



# Capitol Skies

The newsletter of the Madison Astronomical Society

March/April 2005

## From the Observatory Director

by Tim Ellestad

I hope that everyone has been able to get out at least once or twice and take advantage of the dark, clear night skies that Winter can often provide. While Mother Nature has been a little stingy this year with these good

conditions there have been some spectacular nights recently.

YRS offers some wonderful Winter astronomy when these great conditions are here and I encourage everyone to make use of our fine observatory when

they can. However, a word of caution about another common feature of the season - snow. The latter days of Winter can often bring a few notably heavy loads of the white stuff and I alert everyone to carefully consider the safety demands of these circumstances, both over-the-road, and - *in regards to YRS - parking!*

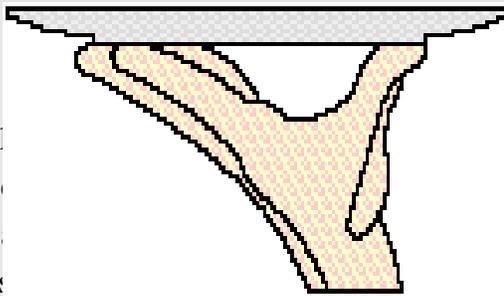
Immediately following a snowfall of any significance the main turn-in driveway off Kelley Road can be precarious. If the driveway has not been plowed it is very, very easy to get just off the gravel surface along its southern edge. If that happens - unless you're driving a tractor - you'll need four more guys or a tow truck to get you out. You could be spending the rest of the night in the clubhouse.

I strongly suggest that if there is reasonably deep (say 5 inches or more) snow cover leave your car parked on the YRS side of Kelley Road - even if there are some tempting ruts in the snow on the driveway. Remember, just because you can make your way into the main driveway from the road, you can't leave your car parked in the main turn-off. You still need to get your vehicle into our parking area or up into our turn-off driveway. The main turn-in driveway is our shared easement with our neighbor to the west, Jon Yanna, and we have to leave him clear access. A prudent decision here along with only about twenty more steps is certainly a more appealing prospect than finding yourself miserably stuck in the snow.

Go to YRS some clear winter night and enjoy the heavens. Think a kind thought or two about LeRoy Yanna. He was supremely generous to us.

## MAS Banquet Notes

Make space on your calendar now for MAS' Annual Spring Banquet. It will be held on March 11. See the calendar on the net for details. Our guest speaker for the annual MAS Banquet this



our own Jim Lattis. Jim's topic for the evening is "How the English Enlightenment Transformed Astronomy--The Cases of William and Caroline Herschel."

Jim explains his aim for this talk: "I plan to present some of the important currents in English Enlightenment thought, explain how they help distinguish the Herschels' work from their contemporary astronomers, and illustrate some connections between Herschel and the Enlightenment movement."

The banquet will be at CJ's East with cocktails at 6 pm and dinner starting at 7 pm. Dinner choices are roast beef at \$15, chicken Cordon Bleu at \$16, broiled walleye at \$18, and vegetable stir fry at \$13. Please send your check to Mary Ellestad, 2810 Mason Street, Madison, WI 53705 by March 1.

## Officers

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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 above.

MAS thanks

Internet Dynamics Corporation  
for hosting our web presence.

Visit MAS on the web at:

[www.madisonastro.org](http://www.madisonastro.org)

## Calendar of Events

- March 5 Space Place Day Trip to the science museums of Rockford, Ill., including the nationally known Rockford Children's Museum (and planetarium), and the Burpee Museum of Natural History (with a good dinosaur exhibit, among other attractions). For more information, see [spaceplace.wisc.edu](http://spaceplace.wisc.edu) or leave a request at message at 608-262-4779.
- March 8 Space Place Guest Speaker, Dr. David Grinspoon, noted astronomer and author. Title TBA, but probably closely associated with his latest book, *Lonely Planets: The Natural Philosophy of Alien Life*. 7:00 pm, 1605 S. Park St.
- March 11 MAS Annual Banquet, CJs east. Menu choices and instructions for reserving your spot can be found in the treasurer's column on page 1 of this newsletter. Cocktails at 6:00 pm, dinner at 7:00. Our banquet speaker is our own Jim Lattis, "How the English Enlightenment Transformed Astronomy—The Cases of William and Caroline Herschel."
- March 16 MMSD Planetarium Public Program: Skywatching: explore the current night sky. Learn how to identify constellations, planets and more. Memorial High School, corner Mineral Point and Gammon, 663-6102 for info. All tickets \$2. Programs last one hour, starting at 6:30 and 7:45.
- April 8 MAS regular monthly meeting. Speaker and topic TBA. Space Place (1605 S. Park St.). Business meeting 7:00, main presentation 7:30.
- April 12 Space Place Guest Speaker, Dr. David Mead, of Lucigen Corp., on "Life in Boiling Thermal Pools; One Niche in the Universe of Biological Possibilities." 7:00 pm, 1605 S. Park St.
- April 20 MMSD Planetarium Public Program: Topic TBA. Memorial High School, corner Mineral Point and Gammon, 663-6102 for info. All tickets \$2. Programs last one hour, starting at 6:30 and 7:45. This will be the final MMSD public program until October.

## Young Astronomer's Club

Retired Madison teacher Jim Kotoski is looking to start an astronomy club especially for young people. The club will attempt to provide activities and meeting for middle and high school students especially, but may be open (or have events) for younger children as well. It will be open to any student in the Madison area who has an interest in astronomy.

Plans are currently in the very beginning stages but Jim hopes to have

the club up and running by the start of school this fall. While the format is undecided, it is likely the club would meet monthly in the Memorial High School planetarium, and have scheduled observing events as often as possible.

Jim is looking for possible partners within the MAS to help organize and run events for this club. If you are interested in helping out, please contact Jim at [jkotoski@madison.k12.wi.us](mailto:jkotoski@madison.k12.wi.us).

# Using the Drift Scan Method (TDI) for CCD imaging on an LX200

by Greg Sellek

Every solution has a problem. Mine was caused by a stubborn LX200 in the dome building that did not want to track well in colder weather. While autoguiding with the CCD camera was an option, it still tended to leave us with football-looking stars on our long exposures. Since looking for asteroids in the frame requires that the stars do not look like said footballs, another approach was needed.

While browsing the SBIG website and dreaming of the day when I could actually afford one of their cameras, I came across an interesting article on Drift Scanning (also called Time Delay Integration or TDI for short). After reading the article, I was a bit confused, but excited that this could be a solution to my football looking stars.

This method is hard to conceptualize, but basically it involves aligning the CCD camera so that the columns of the CCD chip are perpendicular to the motion of the stars in the camera frame when the telescope tracking is turned off. (On a properly polar aligned telescope, only the RA drive is needed to keep the telescope tracking on a star. This is also the drive that can cause tracking errors, also known as periodic error.) So, as the stars trail across in front of the CCD chip (since the telescope is not tracking in RA), each column on the chip is read in separately and then combined to make an image. Special software is needed to calculate exactly how fast the stars are moving across the field of view, given a very specific focal ratio, size of the CCD chip, pixel size, and declination. A gentleman



from Germany has written just such a program. It's called WinScan, and is designed to take TDI images using a windows PC and SBIG CCD camera.

Other than some challenging issues with documentation and its poor English translation, the program worked as advertised. The resulting image had pinpoint stars, and without the telescope gears running, there were no tracking issues. Now only one problem remained. I had gotten used to the automated asteroid runs we were doing on the telescope. Just a few mouse clicks and 2 hours later, you had your asteroid data.

This new TDI process was very manual and would be almost impossible to do an asteroid run using it by hand.

Luckily, the author of Winscan also included a command-line interpreter. That meant that the program could be called from a within another program. All I had to do was pass it the correct parameters and let it take the TDI image. Since we were used to using Astronomer's Control Program for our automated asteroid runs, I decided to write a small script that would run in ACP and call Winscan to take the TDI images for us. The actual script and more information can be found on Matt Mills web site at

[http://webpages.charter.net/asteroid/lx200\\_drift\\_scan\\_method.htm](http://webpages.charter.net/asteroid/lx200_drift_scan_method.htm)

The end result was an automated method to take TDI images from within ACP. We can now continue our asteroid hunt without worrying about telescope tracking issues. Our only outstanding issue is to determine our limiting magnitude using this method. Hopefully some clear skies will help us solve that problem.

## Links and References

### **Matt Mills and the Minor Planet Project**

<http://webpages.charter.net/asteroid/>

### **Alan Homes – TDI Techniques**

<http://www.sbig.com/pdffiles/ST7-9lCameraApps.pdf>

### **Winscan**

<http://www.driftscan.com>

### **Astronomers Control Panel**

<http://www.dc3.com>

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## From the Treasurer

by Mary Ellestad

### **New Members**

MAS warmly welcomes new members Alric Lopez and John Tiemann.

### **Donation From Martin Barrett**

I'm happy to report that Martin Barrett's renewal this year included a nice donation to MAS. This is much appreciated and we extend a sincere Thank You to Martin for his continued support of MAS.

### **MAS Banquet Reminder**

Friday, March 11th - I need your reservations by March 1st. It's at CJ's East with cocktails at 6:00 and dinner at 7:00. The speaker is Jim Lattis from Space Place. See the calendar next page for Jim's banquet lecture topic. We're hoping you will be able to attend - March is a month that could use something fun! The menu choices are

Roast Beef - \$15,  
Chicken Cordon Bleu - \$16,  
Broiled Walleye - \$18,  
Vegetable StirFry - \$13.

Don't forget the chocolate sundae!  
Please send your check to Mary Ellestad,  
2810 Mason St., Madison, WI 53705.

## Book Review:

### *The Modern Moon: A Personal View* by Charles A. Wood

Sky Publishing Corporation (November 1, 2003); \$44.95 at Sky Publishing and Amazon.com

Reviewed by John Rummel

Many amateur astronomers express a certain “Been there, done that” disdain for the moon. Others avoid moonlit nights because the glare interferes with their desire to observe faint fuzzies. Most of us, however, realize the riches available to careful moon watchers and enjoy studying our closest celestial neighbor. No other target packs more observable detail for the amateur than our only natural satellite. Making sense of this wealth of detail is something else though.

There are a variety of excellent books available to satisfy the pure observer (Rükl’s *Atlas* or North’s *Observing the Moon*), or those who want more of a scientific review of lunar geology (Wilhelm’s *To a Rocky Moon* is excellent, as is Spudis’ *The Once and Future Moon*). Charles Wood’s current effort reaches out to both audiences, and does so in a way that is both scientifically authoritative and clearly written by someone who has spent countless hours at the eyepiece observing the features he

moon’s visible face. Though weighing in at only 209 pages, its large format packs a lot of content into each page.

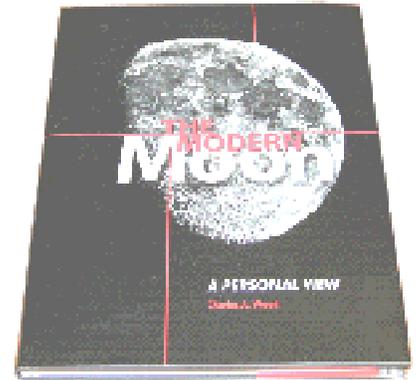
Aside from the traditional table of contents, the inside cover is a lunar map with white lines and numbers delineating the appropriate chapter to turn to if one is interested in, for instance, Imbrium (chapter 3 and 4 primarily). A 19th chapter, very brief, is Wood’s own essay on the need to return to the moon, and it’s importance to understanding our own place in the solar system.

Detailed accounts of all six Apollo landing sites are included in the appropriate chapters, along with directions for the observer to locate them. However, the science takes center stage. This book neatly summarizes the current state of lunar geology; exactly what was learned from the Apollo program and its precursors (Ranger, Lunar Orbiter and Surveyor) and is updated to include the results of the Clementine and Lunar Prospector spacecraft.

I have a few quibbles with this work.

Although the photographic selections are, on average, excellent, there are some omissions. Many times in his text, Wood refers to features that cry out for an illustrated photograph to accompany them. For instance, chapter 8’s discussion of the basin structure of Serenitatis includes the following:

*Wilhelms and McCauley also drew an outer dashed basin ring around Serenitatis, passing through or near the craters Manilius, Eudoxus, Rømer, and Maclear, but you have to be a true believer with the utmost credulity to see*

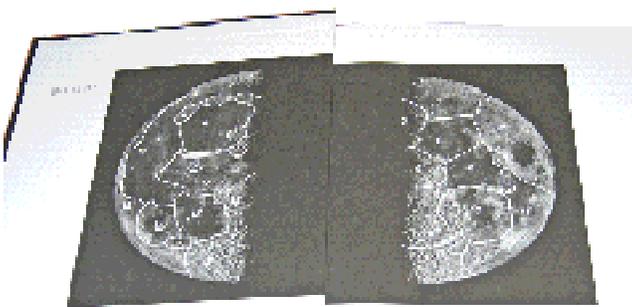


*it... far more believable is an inner ring for Serenitatis defined by a 400-km-wide plexus of wrinkle ridges that is beautifully seen whenever the terminator marches across Serenitatis.*

The accompanying photos do not include any of the craters - labeled or not, much less Wilhelms’ and McCauley’s much maligned dotted line. There are many other examples of this phenomenon which frustrated me as I read the book, but these oversights certainly do not ruin the experience.

Wood’s background includes a Ph.D. in planetary geology and he has been around long enough to have worked with everyone important in the field since the days of Apollo. Wood is not above taking shots at the establishment either. In his introduction, he quips “One of the reasons I quit NASA was that I wanted to do things - not just study the possibility of doing them.” Wood spent most of his career at the University of Arizona’s Lunar and Planetary Laboratory.

*Modern Moon* is a wonderful resource and will soon have you salivating for an opportunity to get out and observe and photograph the moon for yourself. It also makes a great cloudy night companion.



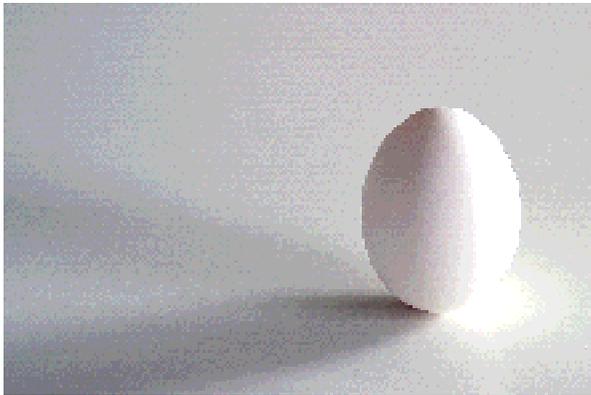
describes. *Sky and Telescope* readers who are familiar his “Exploring the Moon” column will instinctively know that this book is worth a look.

*Modern Moon* contains 18 chapters that are organized by location on the

# Eggs, Eggheads, and Unbalanced Thinking

by Wynn Wacker

Spring is nearly here and, if past years are any indication, some media outlet is sure to trot out the story that eggs can be stood on end at the equinox because the “gravitational forces” are “balanced” at that time. My first introduction to this idea was in a newscast in the early ‘80s, when I was living in Maryland and working at the research annex of the VA Medical Center in Washington D.C. I decided to have a little fun by bringing a couple of eggs



into the lab on the day of the equinox and balancing them on end. To add a little pizzazz to the presentation, I used a plexiglas sheet with a bubble gauge and leveling screws, normally employed to make acrylamide gels for protein identification, as the substrate for the eggs. Word spread, and throughout the day MDs, PhDs, and technicians trooped into the lab to gaze upon this marvel. I freely told anyone one who asked that the notion of gravitational balance was hoey, and the trick would work equally well at any time of the year. I even left the egg balanced there for several days afterward in demonstration. The disclaimer did not seem to diminish the enthusiasm for the demonstration.

The book *Bad Astronomy* by Philip Platt traces the history of this peculiar notion to an article published in a 1945 edition of *Life* magazine describing a large group of Chinese in Chungking performing this ancient custom. The idea seems to have lain fallow until a few years starting in 1983 when self-pro-

claimed artist and “ritual maker” Donna Henes persuaded large numbers of people in New York to try the balancing act in public gatherings. This irresistible human interest filler was spread far and wide by the news agencies. You can read more about it in the book or on Phil’s website of the same name.

Considering the very educated people who are willing to entertain this idea, I suppose that I could drag out C. P.

Snow’s comments on the two cultures, with the contemporary addendum on the divisions within science itself. However, I think that it speaks more to the human yearning for connection to the larger universe in a way which can be grasped viscerally. It’s one thing to know in the abstract that that we are made of star stuff, but it’s somehow much more real to gaze at an ancient symbol of fertility and new life sus-

pending by cosmic forces before your very eyes. Seeing is believing, even if what you believe isn’t true.

The idea of Science, a kind of directed seeing involving the persistent challenge and testing of our perceptions against the physical world, must come hard to the human mind. Despite its evident utility, it arose long after the other (and more comfortable) devices of civilization, Religion and Philosophy. In spite of its many confirmations, it still fights an uphill battle against the lure of the irrational from both the “traditional” religious right and the even more ancient beliefs repackaged as “New Age.”

The battle to dethrone our planet as the physical center of the universe is long won. The war to open the men’s minds to the vast expanse of linear cosmological time revealed by astronomy, physics, and geology is progressing, but still meeting stiff resistance in some quarters. These domains of knowledge benefit by dealing with comparatively simple systems with

some mathematical predictability. The realm of complex biological systems faces harder challenges. Ernst Mayr, one of the great leaders of the modern synthesis in biology which combined biological evolution and genetics into a consistent whole, passed away recently at the ripe age of 100. Despite his lifetime of effort, the many years since Darwin, and the ever mounting supporting evidence, the theory of evolution is still not accepted by the majority of Americans. Increasing efforts have been mounted to suppress its teaching or substitute the thinly veiled religious doctrine of intelligent design.

Never in recent history has Science been held in such low esteem by Americans in general and, most dangerously, by those in government in particular. Findings not consistent with the prevailing political sentiment are ignored or actively suppressed. Compared with our economic rivals India and China, few of our students choose studies in science and engineering. We face the bleak prospect of America as a decaying superpower with a second world economy.

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It is vitally important that we fan the flame of curiosity about the world which every child is born with. Astronomy offers an opportunity to make science real and connect a child directly with the wide universe of space and time using only modest equipment and little mathematical training. Jim Kotoski, retired Madison teacher and previous winner of the MAS Astronomy Education and Outreach Award is attempting to start astronomy youth group. Although not all these children will become an astronomers, or even scientists or engineers, they might all become scientifically literate citizens with the capacity for rational thought necessary to support a great democracy. I urge every MAS member to offer what assistance they can in this worthy endeavor.



## **LeRoy J. Yanna**

### ***From the desk of MAS President Neil Robinson:***

Greetings Fellow MAS'ers,

It is with sadness that I report the passing of one of MAS's great benefactors: LeRoy Yanna, donor of the land on which our observatory, Yanna Research Station, resides, passed away on Saturday, 22 January, 2005.

Below is a transcription of the plaque honoring LeRoy which hangs in the MAS clubhouse at the observatory. Look for a more detailed memorial to LeRoy in our next newsletter.

Leroy was a member of MAS for many decades and contributed energy, wisdom as well as land to MAS and will be deeply missed. Farewell Leroy.

### *LeRoy J. Yanna*

*In 1984, after 50 years of building telescopes and enjoying astronomy, LeRoy J. Yanna donated a parcel of his land to the Madison Astronomical Society. This generous gift became the foundation for his namesake, the Yanna Research Station, and remains the largest portion of our land. For nearly 20 years, MAS members have been inspired by the wonders of the night sky and the vast universe above YRS. LeRoy is now a lifetime member and the MAS is honored to acknowledge his contribution to our society and to many more years of amateur astronomy at Yanna Research Station.*

*June 14th, 2003.*



*Capitol Skies*  
2810 Mason Street  
Madison, WI 53705

**First Class**

*MAS would like to thank:*



*for hosting our web presence*

This resource list is made up of people who have special interests which they are willing, even eager, to share with others in the Society. Many members, not listed, also are interested in particular aspects of astronomy and have considerable expertise in viewing and imaging the skies. Members are encouraged to come to the monthly meetings, not only to get to know the other members, but to discuss and enjoy their special or general interests in various aspects of astronomy. This is a Society of beginners and experienced amateurs. From time to time we have seasoned professionals attending. The meetings are a good time to meet these people as well. See you there.

### Resource People and Special Interests

The resource list is currently being revised and rebuilt. If you would like to be listed as a club resource, please submit your name and contact info to darksky25@charter.net.

Possible areas of expertise include:

- Variable stars
- Planetary and lunar observing and imaging
- Deep space object observing and imaging
- Solar observing and imaging
- Observatory design and construction
- History of astronomy
- Computers and software
- Comet and asteroid astrometry and photometry
- Occultations and grazes

<b>MAS Membership Form</b>	
Name:	_____
Address:	_____
City/State/Zip:	_____
Phone:	_____
Email:	_____
Please circle membership type: <i>Enclose check and make payable to the Madison Astronomical Society. Mail to MAS Attention: Mary Ellertsd, 2810 Mason Street Madison, WI 53705</i>	
Student (\$5.00)	<input type="checkbox"/>
Regular (\$25.00)	<input type="checkbox"/>
Observing (\$60.00)	<input type="checkbox"/>