Madison Astronomical Society

# Capitol Skies

*The Newsletter of the Madison Astronomical Society* *March/April 2007*

## From the President's Desktop

*by Jeff Shokler*

Looking out the front window as I write this, the sun has set, twilight has reached its fullness, Venus shines low in the west, and the crescent moon is blazing overhead. (You guessed it, my house faces west.) Stars are beginning to pop out across the clear, crisp sky that is now a dark, dark blue fading to black. With a temperature of 40 degrees outside, I'm thinking I need to get the telescope out and enjoy a bit of backyard observing this evening. Our recent above average temperatures certainly have me thinking about the coming spring and the warmer nights that come with it – the kind of nights where observing doesn't require constant attention to the prospect of frostbite…

With all this in mind, our upcoming March meeting, scheduled for Friday, **March 9th, at 7:30 pm** at the Space Place will be our first (annual?) **Equipment Expo**! All members are invited to bring their astronomical equipment: your favorite telescope(s) and binoculars (don't forget the mounts!), your most useful accessories, those unusual gadgets (both purchased and home-made), even what you feel are your most vital books and observing resources that form the most vital parts of your observing/imaging gear. The idea is for members and guests alike to see, to share, and to learn about the array of equipment and resources currently available and in use by our members as we pursue our interests in amateur astronomy.

The **MAS Equipment Expo** will be a great resource not only for our membership, but also particularly for any guests and visitors who might join us. At recent meetings we have had a number of interested guests who had terrific questions about astronomical equipment – many with an eye toward purchasing their own. What better way for us to educate each other and the public about the great array of quality equipment (for all experience levels and bank accounts) for amateur astronomy? I know I'll learn a lot and am also looking forward to showing folks my favorite gear. Who doesn't like talking about their most cherished telescope, eyepiece, or digital camera?

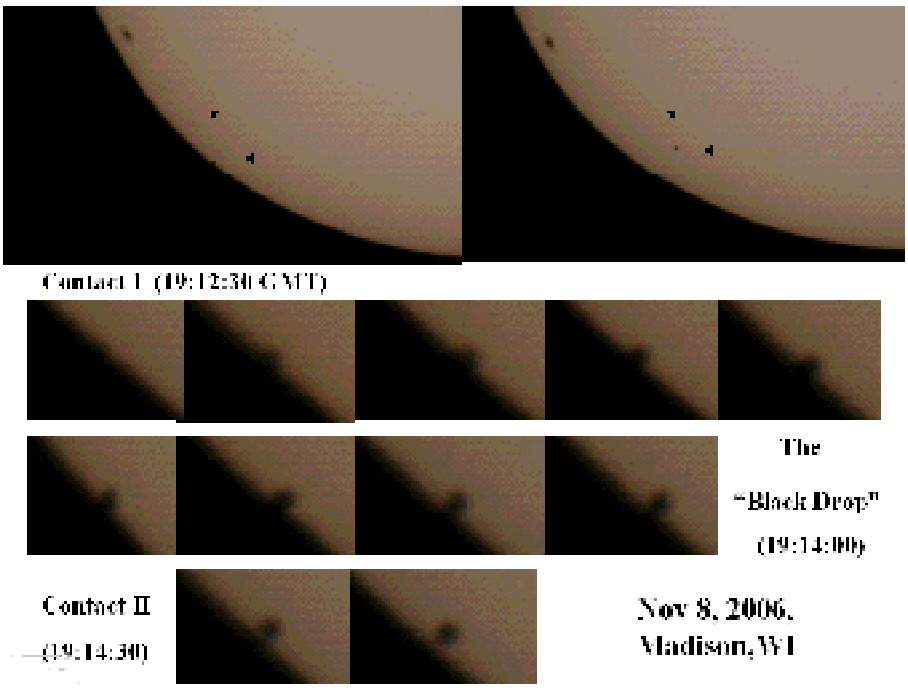
Tell your friends, bring your family,

## Mercury Transit

*by Douglas and Mercedes Russell*

These images of the rare 2006 Transit of Mercury across the sun were taken from our new observation deck near Madison West Town. Photographs were taken using a Canon 20D DSLR Camera at prime focus on an 11" Scmidt-Cassegrain CGE1100 Telescope with solar filter, with digital zoom in Photoshop 7 for high magnification planetary transit images. The gamble to take the day off work and set up for this paid off, as it proved a gloriously sunny day, and the clouds cleared just in time. The location on the solar limb and timing of the event was identified precisely from Fred Espenak's article in

*Continued on page 2*



# *The First Copernican: Georg Joachim Rheticus and the Rise of the Copernican Revolution* by Dennis Danielson

*Reviewed by John Rummel*

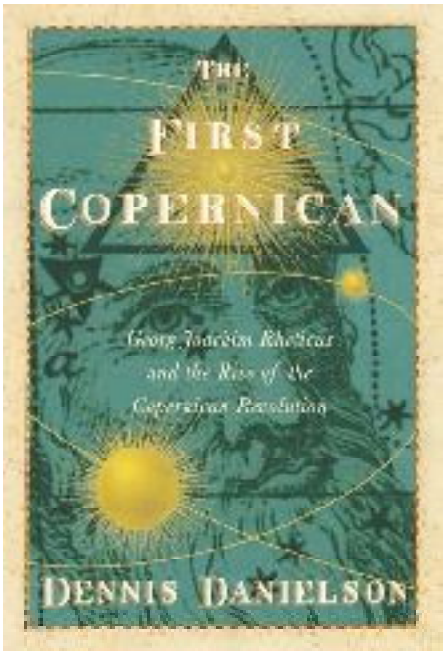
Georg Joachim Rheticus' name will be unfamiliar to all but those who have more than a passing acquaintance with the development of astronomy from Copernicus to Kepler. He is frequently mentioned as Copernicus' only student, but his role in the revolution set into motion by his teacher was much greater then that of disciple. Scientific revolutionaries are often romantically imagined to have worked in isolation: Newton's discoveries during the plague year at Woolsthorpe come to mind, as does Einstein's famously singular push from special to general relativity. The truth, however, is usually much more pedestrian. Newton would never have been moved to write the *Principia* without Halley's urging and generous patronage. Nearly two centuries later, Darwin might have never published the *On the Origin of Species* unless he had been prodded out of his long procrastination by Russell's paper on natural selection.

For Copernicus, the push to publish came from his disciple, Joachim Rheticus, a young scholar from Wittenberg who traveled to Frauenburg, where the aging astronomer was working as a canon in the cathedral there. Rheticus had come to learn of the new astronomy, after first learning of Copernicus' unusual system of the universe from Johannes Petreius, a publisher in Neremberg. Rheticus became Copernicus' pupil and stayed two years with him. Dennis Danielson's new work, *The First Copernican*, is the first popular treatment of Rheticus' life and work.

Danielson stakes out his thesis in the prologue to the book, entitled "No Rheticus, No Copernicus." Rheticus' visit brought with it the first serious scholarly interest in the old man's system of the universe. More importantly, it brought him the personal contact and enthusiasm of a younger man to persuade him to undertake the enormous task of committing himself to a full treatment of his heliocentric system and all its complex mathematical consequences.

The details of Rheticus' life are perhaps not as important as his global role in the Copernican revolution. But the details, chronicled in conversational biography by Danielson, also help to paint a portrait of the times in which both Rheticus and Copernicus lived. Understanding this zeitgeist is vital to understanding the revolutions in thought that emerged from it. Danielson neatly develops the historical context, particularly the Reformation, and how it created the intellectual landscape within which Copernicus' ideas would be received. Lutheran and his disciple Melanchthon rewrote the system of education in Germany by encouraging the study of God's natural world, along with God's Word. Melanchthon took a personal interest in Rheticus, and encouraged both his education and his travels, with the selfish interest that Rheticus would return to become a lifelong professor of mathematics at the university of Wittenberg.

Danielson's treatment of the characters in this story bring to life the events




that carry the tale forward. We feel the loneliness, both academic and personal, felt by the aging Copernicus. We are touched by the interest and friendship shown by the young Rheticus. We see the reluctance to publish on Copernicus' part, partially due to the fact that he was busy with his secular duties in the cathedral, but also because he sensed that his radical

*Continued on page 3*

### *Mercury Transit, cont. from front page*

the *2006 Observer's Handbook*, and a count-down sequence was started 10 minutes ahead of time. The upper panels show the position of Mercury's disk first crossing the solar limb at ingress, and then silhouetted against the solar disk. The object at upper left is a Sunspot. Arrows mark the position of Mercury. The sequence of insets show first, the initial ingress, a minute notch on the solar limb, seconds after "Contact I" , when Mercury's disk is externally tangent to the Sun. Ingress then is seen. Just before ingress is completed, a small distortion of the planetary shadow is seen at the solar limb, known as the "Black Drop" effect, which is an optical effect (historically famous for confounding efforts in the 18th Century to accurately time transits and hence calculate the distance of the earth from the Sun). Contact II is when the planet is internally tanget with the Sun. The whole sequence occured in less than 2 minutes, between 19:12:30 and 19:14:30 GMT (UT) or 13:12:30 to 13:14:30 CST. The disc of Mercury is about 10 arc-seconds in diameter.

***Rheticus Book Review, cont.***

ideas lacked an audience. Our hearts swell as Rheticus gives him that audience, and emboldens the old man to push forward with an grueling writing task that took, quite literally, the rest of his life. Later in the story we sympathize with the conflict Rheticus feels between his duty to return to Wittenberg to teach, and his desire to continue his travels and his own research into triangles (trigonometry). We are appalled when he becomes enmeshed in a lawsuit over his inappropriate sexual liaison with a male student, and is forced to flee or face persecution.

Danielson's biography of Rheticus walks a line between a chatty popular account and a serious scholarly work of research. It is not an easy read due to the level of detail and, occasionally, the level of the vocabulary. It may be just beyond accessible for the casual reader who lacks a background in the history of science and astronomy. However, it will certainly be required reading for any serious student of the times, whether professional amateur. Copernicus' epochal *De revolutionibus* did not emerge from a cultural or intellectual vacuum, but biographical detail of Copernicus' life is scant. Rheticus' story fills a gap and Danielson's telling of the story will enrich your understanding of this pivotal

# For Sale: 15" Discovery Truss Dob

Here's what all is included:

1. 15" Discovery Truss Dob. The mirror is amazing. In the interest of full disclosure, it has a tiny, 2mm x 2mm "ding" (pictures available) that has been blackened. This has absolutely no detrimental effects for viewing or otherwise. Also, though I have to shine a light on the mirror in just the right way to see them (and I couldn't seem to capture them on camera), I've spotted a few sleeks here and there (NOT scratches!). You might never notice them if I didn't tell you about it, and again, these don't in any way detract from the mirror's quality or function (or I would never have bought it!) - no light loss, no light scatter, sharp as a tack. The secondary mirror is in excellent condition. I have received comments from experienced astronomy buffs that the mirror on this 'scope rivals others of reputed higher quality (i.e., a 16" Obsession is one specific example I recall). It truly is a very sweet mirror.

2. Astrosystems DewGuard temperature sensing secondary mirror heating system (needs to be installed) with documentation.
3. JMI NGF-DX1 focuser with motofocus controller.
4. Telrad
5. 50mm viewfinder
6. NGC-MAX digital setting circles and computer. Locate 12,000+ objects in the night sky. It has worked very well for me. Comes with documentation. I mounted this on a nice, sturdy professional looking stand on the rockerbox so you can see it as you are hand-slewing to the coordinates.
7. The complete Catseye Collimation System - absolutely awesome! The best there is for spot-on collimation. Comes with documentation.
8. Very nice spandex-like black shroud. (Plus the shroud that came with the 'scope from Discovery).
9. Full size nylon telescope cover.
10. Upper assembly PVC-material light shield. Sturdy but rolls up for easy storage too.
11. Cooling fan underneath mirror.
12. Four "boundary layer" fans - 2 intake and 2 exhaust. Also can help cool mirror. You can switch these on and off separately from the cooling fan underneath.
13. 12v battery mounted in a box on mirror box with red leds and separate switches for fans and another for the DewGuard secondary mirror heating system. This battery serves very well to help balance the 'scope.

Much, much more included. Please contact me for details:

PRICE: $2,400 -- I'd be happy to deliver it to your door if you live within 100 miles of Milton, WI. If you have any questions, please don't hesitate to contact me. I will take cash, PayPal, or Money Order.

My contact info is: Kevin Huddleston
home phone: 608-769-8734;
work phone 608-754-4497;
e-mail kdhuddleston@gmail.com.

*Capitol Skies*
*2810 Mason Street*
*Madison, WI 53705*

***First Class***

*MAS would like to thank:*

IDC

*for hosting our web presence*

## *Officers*

***PRESIDENT***
*Jeff Shokler*
*301-0191*
*jshokler@wisc.edu*
***VICE PRESIDENT***
*Wynn Wacker*
*274-1829*
*wkw@mailbag.com*
***TREASURER***
*Mary Ellestad*
*233-3305*
*ellestad@mailbag.com*
***SECRETARY***
*Dave Odell*
*608-795-4298*
*dcodell@centurytel.net*
***OBSERVATORY DIRECTOR***
*Tim Ellestad*
*233-3305*
*ellestad@mailbag.com*
***AT-LARGE BOARD MEMBERS***
*Neil Robinson*
*238-4429*
*neilandtanya@mailbag.com*
*Mark Hanson*
*833-8988*
*markh@tds.net*

**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 Attention Mary Ellestad, 2810 Mason St., Madison, WI 53705*