed interest in learning of the history of the building so they can continue to affectionately call it the KMO, even in its new home.

Photos by Dan Strome

Donald Park Star Party

By Theresa Greco



The scene at Donald Park July 8th could have been slightly intimidating for the uninitiated. A line of rather large astronomical telescopes pointing towards the southern sky were queued up and ready to go, their gleaming black exteriors catching the reflection of the quarter moon that watched over us. An army of fireflies joined in on the chorus, flitting across the field in an undulating wave of green phosphorescence.

A crowd of about forty or so had gathered, some of them MAS members, and quite a few of them members of the general public. Some came because they were curious; one gentleman told me that he and his girlfriend had seen an ad in the newspaper and decided to see what it was all about. He was from northern Minnesota, and regaled me stories of a night sky so thick with stars that they appeared to have been painted on. He had always heard little news tidbits, about a certain planet that was due to be visible, and decided that this was the night to acquire a little knowledge about the subject. Another woman told me that she and her husband had owned a small telescope for about five years, but, for some reason, they had never brought it out. She was very enthused at the event, and said that, "People with hobbies are the most interesting people. There's always so much to learn from them". Perhaps she will decide to dust off the "small telescope" and re-introduce it to the cosmos.

The MAS members who were present were graciously instructing the curious about how telescopes work, why objects appear to be moving through the viewfinder, and generally answering any and all questions posited to them with regards to both the workings of the universe, and the small minutiae involved in working a telescope. People moved from scope to scope, engaging in conversation along the way, and creating that communal, contented hum that only we humans are capable of creating.

The entire age continuum was represented there that night, with children scampering in the field behind the astronomers, popping in and out to view Saturn and the moon; retirees strolling along the line of steel cylindrical soldiers, and all ages in-between enjoying the summer night. I, myself, ended up animatedly engaged in a conversation with a woman I had never met before. We ended up talking for a good hour, and I realized that I had somehow lost track of my initial purpose—but I suppose that says something in itself: total strangers who gathered under the stars and formed instant friendships for the night. How could it have been any better?

September 9th MAS Meeting:

John Rummel and Mark Weller will show some pictures from their recent milky way photography trip to the Apostle Islands. John will do a brief workshop on Photoshop editing procedures for presenting astrophotos.

MAS periodically uses email to communicate with members. If you have not been receiving emails from president John Rummel, we may have an incorrect email address for you. If so, please send an email to Dan Strome (djstrome@gmail.com), include your name, and mention that you are updating your email address.

MAS Student Telescope Scholarship

by Ben Gellman

Hi MAS members! This year I will be a tenth grader at Madison Memorial High School. I've always been interested in science (my dad is a chemistry professor at UW and he has influenced me in this respect) and I've always had a passive interest in astronomy and astrophysics. However, I turned that into an active interest this past school year when I joined the astronomy club at Memorial. At Memorial we have the district planetarium, and the club is jointly run by the planetarium director and Mr. Rummel. After getting to know Mr. Rummel this year he invited me to come to an MAS meeting. I thought it was very interesting. My family and I were pondering buying a telescope, and during the winter of the previous year I rented the district's six-inch Dobsonian and did a little elementary observing with my dad. Despite the limitations of our observing (we only really looked at Jupiter) we were captivated. Then this spring, when Mr. Rummel heard that I hadn't purchased a telescope yet, he insisted that I apply for the club's loaner eight-inch SCT. I certainly wasn't going to refuse! This summer has been busy enough and our schedules have been irregular enough that I haven't done much observing. We looked at Saturn using different magnifications, which was amazing. We also looked at the moon and were blown away at the detail we could see. My dad and I are going to do a lot more observing during the upcoming fall, winter, and spring, and we hope to get out to the MAS dark sky site a few times (at least!) and look at the Messier objects (among other things). We are both really excited to see some incredible things with the telescope! In conclusion, I'd like to thank all the MAS members for giving me the opportunity to spend a year with this great scope. It really is a great opportunity, and one that we will do our best to take advantage of. I hope to see all of you at meetings or events in the future!

For Sale:

Odyssey Dobsonian 13.1 inch telescope by Coulter Optical Company. Includes Meade 8 x 50 view finder, 2 sky chart/atlases, Plossl eyepieces 20mm, 10.5mm, and 7.4mm, filters and polarizer. Asking $700.

http://madison.craigslist.org/for/2560834687.html

From the Treasurer

Dan Strome

MAS welcomes recent members: Ben Gellman, Monty Baker & Katie Dobberpuhl, Lindsey Nytes, James & Shandra Singer, Michael Van Susteren, Laura Wangerin and Thomas Adams.

And we acknowledge these donations:

- a roll-off roof building from Matt Mills
- a 10-inch Meade LX-200 telescope, mount, and tripod from Dr. R. A. Greiner
- financial gifts for moving and setting up the building, from Martin and Kay Barrett and Dr. R. A. Greiner
- donations in memory of Kevin Ireland, former MAS member, who died in January, from his family and friends.

Mysterious Moon

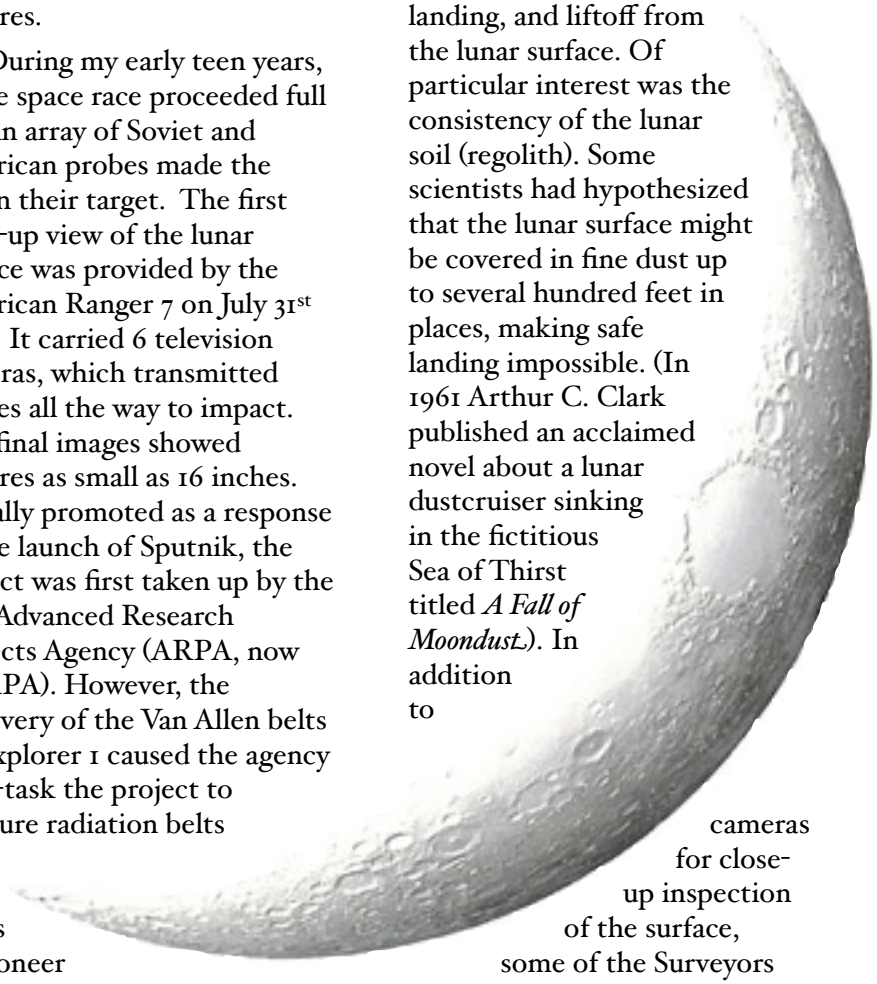
by Wynn Wacker

The recent research suggesting that the differences between the lunar hemispheres facing toward and away from Earth are due to the impact of a smaller second moon early in the formation of the Earth-Moon system (http://www.universetoday.com/87934/second-moon-may-have-orbited-earth-billions-of-years-ago/) set me thinking about how many Moon mysteries have been solved in the course of my lifetime and how many remain to be solved.

When I started in astronomy as an adolescent, amateurs were still mapping the Moon, making detailed sketches of small areas under high magnification during the brief moments of good seeing. The major features had already been well-mapped by professional astronomers, but the nodding librations of the Moon as seen from Earth along with the changing illumination of the lunar day means that low relief features might only cast visible shadows on rare occasions. Amateur selenographers would scan the terminator for lunar domes and small craters, or they might scan the edge of the disk to try and make out features on the 9% of the "dark" side which on rare occasions peeped over the edge. About a month before my 10th birthday the coarser features of the far side were revealed for the first time in the noisy low-resolution images returned from the Soviet Luna-3 probe. They showed that maria, which covered much of the near side of the Moon, were strangely lacking on the far side, but even after image processing showed only the grossest features.

During my early teen years, as the space race proceeded full tilt, an array of Soviet and American probes made the Moon their target. The first close-up view of the lunar surface was provided by the American Ranger 7 on July 31st 1964. It carried 6 television cameras, which transmitted images all the way to impact. The final images showed features as small as 16 inches. Initially promoted as a response to the launch of Sputnik, the project was first taken up by the new Advanced Research Projects Agency (ARPA, now DARPA). However, the discovery of the Van Allen belts by Explorer 1 caused the agency to re-task the project to measure radiation belts with the series of Pioneer spacecraft. It was NASA which finally undertook the original mission with a series of 9 launches. The first 6 launches were failures. In those days, failure was an option and persistence a necessity.

From 1966 to 1968, the Lunar Surveyor program launched 7 robotic craft to soft land on the lunar surface at locations across the near side of the Moon, mostly near the equator. Although the Soviet Luna 9 achieved the first soft landing 4 months before Surveyor 1, the Surveyors pioneered maneuvers needed for a manned landing such as the mid-course correction, soft landing, and liftoff from the lunar surface. Of particular interest was the consistency of the lunar soil (regolith). Some scientists had hypothesized that the lunar surface might be covered in fine dust up to several hundred feet in places, making safe landing impossible. (In 1961 Arthur C. Clark published an acclaimed novel about a lunar dustcruiser sinking in the fictitious Sea of Thirst titled *A Fall of Moondust*). In addition to cameras for close-up inspection of the surface, some of the Surveyors were equipped with mechanical scoops to dig trenches in the soil. Only two of the missions were failures, one due to a bad midcourse correction and one due to lost contact minutes before landing.



In preparation for the Apollo landings, five Lunar

Orbiter missions were launched from 1966 through 1967. All of the missions were successful and the scanned photograph imagers mapped 99% percent of the Moon's surface at a resolution of 60 m, with resolution down to 1 m for selected areas. Additionally, these missions returned the first photographs of the whole Earth and measured the flux of micro-meteoroids near the Moon.

Finally came July 20th, 1969 and the Apollo 11 manned landing. I watched with fellow MAS members, along with 600 million people around the globe, as the shadowy figure of Armstrong took the first human steps on the surface of a celestial body. The instruments left on the Moon by that and subsequent missions allowed for the measuring the Moon's orbit with amazing precision and unexpectedly detected moonquakes (the seismometers were intended to record meteorite impacts). The UW-Madison was one of the institutions selected to receive some of the rocks collected by the astronauts. I recall waiting in line at the Chemistry building to look at some samples covered by plastic domes. The data from the lunar rocks ultimately yielded ages for parts of the Moon's surface, insights into conditions in the early solar system, and a new hypothesis for the greatest mystery of all – the origin of the Moon.

In the course of a decade, as I grew from a child to an adult, the Moon went from being an unreachable image seen through a telescope, with an unknown side suitable for populating with the aliens and monsters of science fiction, to a real world, well-mapped and with tangible geology. Looking back, it was a truly remarkable time, when existential fear combined with the thirst for knowledge to prompt daring feats and broad strides in technology.

Amateurs still seriously observe the Moon, though they are more likely to record it with digital cameras than sketchbooks. They're more interested transient events, TLP events and meteorite hits, than the well-mapped surface forms. After a hiatus at the end of the Space Race, the U.S. and other nations have sent more unmanned probes to explore the Moon and its environs. And there is still an ample supply of lunar mysteries. How much water lies near the surface, in what form and how distributed? Do the "Moon fountains" of electrostatically levitated dust, suggested by some observations of the Apollo astronauts and one of their instruments, really exist, and what is their magnitude? Are they related to TLPs? Is there a rich supply of helium-3 in the lunar regolith, and can it be profitably extracted for fusion reactors?

We've barely scratched the surface of the Moon. There are still mysteries to be solved, and even more to be discovered.

Open House at YRS

by Chris Zeltner

On Saturday June 18 MAS held a swap meet and picnic at our observatory, the Yanna Research Station. The weather was lovely though a little warm. Only about 4 or 5 people brought things to sell at the swap meet and as the afternoon progressed and picnic time approached, the crowd slowly grew. We all had a good time eating and visiting over our brats and potluck. We did get a couple of new members at this event and a couple more who came and joined a little later.

I purchased a lovely 5mm Nagler eyepiece from Martin Mika. Matt Mills was selling a superb dobsonian scope with digital setting circles. The club ended up purchasing this scope (at a great price – Thanks Matt!) for use at YRS and at future star parties.

After the swap meet we had a good time as people came in for the meal. There were about 20 or so people present for the potluck meal, including our several Kelly Road neighbors.

We had planned to stick around for some observing that evening but rain came and shut down any chance of stargazing.

MAS plans to do another similar event next spring. Stay tuned.

Capitol Skies
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First Class

MAS would like to thank
www.netwurx.net
for hosting our web presence

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Madison Astronomical Society members are active in sharing the pleasures of astronomy with the public, acting as a resource for students and teachers, and exchanging information at Society meetings which occur monthly. The Society continues to pursue its original goal to "promote the science of astronomy and to educate the public in the wonders of the universe." For more information about the Society, please contact one of the officers listed at left or visit us on the web at:

www.madisonastro.org

MAS Membership Form

Name _____

Street _____

City/State/Zip _____

Phone _____ *email* _____

Please circle membership type:
Student ($5.00)
Regular ($30.00)
Observing ($70.00)

Enclose check and make payable to the Madison Astronomical Society. Mail to MAS, 502 Walton Place, Madison, WI 53704