



# Capitol Skies

The newsletter of the Madison Astronomical Society

December 2003

## MAS Astronomy Merit Badge Clinic

by Mary Ellestad

The Astronomy Merit Badge Clinic for the Boy Scouts on November 1st was attended by 13 scouts. This was a successful event for MAS public outreach and education largely due to the efforts and persistence of MAS member AJ Carver. From the initial presentation of the idea at an MAS meeting months ago to his final review at the November meeting, AJ was involved and led the process every step of the way. He contacted the Boy Scouts, worked out all the details, presented them along with Bill F. from the Scouts at one of our meetings, rounded up MAS volunteers, put a moon lab on the MAS website, planned the classroom session, ordered the planispheres, prepared handouts and presented some of the sessions during the clinic. When the weather did not cooperate for actual telescope viewing on Saturday, he was prepared with a session scheduled at the MMSD Planetarium on the following Monday. As you can see, this all took a LOT of planning, effort and time.

AJ's presentation at the November meeting was both informative and humorous. He had surveyed the scouts and their parents with a questionnaire about what they learned, liked, disliked, etc. and prepared some graphs with the results. Some of the answers were pretty funny but it was obvious that this was an enjoyable and educational experience for most of them. It certainly turned out to be an event that MAS can be proud of and would wish to do again in the future. Although AJ then thanked every person who helped in any way, it seems that the biggest Thank You should be from MAS to AJ Carver for a job extremely well done.

## Miss the meeting?

The MAS meeting minutes can be had electronically by any member sending a request via e-mail to Dave Odell ([dodell@midplains.net](mailto:dodell@midplains.net)).

## From the President's Desk

by Neil Robinson

Greetings Fellow MAS'ers. November was a good month for observing events; we started the month with some of the largest sunspot displays in memory. The Boy Scout Astronomy Merit Badge program organized by AJ Carver was a success. Many of us got out on Saturday November 8th to watch the lunar eclipse. Tom Jacobs and I each did a day at the DeForrest Middle School showing off telescopes to 5th and 6th graders on the November 11th and 13th.

The board of directors has approved the update of the YRS description-and-rules and this will be mailed out to all members shortly. We have established an ad hoc committee to poll the membership on what sort of development we would like to see happen at YRS and develop a plan accordingly.

The RASC Observer Handbooks are in and were distributed at the November meeting to those who were present. Those of you who have not yet collected requested copies can get them at the December meeting or call me to arrange discrete pickup.

## Venus Transit Europe Trip

by Jane Breun

On June 8, 2004, Venus will transit the sun for the first time in over one hundred years. Some of us MAS'ers want to view this historic event. We are researching various locales and weather possibilities in Europe and plan to share our findings at the December meeting. Tentatively, we would leave here June 5 and return June 12. Check your calendars and your travel budgets and plan to join us!

## Girl Scout "Skysearch" Badge Workshop

by Jane Breun

On Friday, February 27, I have scheduled a workshop at Space Place from 7 p.m. until 8:30 p.m. for Junior Girl Scouts to learn about telescopes. This is part of their "Skysearch" Badge, which they will have begun with me at the UW planetarium at a separate session. The Scouts need to learn how a telescope works and then look through a telescope, focusing it and looking at the same object at different magnifications. On February 27, the moon, Saturn, and Jupiter should all be visible, if the sky is clear. These seem like ideal objects for the Scouts to view. If the sky is not clear, I will still do the workshop, just setting up telescopes indoors and viewing a picture on the opposite wall. I would like to have no more than four girls per telescope, so I need lots of help. If you can help, please call me at 832-1583 or email me at [seniormixed@tds.net](mailto:seniormixed@tds.net). If significant numbers of girls want to do this, I'll offer another workshop on Sunday, February 29.

## 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

- December 12 7:30 pm, MAS Annual Holiday Party. Space Place, 1605 S. Park St.
- December 17 Madison Metropolitan School District Planetarium – Public show. Season of Light. This delightful multicultural program will lead you through the discovery of many basic astronomy concepts as you explore the holiday traditions of several cultures and religions. Two shows, 6:30 and 7:45. Tickets \$2. Tickets go on sale approximately 20 minutes prior to the show. First come, first served. Memorial High School, 201 S. Gammon Rd., 663-6102 or [www.mmsd.org/planetarium](http://www.mmsd.org/planetarium) for info.
- January 9 MAS monthly meeting. 7:00 pm board meeting, 7:30 main presentation: Dr. Sanjay Lemaye, "Invading Mars Again." Space Place, 1605 S. Park St.
- January 21 Madison Metropolitan School District Planetarium – Public show. Skywatching: Explore the current night sky. Special emphasis this month on the arrival of the Mars Explorer Rovers. Two shows, 6:30 and 7:45. Tickets \$2. Tickets go on sale approximately 20 minutes prior to the show. First come, first served. Memorial High School, 201 S. Gammon Rd., 663-6102 or [www.mmsd.org/planetarium](http://www.mmsd.org/planetarium) for info.

## Another successful Moon Over Monona Event

by John Rummel

Saturday, October 4th was the MAS' second Moon over Monona event in two years. Originally scheduled for Friday the 3rd, clouds dictated moving the event to the following night. With a beautiful gibbous moon and Mars still large enough for some good looks, hundreds of people were treated to views.

Approximately 20 MAS members attended the event and brought instruments, ranging from binoculars to elaborate telescopes with video monitor setups. Monona Terrace estimates that between 400 and 500 members of the public attended that evening. Those numbers are well down from last year but part of that can be attributed to the change from the published date to the rain date.

In any case, Moon over Monona Terrace continues to be one of MAS' signature events of the year and one that should be anticipated eagerly by all members. See you in October of 2004!



# Proposed Changes to the Madison Astronomical Society By-Laws

by Dave Odell

There is a proposed change to the by-laws for the Madison Astronomical Society. This change is to allow the annual banquet to be held in March. This will allow more business meetings before the summer observation season and to avoid conflicts with Good Friday in April. As required by the by-laws the proposed changes must be published to the membership at least 1 month prior to the meeting which ratifies the changes. The changes are as follows:

## Change 1

Original:

### ARTICLE VII

#### Meetings:

Meetings shall be held on the second Friday of each month, except for the months of April and June. In April the annual banquet shall be held on the second or third Friday of the month. In June the annual meeting shall be held on the Saturday following the second Friday in the month in the form of a picnic at the Yanna Research Station.

New:

### ARTICLE VII

#### Meetings:

Meetings shall be held on the second Friday of each month, except for the months of March and June. In March the annual banquet shall be held on the second or third Friday of the month. In June the annual meeting shall be held on the Saturday following the second Friday in the month in the form of a picnic at the Yanna Research Station.

## Change 2

Original:

#### Program and Social Committee:

The duties of the Program and Social Committee shall be to arrange for speakers and other programs at meetings of the Society. This shall include arranging for the location of Society gatherings and activities at the December holiday party, the April banquet and the June picnic.

New:

#### Program and Social Committee:

The duties of the Program and Social Committee shall be to arrange for speakers and other programs at meetings of the Society. This shall include arranging for the location of Society gatherings and activities at the December holiday party, the annual banquet and the June picnic.

## Change 3

Original:

#### Dates of Modification and Approval:

These by-laws were amended by vote of the general assembly of the Madison Astronomical Society, Inc. on Friday September 13, 1985. Article XI was added December 12, 1986 by vote of the general assembly of the Madison Astronomical Society, Inc. These by-laws were amended, restated, codified and

approved by the general assembly of the Madison Astronomical Society, Inc. on January 12, 2001.

New:

#### Dates of Modification and Approval:

These by-laws were amended by vote of the general assembly of the Madison Astronomical Society, Inc. on Friday September 13, 1985. Article XI was added December 12, 1986 by vote of the general assembly of the Madison Astronomical Society, Inc. These by-laws were amended, restated, codified and approved by the general assembly of the Madison Astronomical Society, Inc. on January 12, 2001. The by-laws were modified to change the date of the annual banquet to March. This amendment was ratified by the general assembly at the January 9, 2004.

The final change (Change 3) would not be made until the changes are ratified by the general membership at the January 9, 2004 meeting. All members are encouraged to review these changes in preparation for the January 2004 MAS general meeting.

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## From the Treasurer

MAS warmly welcomes the following new members: Brian Schultz, Paul Zimmerman, Randall Wentz, Julia & George Gruetzmacher, Christopher Eaton, Veronique Hope Cole and Jerry Erdmann.

### **Dues & Subscription Renewals**

Almost everyone has paid their MAS dues and magazine subscription renewals. Thanks again for your prompt response. I was able to send in the subscriptions to Astronomy and Sky & Telescope on Oct. 12th. If you get any more renewal notices you can just ignore them. A friendly reminder—this will be your last newsletter if you haven't paid your dues renewal.

# Observing the Transit of Venus from Wisconsin

by John Rummel

It's not ideal, and it might not even be good, but for those of us not lucky enough to be traveling overseas next June 8th, our only option is to try to observe the tail end of the transit of Venus from right here in Wisconsin.

The transit will be visible in its entirety from most of Europe, central and western Africa, the middle east, and much of Asia. Observers in the United States, east of a line from Montana to east Texas (the farther east, the better), will be able to see only the very end of the event, with the sun rising just as Venus is about to leave the eastern edge of the sun's disk. We effectively have a chance to observe just the final minutes of a 5.5 hour event, as the disk of Venus makes 3rd contact, then diminishes to a notch, and finally nothing.

Given that no transit of Venus has occurred since 1882, this is an event well worth attempting, whatever the possible limitations. My primary constraint that day is that I can't miss work. Wherever my observing location, I have to be able to get back to Madison at a reasonable time that morning.

My possible observing scenarios:

1. From Madison: Find a place with a nice flat eastern horizon and observe at sunrise
2. Get permission to observe from the

roof of a downtown tall building to improve the eastern horizon

3. Travel east to Milwaukee: Observe from the lake shore, taking advantage of the water front for a clear eastern horizon
4. Observe from the roof of a downtown Milwaukee high rise near the water front.
5. Travel north and east to find a location with suitable eastern horizon.

As the circumstances table shows, one gains 7 minutes of observing time by traveling east to Milwaukee thanks to the slightly earlier sunrise there. Since there is no significant parallactic change in the circumstances of the transit between Madison and Milwaukee, you effectively can see 7 additional minutes of the transit by going to Milwaukee.

The benefits of observing from the roof of a tall building are a little less clear cut. There is an obvious benefit in terms of avoiding a cluttered horizon. The time advantage is slight but real. You can probably see the sun's disk break the

horizon about two minute earlier from 100 meters up (from a 2 meter elevation, the horizon is 5 kilometers distant; from a 100 meter elevation, the horizon is about 35 kilometers away. Since the sunrise time between Madison and Milwaukee is about 7 minutes, with distance of 123 kilometers, the additional 35 kilometers gained by increasing your elevation would be roughly equivalent to getting

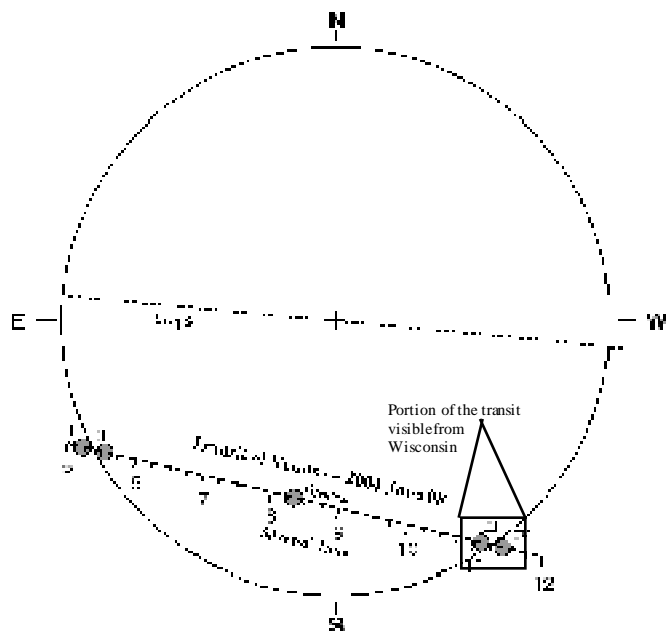
## Local Circumstances for the Venus Transit in Madison and Milwaukee

June 8, 2004	Madison	Milwaukee
Sunrise (CDT)	5:20 am	5:13 am
3rd Contact	6:06 am	Same
Sun's altitude	6 degrees	7 degrees
4th Contact	6:25 am	Same
Sun's altitude	9 degrees	10 degrees

yourself 35 kilometers further east, or about two minutes).

Whatever the time benefits of the additional altitude, the real advantage of this scenario may be avoiding the surface haze that could ruin viewing of an event like this that requires a view of the sun so low on the horizon, and again cost

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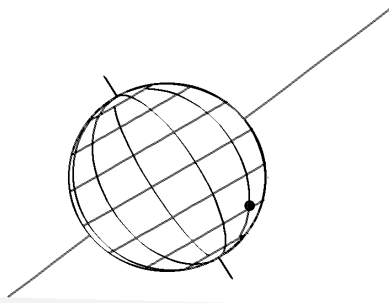
The principal events occurring during a transit are conveniently characterized by contacts, analogous to the contacts of an annular solar eclipse. The transit begins with contact I, the instant the planet's disk is externally tangent with the Sun. Shortly after contact I, the planet can be seen as a small notch along the solar limb. The entire disk of the planet is first seen at contact II when the planet is internally tangent with the Sun. During the next several hours, the silhouetted planet slowly traverses the brilliant solar disk. At contact III, the planet reaches the opposite limb and once again is internally tangent with the Sun. Finally, the transit ends at contact IV when the planet's limb is externally tangent to the Sun. Contacts I and II define the phase called ingress while contacts III and IV are known as egress.

—Image and text courtesy Fred Espenak, NASA, <http://sunearth.gsfc.nasa.gov/eclipse/>

valuable time. Any morning mist or fog over the lake will delay the appearance of the sun until it's already several degrees above the horizon. It is then that a lofty vantage point may come in handy.

According to Milwaukee climate almanacs, fog and haze are not uncommon in June. In fact, Milwaukee averages just 8 cloudless days in June (Madison fairs a bit worse with an average of 7 cloudless days). What about lake haze? I can find no climatological reference that records such a statistic. My best bet would have been to travel to Milwaukee several mornings last June and see for myself. Not having done that, I'm a little short on facts.

The final way to buy more observing time is to travel north. The farther north you go, the earlier the sunrise occurs (if you go as far as the Nunavut province, above the arctic circle, you could observe the whole transit). For every degree of latitude you travel north, the sun will rise approximately 4 minutes earlier. A degree of latitude is approximately 69 miles, so the gain is modest but again,



*Starry Night Pro simulation of the sun just after sunrise on June 8, 2004 with Venus as the black dot near the SE limb.*

every little bit could be crucial. For example, from Green Bay, sunrise is at about 5:10 am.

So this is where I need your help fellow transit observers:

1. What are your plans for June 8th 2004?
2. Does anyone have any firsthand knowledge of the pros and cons of observing over Lake Michigan early in

the morning?

3. What do you think of the idea of observing from the roof of a tall building, either in Madison or Milwaukee?
4. What considerations are most crucial (other than cloudless conditions) for a successful transit observation from Wisconsin?
5. What other observing locations east or north might have bigger upsides?

Please contact me at the address below and let me know your feedback, answers, comments, corrections, or intentions. If reasonable, I'd love to organize an Wisconsin expedition of folks like me who want to observe this historic event, but are stuck here at home for the day.

Send me your feedback, I look forward to hearing from you.

*(thanks to Neil Robinson for his comments while preparing this piece. Neil plans to capitalize on the altitude variable by observing from an aircraft)*  
darksy25@charter.net

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## From the Observatory Director

by Tim Ellestad

### Clubhouse Heat

Winter astronomy is here again. MAS enjoys the good fortune of having the wonderful facilities at YRS, making cold weather observing bearable. As usual I'm reminding everyone using the heating system in the clubhouse (and we encourage it) to leave the thermostats and heater controls set as they are.

While the temperature in the clubhouse is maintained at a constant 50 degrees, room temperature is reached by simply setting some time on the heating timer on the control box located on the floor below the air conditioner. Just turn the timer knob clockwise, setting as many hours as necessary for your observing session. Thanks to the extra insulation of the clubhouse a comfortable temperature is achieved fairly quickly. The high temperature thermostat will regulate the heat to 68 degrees while the timer is

running. Please use the ceiling fan (switch next to the front door) to help recirculate the warm air but be sure to remember to turn it off when you leave.

For that matter, please remember to dial out any remaining time left on the timer when you are leaving. Simply turn the timer knob clockwise back to the zero position - you'll hear the relay snap off, cutting power to the high level heaters.

### Winter Vehicle Traffic

As frost sets in at YRS we will again put the traffic barricade in place, blocking any vehicles from driving on the mowed portion of our property. As in the last several years it will be set up between the Arbor Vitae just where the driveway enters the lawn. Please watch for it as you drive in. Plan to park in our parking lot or in our driveway. Vehicles may not be left blocking the main driveway turning off

Kelly Road - this driveway is a shared easement with Jon Yanna, our neighbor just to the west.

### Unauthorized Equipment Installed

Recently some unauthorized personal equipment was left installed on one of the YRS telescopes. The MAS observatory rules prohibit unapproved modifications of our equipment. When this equipment is left in place it presents unexpected obstacles to other observing members who are totally unfamiliar with the strange apparatus. In this case it also presented an unanticipated hazard in the dark as part of the gear was underfoot. In the future, any personal equipment that is left installed, even approved equipment, will be removed from the observatory.



Capitol Skies  
2810 Mason Street  
Madison, WI 53705

First Class

MAS would like to thank:

**PRINT-TECH**

and Tim Stanton for printing  
the newsletter and

**IDC**

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"/>