starry nights

April, May, June 2003 Volume 22, Issue 2

In this Issue

Help W.A.S Raise Funds at no cost to you

The Wehr Astronomical Society (W.A.S.) is now part of Pick'n Save's WE CARE program. The WE CARE donation program distributes money to non-profit groups based on shoppers' tape total. This is an easy way that W.A.S. can raise funds to further our educational programs.

For those of you not familiar with WE CARE, this is how it works:

- ★ Non-profit groups sign up for WE CARE and are assigned a six-digit number. (**Our six-digit number is 923500**.)
- ★ Pick'n Save shoppers sign up for an Advantage Saver's Club card and list the six-digit number on the application. (Shoppers who already have an Advantage Saver's Club card can add W.A.S's six-digit number at the Customer Service desk.)
- ★ When you shop at Pick'n Save and use your Advantage Saver's Club card, 1% of your tape total will be donated to the non-profit group(s) that you specified on the application.

It's that easy! You don't have to save receipts or get stamps or stickers. It works at any Pick'n Save store. You're going to buy groceries anyway, why not help W.A.S. raise funds at the same time?

How much could we earn? More than you might think. If we have 50 people sign up and each of them spends $50 a week on groceries, it could add up to $1300 a year!

If you already have and use Pick'n Save's Advantage Saver's Club card, please consider adding W.A.S. to it. Our six-digit number is **923500**. You can pick up a change form at the Customer Service desk. If you don't have a card, or don't shop at Pick'n Save, please consider doing so to help W.A.S. raise money.

- Donna Grunewald

At the Observatory - 2002

The past year has been interesting to say the least. In March, we had a 4th magnitude comet C/2002 C1 Ikeya-Zhang in the west. This comet could be easily seen with binoculars.

In April, the Observatory Director noticed that the locks to the pavilion had been re-keyed and he had to contact Milwaukee County Parks to get a new key. This was a case that they didn't know that we had access to the county facility. We have this access so we can turn off the lights for our observing sessions. This does not give us access to use the facilities.

In May we had comet C/2002 F1 Utsunomiya, a 6th magnitude comet, right next to Mercury. And when I say right next to, I mean it was about 5 arc-minutes away from it when we observed it!

Also in May, we noticed that the Milwaukee Rampage had installed their sports lighting. In June we had our first of two conflicting schedules with them. Since we started at 9:30 and their game ended at around 9:00 they didn't conflict too much. We had to delay our start time by about 15 minutes. The other conflicting date was in August where they did seriously impact our ability to provide an observing session. We used their lights to our advantage and provided displays that were well illuminated by them. And for those of you who don't know, the Milwaukee Rampage disbanded in January of this year and the city of Franklin is considering purchasing the sports complex.

In August, we held our novice night. Attendance increased to 70 people that night with the help of Vince Condella, Chief Meteorologist for Fox 6, who promoted our session. This is impressive considering that we were competing with Labor Day weekend, a Packer game and fear of the West Nile virus. We helped a bunch of people get started in astronomy. We also helped many people on different nights get started with their telescopes, or helped them with their telescope purchase.

Tim Grunewald
Observatory Director

Below are our attendance records for the year 2002:

Date	Attendance	Weather
January 4	14 people	32 degrees, scattered clouds, then hazy
January 18	9 people	12 degrees, clear
February 8	25 people	37 degrees, hazy
February 22	20 people	29 degrees, hazy then clear after 9:00
March 15	0 people	36 degrees, overcast
March 22	25 people	33 degrees, clear
April 5	14 people	34 degrees, cloudy then clear after 8:30
April 19	11 people	41 degrees, a hole in the sky until 9:20, rain at 10:00
May 3	50 people	41 degrees, clear
May 17	0 people	39 degrees, mostly cloudy/overcast
June 7	33 people	65 degrees, clear
June 14	0 people	58 degrees, overcast
July 12	22 people	68 degrees, clear then hazy
August 2	15 people	69 degrees, clear
August 16	15 people	73 degrees, cloudy/hazy
August 30	70 people	71 degrees, clear/dewy
September 13	15 people	67 degrees, partly cloudy
September 27	10 people	57 degrees, partly cloudy
October 11	25 people	59 degrees, clear/foggy
October 25	0 people	46 degrees, cloudy/rainy
November 8	10 people	58 degrees, partly cloudy then mostly cloudy
November 22	12 people	34 degrees, clear
December 6	8 people	26 degrees, hazy/overcast
December 22	0 people	31 degrees, overcast/light flurries

2003 W.A.S Volunteer Positions

Board of Directors
- ★ **President:** Joe Carlone
- ★ **Vice President:** Mike Nugent
- ★ **Secretary:** Jackie Mau
- ★ **Treasurer:** ***Sandy Dombeck
- ★ **Observatory Director:** ***Tim Grunewald

Milwaukee Country Parks Liason:
Karen Kerans

Public Program Planning Committe Chairperson:
Sandy Doembeck

Froemming Park Observing Helpers:
Joe Carlone
Sandy Dombeck
Gene & Charlotte DuPree
Adam Machajewski
Todd Weiler

Membership Coordinator: ***Greg Zuchowski

Merchandice Administrator:
Greg Gonia, Jackie Mau

Magazine Subscripion Coordinator:
Greg Zuchowski

Webmaster: Tim Grunewald

Newletter Editor: Adam Machajewski

Newsletter Proofreader: Donna Grunewald

Newsletter Duplicator: ***Greg Zuchowski

Newsletter Mailer: Gene & Charlotte DuPree

Newsletter Article Writers:
Tim Grunewald
Jay Wichmann
Adam Machajewski
Phil Schumacher
Pauline Beck

(Any members are welcome and encouraged to send in articles for the Newsletter. Edited and published at the discretion of the editor.)

Librarian: **Open**

Historian: Greg Gonia

Public Outreach Coordinator: Karen Kerans

Book/Magazine/Slide Loanout Administrator:
Karen Kerans

Telescope Loanout Administrator:
(Observatory Director) ***Tim Grunewald

Auditors: (by appointment of the Board of Directors)

Picnic Coorinator: Gene & Charlotte DuPree

5 Year banquet coordinator: **Open**

Note: *** signifies a position ending in 2003 (See "Open Board Positions"

Open Board Positions

Coming up in June, we have three positions that are opening up – Observatory Director, Treasurer, and Membership Coordinator. For the Observatory Director position the requirements are as follows:

- ★ Be committed to the position for a 3 year term (but other members can help out for an observatory session if needed)
- ★ Must have ample storage space to store the loaner and club scopes
- ★ Responsible for the upkeep of the observatory
- ★ Be available on Friday evenings, twice a month
- ★ Be able to schedule observatory sessions three months in advance.
- ★ Attend quarterly board meetings
- ★ Must have a willingness for observing in warm, humid, mosquito biting or dry, chilly, frost-biting temperatures
- ★ (optional) Write the Observer's Corner articles for the newsletter

Being the Observatory Director for the past 5 years has increased my knowledge of the night sky and is a great way to improve on your observing skills. It is also a perfect opportunity to practice your public speaking skills. Remember you are not on your own, as other members do show up to help out. I saved all of my observatory schedules and notes in the Observatory Director's packet, so you aren't starting out cold.

For the Treasurer position, the requirements are as follows:

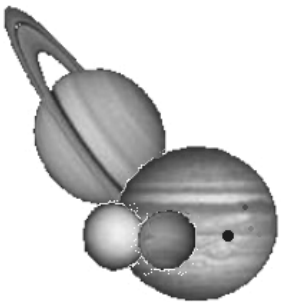
- ★ Be committed to the position for a 3 year term
- ★ Must be able to balance a checkbook
- ★ Verify receipts for merchandise purchased for the club and hand out reimbursement checks
- ★ Attend quarterly board meetings
- ★ Create quarterly and year end statements
- ★ Send in magazine subscriptions

For the Membership Coordinator position the requirements are as follows:

- ★ Create and mail member renewal forms
- ★ Maintain a database of members
- ★ Create and issue the member directory and membership cards
- ★ Create a list of members subscribing to magazines

For the Observatory Director, Tim has used up his two 3 year terms and the by-laws require that he take a minimum of a one-year break. Sandy has only used up one term, and would continue in the position, but if someone else wants it, we can vote on it. Most likely the database that Greg Zuchowski has built up over the years will be available for whomever will become the new coordinator. The lists above are only a summary of the major issues the positions hold. If you have any questions or are interested in one of these positions please contact a board member.

-- Tim Grunewald



Solar System News Roundup

PLUTO (and KBOs)
In the Pushing-Pluto-Out-of-the-Planet-Ranks debate, more information has been gathered on the largest Kuiper-Belt-Object (KBO) found to date, Quaoar (pronounced KWAH-oh-ar.) Using the Hubble Space Telescope's Advanced Camera for Surveys (ACS) to scan the KBO more closely, Caltech astronomers have discovered that Quaoar now surpasses Pluto's satellite Charon in size, being 780 miles in diameter to Charon's 745. Also, parts of Pluto's elliptical orbit actually take it farther out from the Sun than Quaoar's updated more circular orbit.

Quaoar also appears to have an icy surface, like Pluto, since its reflective albedo has been accurately determined (by knowing the KBO's diameter,) to be 12%. (Pluto's albedo ranges from 15-20%, depending on how much of its atmosphere has frozen.) Most other KBOs (and comets) show an albedo of only 4-7%.

Since previously the twin-planet pair were the largest KBOs, this catapults Quaoar to 2nd-largest status amongst the KBOs, and wets the appetite of the PPOotPR people to some day find a KBO even larger than Pluto, which will then accomplish their goal of downgrading it.

NEPTUNE
Last month astronomers using the 160" Blanco telescope in Chile, together with the 140" FHT in Hawaii, discovered three more satellites of the gas giant, bringing its total to 11. The newest moonlets are only 18-24 miles in diameter, and are in retrograde, elliptical, inclined orbits to Neptune's equator, making them most likely captured KBO fragments.

In addition, another research team has found the first Trojan satellite of Neptune at the leading LaGrange point of its orbit. Again it is either a KBO or comet fragment captured in a gravitational tug-of-war between Neptune and Sol, with Neptune winning this one and keeping the object from falling in towards the Sun.

Finally, on Neptune itself, more observations by Hubble's ACS have revealed that another Great Dark Spot (GDS) storm has appeared in the same location of the first GDS discovered by Voyager 2 which then dissipated. The re-emergent GDS seems to confirm that some irregularity on Neptune's sub-surface causes the GDS to reappear, somewhat in nature like Jupiter's permanent Great Red Spot.

URANUS
"The strangest, bizarre surface in the Solar System." This describes Uranus' 300-mile-diameter moon Miranda, discovered in 1948 and photographed close-up by Voyager 2 in 1988. Saw tooth ridges, chevron shapes the size of continents, a gigantic oval "racetrack" formation, and cliffs miles high, coupled with lunar-highland-like crater clusters all combine to make Miranda's surface a collection of the strangest landforms seen in the Solar System.

Scientists have concluded that all this is the result of the moon being shattered by another moon and then coalescing back again to spherical shape, but how to explain the weird formations that resulted?

Now they think they have come up with a workable hypothesis. In the re-assembly process, the denser rocky pieces sank towards the center of the new moon, while the icy parts "floated" above. But as the rocky chunks sank, the friction of their descent warmed any icy materials folded inside and churned up a slow-motion frigid cauldron, creating currents that compressed some portions, (the "racetracks") expanded others, (the chevrons,) while leaving some of the ancient surface forms untouched, (the cratered "highlands") and thus created the mixture of light and dark surface features seen today.

SATURN
Using the gigantic 400" Keck-II and 300" Gemini-North telescopes on top Hawaii's Mauna Kea volcano, Caltech astronomers have confirmed finding methane cloud formations on Saturn's largest moon Titan. This is an amazing coup for the adaptive optics of these two telescopes, since the Voyager spacecraft passing by Saturn in the '70's never showed any cloud formations at all on Titan, even in their close-up photos of the orange-hazy moon.

In addition to this feat, the Keck instrument also revealed the first surface features on the smog-shrouded moon, which show a bright icy continental highland, surrounded by linked dark regions that are either ethane seas or asphalt-like-covered lowlands.

Titan will be visited by a probe (named Huygens,) from the Cassini spacecraft in 2004 which will either confirm or change these findings, besides adding its own new and more-detailed discoveries.

JUPITER

Good news in the recently-released NASA 2004 budget is the funding requested for the Jupiter Prometheus Project. This is a two-fold endeavor which will combine the testing of an advanced nuclear propulsion spacecraft with a tour of the three Jovian ice-moons, to seek evidence of any subsurface oceans beneath Europa, Ganymede, and Callisto. Since the earliest the nuclear propulsion system could be ready is 2010 (shades of Arthur C. Clarke's novel!) astrobiologists are already proposing adding landers to the spacecraft, at least for Europa. Samples taken from a lander's borings could indicate the existence of any microbiological evidence in the icy surface, deposited from up swellings from below.

ASTEROIDS

Already in NASA's budget is another next-decade exploration of two major asteroids, Ceres (the largest,) and Vesta (fourth in size.) Called the Dawn Mission, the probe will take a circuitous route and nine years to reach the asteroid belt. More than the 600-mile diameter Ceres, scientists are anxious to inspect Vesta, whose 330-mile diameter but mushroom-shaped appearance seems to be the remnant of a catastrophic collision. If a primordial core is thus found exposed, it would greatly add to the understanding of how the asteroids came about, and especially if there was at one time a proto-planet that was in turn torn apart by Jupiter's gravitational pull.

MARS

Another NASA 2004 budget item is to put a telecommunications satellite in permanent orbit around the Red Planet to handle the expected increased traffic in data to be sent back by scheduled future probes. Right now two satellites are in orbit around Mars, the Mars Global Surveyor (MGS) and the Mars Odyssey Observatory (MOO.) However, when more landers and rovers are put down on the surface, their huge increase in transmitted data will require a dedicated communications satellite to ensure that the multiple surface probes can send up all the information they are capable of gathering. The satellite, called the Optical Communications Initiative, would not be in place in time for next year's rover landings and the European Space Agency lander, however.

For both of next year's rovers, the MERs, the two landing sites have been selected: the Meridiani Planum and Gusev Crater. The former is a plain on the equator that shows large amounts of hematite, an iron ore which in turn may be indicative of ancient hot springs. The latter is a crater that shows evidence of once being an ancient lakebed, with a channel entering the crater that could have been the source of its water inflow. Launch of the MER spacecraft is scheduled for May-June of this year, with touchdown on Mars in January of 2004.

EARTH

All of the above ambitious projects are subject to overriding funding spent on investigating and correcting the fault in the Space Shuttle that caused the Columbia disaster. In addition, hard choices will have to be made as to what to do with the International Space Station and its absorption of two-thirds of NASA's budget. With only three shuttles left, and no funding available to build any more of their generation, the trio of orbiters cannot meet even the minimum needs of servicing the ISS, let alone add to it. In addition, Russia has fallen behind in its minimal commitments, and the manufacturing time-table of its Soyuz and Proton rocket-launched capsules is not sufficient to take up the slack. With the remaining shuttles grounded for at least a year--and an anticipated two--the future of the ISS is in grave doubt.

Jay E. Wichmann

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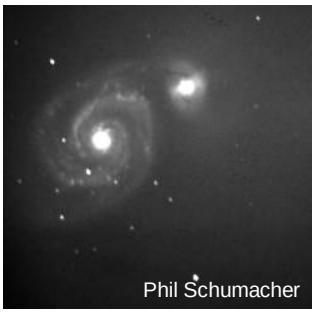
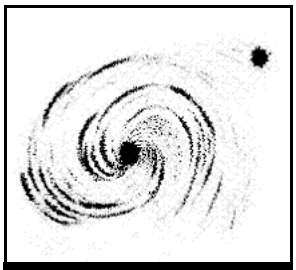
Observer's Corner –
The Whirlpool Galaxy (M51)

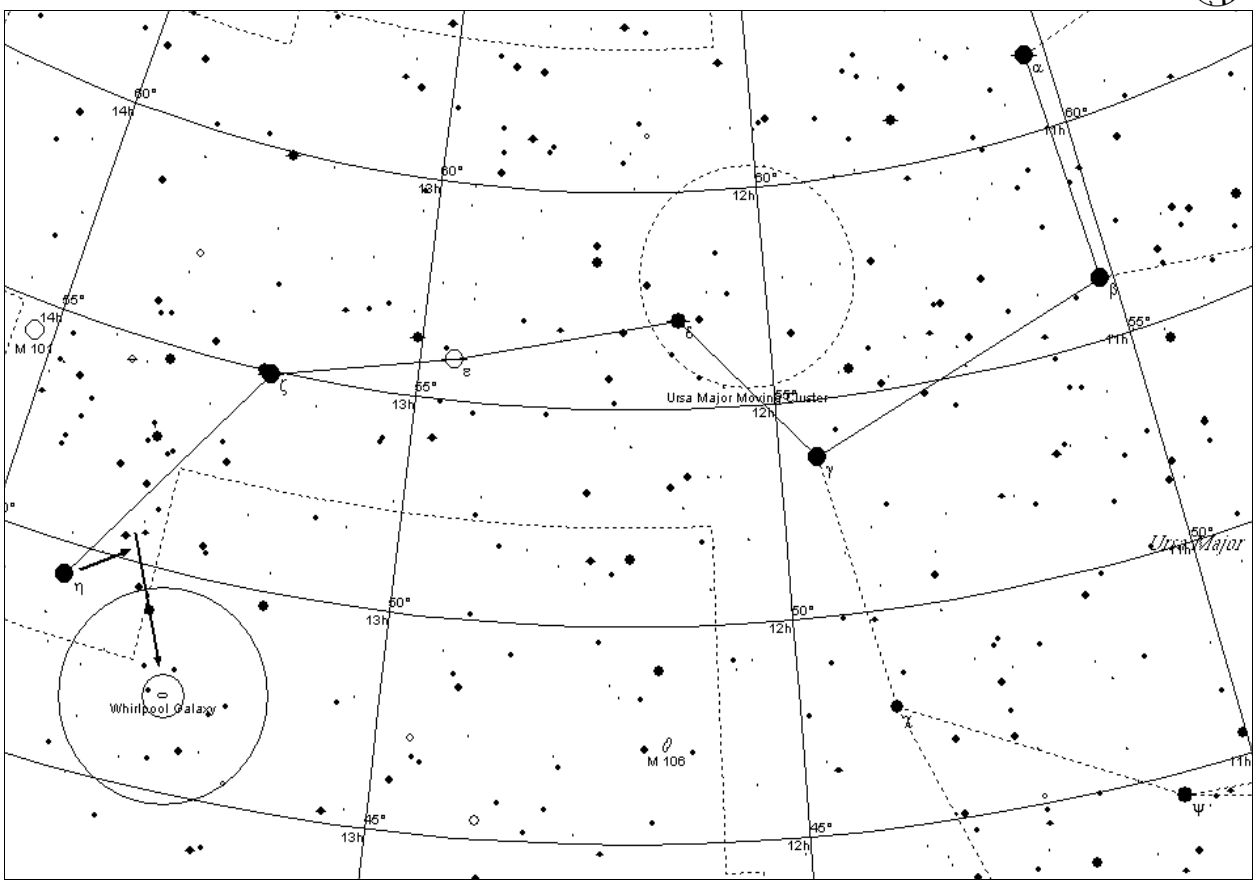

Phil Schumacher

This quarter we will be looking at the first galaxy that visually displayed a spiral structure -- the Whirlpool Galaxy (M51) in Canes Venatici. William Parsons, the Third Earl of Rosse, with a 6 foot reflector in 1845 was the first person to see the spiral structure of the "nebula" (See drawing and photograph). The thought that some of these "nebulae" were other galaxies, outside of the Milky Way, was not thought of until 1920.

To locate the Whirlpool Galaxy, we will start at the end of the handle of the Big Dipper. Travel a little ways toward the bowl of the Dipper to find three stars in a line. If you look carefully you will also see another faint star above the star at the end of the line that is closest to the handle. We will use these two stars and the end star at the other side to form an arrow. You want to travel in the direction of the arrow a distance of its length from the tip. If you look carefully you will see three faint stars that almost form an equilateral triangle (a triangle whose sides are all the same length). If you have a 6 x 30 finderscope or highly light polluted skies, these stars may be difficult to detect. You want to put the crosshairs of the finderscope at the far side of the little triangle.

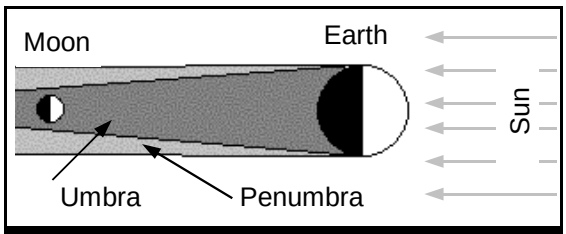

Parsons' Original Drawing

If you have a small aperture scope (less than 6 inches) or your skies are fairly bright, the Whirlpool Galaxy may be difficult to detect. It is an 8.4 magnitude galaxy with a surface brightness that is fairly evenly distributed, so it is quite sensitive to light pollution that makes it easily fade into the background. The best time to look at the Whirlpool Galaxy is when the Big Dipper is overhead. If you have difficulty detecting it, then you may want to try darker skies. I know from our observatory, with an 8" scope, you will see two faint smudges, which are M51 and NGC 5195. But with the same scope out at Ledge Park near Horicon, I could see the spiral arms.



Skywatch

Total Lunar Eclipse



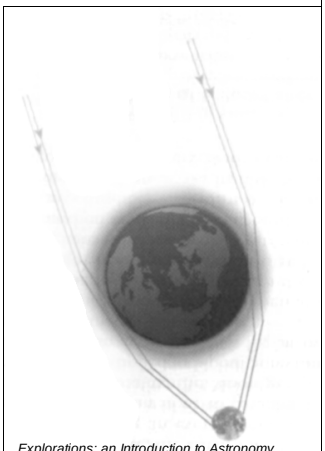
Earth, Moon, Sun configration for the Eclipse

It seems like it's been forever since we have been in the right spot at the right time for any kind of major astronomical event. Finally this quarter we are. On the evening of May 15 we will be graced with a total lunar eclipse.

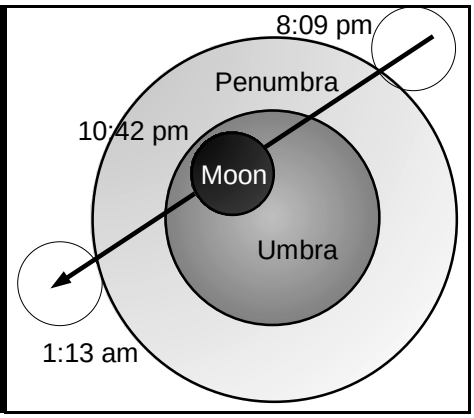
Starting at Moon rise the Moon will touch the penumbra of the Earth's shadow. This part of the eclipse will probably be impossible to notice with the naked eye since it still will be twilight and the Moon will be very low on the horizon. The Moon will not begin to move into the umbra of the Earth's shadow until 9:06 pm. In the minutes before this is when you will want to have the telescope on the Moon to watch for the instant the Moon hits the umbra. The Moon will continue to slowly move into shadow until 10:17 pm. Now the Moon will be totally eclipsed by the earth, the totality will last for 47 minutes until it will begin to emerge from the umbra at 11:04 pm. The whole ordeal will end at 1:13 pm when the Moon will emerge from the penumbra.

So get all your equipment ready for this event. If you plan to photograph the event it's always a good idea to practice a little bit before to help suppress some that darn Murphy's Law. Think clear sky thoughts and PLEASE don't mention the "r" word. We will have another total eclipse in November but this is the better one.

-Adam Machajewski


Explorations: an Introduction to Astronomy
Thomas T. Arny

The Moon looks red from the refraction of the sunlight thought the Earth's atmosphere



This shows how the Earth's shadow (the target) will cover the Moon at the maximum eclipse

Lunar Phases

●	**April 1**	**New**
◐	**April 9**	**First Quarter**
○	**April 16**	**Full**
◑	**April 23**	**Last Quarter**
●	**May 1**	**New**
◐	**May 9**	**First Quarter**
○	**May 15**	**Full**
◑	**May 22**	**Last Quarter**
●	**May 31**	**New**
◐	**June 7**	**First Quarter**
○	**June 14**	**Full**
◑	**June 21**	**Last Quarter**
●	**June 29**	**New**

Upcomming Star Parties

April

Texas Star Party — April 27-May 3
www.metronet.com/~tsp

May

NCRAL Convention (Sturgeon Bay) — May 2-3

Marshfest (Ledge Park) — May 2-3
www.co.dodge.wi.us/planning/recreation/parks-ledge.htm

Wisconsin Observers Weekend (WOW) — May29-June 1
www.new-star.org/wow.html

July

Astonomical League Convention — July 8-13
www.astroleague.org

Nebraska Star Party (NSP) — July 27-August 1
www.nebraskastarparty.org

August

Northwoods Starfest — August 1-3
www.cvastro.org/sf.html

September

Astrofest XXIV — September 18-21
www.chicagoastro.org/

Great Plains Star Party — September 23-27
http://astronomyvillage.org

Note: Some star parties require preregistration, so check the sites promptly if you are interested.

SCHEDULED ACTIVITIES

FOR

The Wehr Astronomical Society

http://www.wehrastro.org

Regular Meetings

(Free and Open to the Public)

Tuesday, April 8, 2003 at 7:00 p.m.

At the Wehr Nature Center

Computer Modeling of the Early Universe: Peter Mendygral, will be talking about computer modeling of the early universe

Tuesday, May 13, 2003 at 7:00 p.m.

At the Wehr Nature Center

40th Anniversary of the Mercury Space Flights: Jay Wichmann, who participated in the program while serving in the Navy, will be talking about the 40th Anniversary of the Mercury Space Flights.

Tuesday, June 10, 2003 at 7:00 p.m.

At the Wehr Nature Center

Demonstration of Cartes du Ciel (Sky Charts) planetarium program: Tim Grunewald will be demonstrating the freeware planetarium program. Free copies of the program will be given out to all attendees!

Observatory Activities

(Free and Open to the Public)

April 4	7:30	Observing the moon and deep sky objects. See a thin cresent moon and the brighter deep sky objects. See Jupiter (GRS transit 12:05am. Ganymede shadow transit 8:35pm) and Saturn.
April 25	8:30	Locate Leo the Lion. See Jupiter and Saturn.
May 2	8:30	Observing the moon and deep sky objects. Try and see a one-day old moon. See the Whirlpool Galaxy. See Jupiter and Saturn.
May 9	**7:00**	Observing the moon and deep sky objects. **Astronomy Day presentations**. See a 1st quarter moon and the brighter deep sky objects. See Jupiter and Saturn.
June 6	9:30	Observing the moon and deep sky objects. See a first quarter moon and the brighter deep sky objects. See Jupiter (GRS transit 9:25)
June 20	9:30	Deep sky observing. Globular clusters. See Juptiter (GRS transit 11:03pm)

Note: All observatory dates fall on a Friday, and are held at Froemming Park.
GRS transit: When Jupiter's Great Red Spot is in the middle of the planet.
The GRS is visible 1 hour before and after this time.