starry nights

October, November, December 2001 Volume 20, Issue 4

In this Issue

Annual Picnic

The Wehr Astronomical Society picnic on July 10 was definitely a success. We had a beautiful clear blue, 75-80 About 20-25 people showed up for a nice buffet style dinner, with KendraJohncock the master chef,

Kendra pauses for a quick laugh

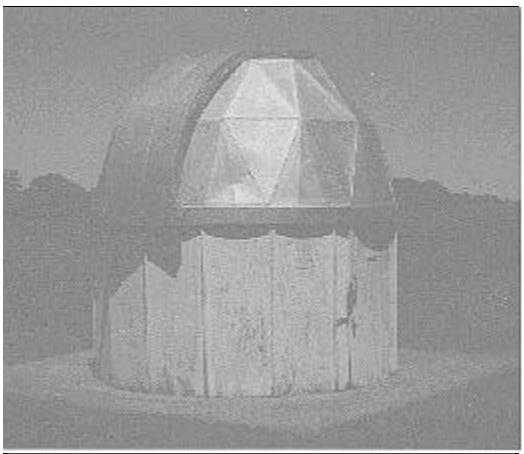
cooking the brats and hamburgers, supplied by the club, for all who attended. Everyone brought a variety of great dishes to pass, from fruit, to party salads. Also for our observing pleasure, Gene and Charlotte Du Pree brought their C8 along to look at sunspots. After we ate I got to show of the repairs done on the observatory(see "Observatory Facelift" page 4). Our photographer Sandy Dombeck took some pictures, which shows some of the familiar faces that showed up.

What's everyone looking at?

Observatory Facelift

By: Adam Machajewski

After seeing our observatory sit dormant for the first year I was a member, I decided to find out why it wasn't used. After asking our observatory director, Tim Grunewald, that very question, I found out there were a number of problems. It needed electrical work, most importantly, but otherwise it just needed a coat of paint and to be cleaned out. After I got the OK, I set up a date, obtained the keys and we were ready to begin the repairs.



The observatory before and...

On a Tuesday morning armed with paintbrushes, a gallon of paint, a shop vacuum, and other supplies, my mom, two brothers, sister, and I began work. We started by vacuuming and washing the interior of the observatory, it was filled mostly with spider webs and a few thankfully vacant wasps nests. The outside involved much more work. I began painting around the dome with white high gloss paint. While my mom and brother cut and nailed 1 x 4 green-treated wood along the bottom, to seal it from critters and water. That completed day one.

The next day we came in the evening, with my dad and we began replacing the rotted boards the shape and support the cover for the slit. This proved to be the most difficult and most expensive task. It required tracing the old wood on to three quarter inch green-treated plywood. Then, cutting it out with a jigsaw. But, each didn't fit perfectly so we had to fit and cut a few times. This took about three hours to finish both sides. While we were doing this, my dad was desperately trying to figure out what the problem was with the electrical system. He was trying all sort of things, the problem ended up being some faulty light switches. So we replaced them along one section of wire that had been munched on by a rodent and consequently corroded. Everything finally was working properly and looked much better.

...after the facelift.

The pier in the observatory is currently fitted for a Celestron equatorial wedge, but arrangements could be made to get other scopes on the mount. We also have an adapter to set a telescope up in the Alt - AZ mount style. To test the compatibility of your telescope stop at one of the regular Friday observing sessions. See you there.

W.A.S Board of Directors and Officers

President:	***Joe Carlone**
Vice-President:	**Kendra Johncock**
Secretary:	**David Stublaski**
Treasurer:	**Sandy Dombeck**
Observatory Director:	**Tim Grunewald**
Newsletter Editor:	**Adam Machajewski**
Assistant Editor:	**TBD**
Membership	**Greg Zuchowski**
Proofreading:	**Donna Grunewald**

Wehr Astronomical Society
Phone: (414) 425-8550

http://www.execpc.com/~tgrunewa/astro/was.html
*** to be officially decided**

SEPTEMBER 11TH

ASTEROID MEMORIALS

Following the terrorist attacks on the United States last month, the committee of the International Astronomical Union responsible for naming asteroids has announced the following, in the October 2nd Minor Planet Circular:

"The terrible events three weeks ago today have prompted several correspondents to propose that minor planets be named to honor the victims. Deeply sympathetic to this desire, but as an independent action, the IAU Committee for Small-Body Nomenclature has unanimously agreed to name three minor planets for concepts that represent some of the most basic and universal human values. The resulting names and citations, on MPC 43684, for the consecutively numbered minor planets (8990), (8991), and (8992), which discovered at observatories on three continents, are intended as a positive statement abhorring the tragedy that occurred on a fourth.

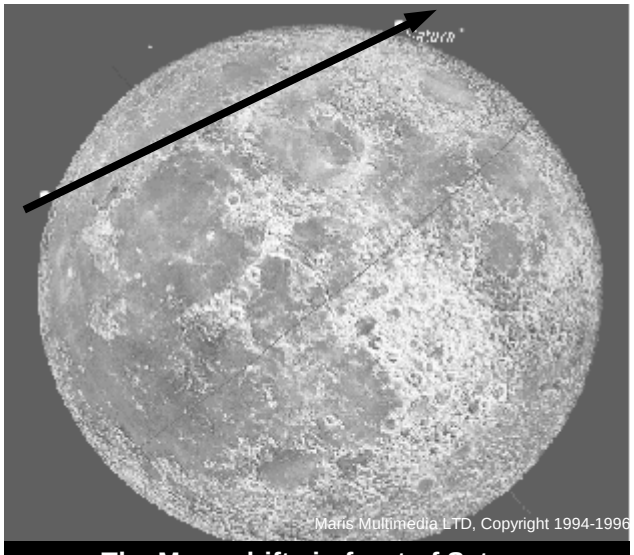
"(8990) Compassion = 1980 DN Discovered 1980 Feb. 19 at the Klet Observatory. Named by the Committee for Small-Body Nomenclature to honor the compassion of people around the world for the friends and families of the of disasters, exemplified by the terrorist attacks on New York and Washington on 2001 Sept. 11, with the hope that they will overcome their sorrow.

"(8991) Solidarity = 1980 PV1 Discovered 1980 Aug. 6 at the European Southern Observatory. Named by the Committee for Small-Body Nomenclature to honor the solidarity of people around the world with both victims and survivors of terrorist attacks like those on New York and Washington on 2001 Sept. 11, in the goal of terrorism from the world.

"(8992) Magnanimity = 1980 TE7 Discovered 1980 Oct. 14 at the Purple Mountain Observatory. Named by the Committee for Small-Body Nomenclature to honor the magnanimity of people around the world in dealing with terrorist attacks like those on New York and Washington on 2001 Sept. 11, in the hope that terrorism will be countered with justice for all, not with revenge." (taken from *Sky & Telescope* magazine's e-mail News Bulletin)

Note: (8990) Compassion = 1980 DN is currently at magnitude 18.6 in the constellation Gemini. (8991) Solidarity = 1980 PV1 is currently at magnitude 18.6 in the constellation Leo. (8992) Magnanimity = 1980 TE7 is currently at magnitude 18.8 in the constellation Libra.

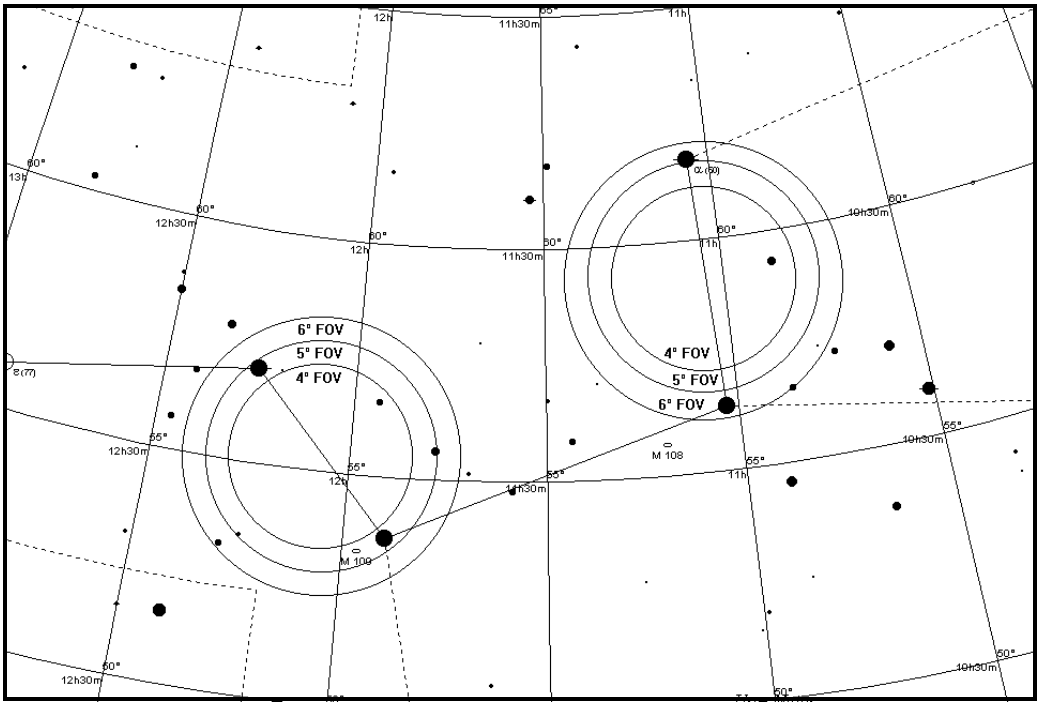
Lunar Occultation of Saturn



The Moon drifts in front of Saturn

November 30th treats amateur astronomers of the United States with a lunar occultation of Saturn. Looking due east at 6:49 PM Saturn's rings will begin to plunge below the lunar surface. A telescope or binoculars will be necessary because the brightness of the full moon will drown out Saturn's relatively faint magnitude -0.44 out. Saturn will hide behind the moon for about forty minutes until the rings emerge at 7:29 PM. The image shows the positions of Saturn before(bottom) and after(top) the occultation.

Starhopping 101: Knowing Your Field of View



Once you have your finderscope lined up to the telescope, in order to successfully star hop you need to know your finderscope' s field of view. The field of view is the diameter of the circle of sky that you can see through the finderscope or telescope with a given eyepiece. Field of view is usually measured in degrees, but can be in arc minutes, especially for an eyepiece in the telescope. There are 60 arc minutes (designated as 60') per degree. Knowing your finderscope' s field of view allows you to match up a star atlas to what you see in your finderscope. This allows you to easily find your way around the sky by star hopping.

For those of you with a Telrad, you already know your field of view as 4°, 2° and 0.5° (or 30') circles. So you can skip down to the next paragraph. If you have a finderscope you can use the bowl of the Big Dipper or Orion' s belt and sword to easily determine its field of view. The end stars of the bowl of the Big Dipper (the pointer stars to Polaris) are about 5° apart. If these two stars fit in your finderscope or binoculars, then your field of view is at least 5°. If these stars are not on the edges of the finderscope, then try the two bottom stars of the bowl of the Big Dipper. These stars are 8° apart. If they don' t quite fit, then your field of view is between 5° and 8°. Most finderscopes are between 4° and 6° field of view. In the diagrams I show several field of view circles on both sides of the bowl of the Big Dipper and in Orion's belt and sword. See which one best fits what you see in the finderscope and that should be your field of view.

Once you have figured out your telecope' s field of view, you can use a circle of wire, a circle template or even a circle drawn on clear plastic to use with your star charts to relate from the star atlas to what is seen in the finderscope. This makes it much easier to locate objects in the sky when you can lay down a template of your finderscope's field of view on the star atlas to match what you see in the finderscope.

To figure out the right diameter you will need to convert the scale of the atlas to a measurement in millimeters or inches. You need to find a page that is close to the celestial equator and measure the declination. A good page to use is one that has Orion on it. The top belt star is just below the celestial equator. To be accurate, measure 10° of declination and then divide that number by 10 to get the number of millimeters or inches per degree. For example, if I measure 10 degrees to be 33 millimeters then the atlas scale is 1 degree per 3.3 millimeters. Below are my measurements for some of the popular star atlases:

Norton Star Atlas/Cambridge Star Atlas
3.3mm per degree
Sky Atlas Desk Version
7.1mm per degree
Sky Atlas Deluxe Version
8.2mm per degree

Now that we know the scale, multiply the measurement that you obtained by the field of view for

your finderscope. In our example above, if the finderscope has a field of view of 5°, and you are using the Cambridge Star Atlas, then your circle will need to be 16.5 millimeters in diameter. So we make a circle out of wire or draw it on a clear piece of plastic or just find the right circle on our circle template to use to represent our finderscope' s field of view.

To use our finderscope template, just put it on your star atlas where you are going to start your star hop, which is usually a bright, well known star. Line up the finderscope to that object and check if it matches the field of view in the star chart. At this point I usually rotate my atlas to match what I see in the finderscope. Note that if you have a right angle on your finderscope, it may not match, but be a mirror image, which makes it more difficult. Two solutions to this are to turn the page over to look at the back of the map and shine your light through the page or to try to use a small mirror. Now move the template over by one field of view in the direction of the object that you are looking for while keeping fairly bright stars in the field to make it easier to know where you are going. Move your finderscope over to where you moved the template and it should match the view in the circle template. Keep going until you get to the object that you want to look at.

- Tim Grunewald

Starhopping 101: Another Way to Find the Field of View

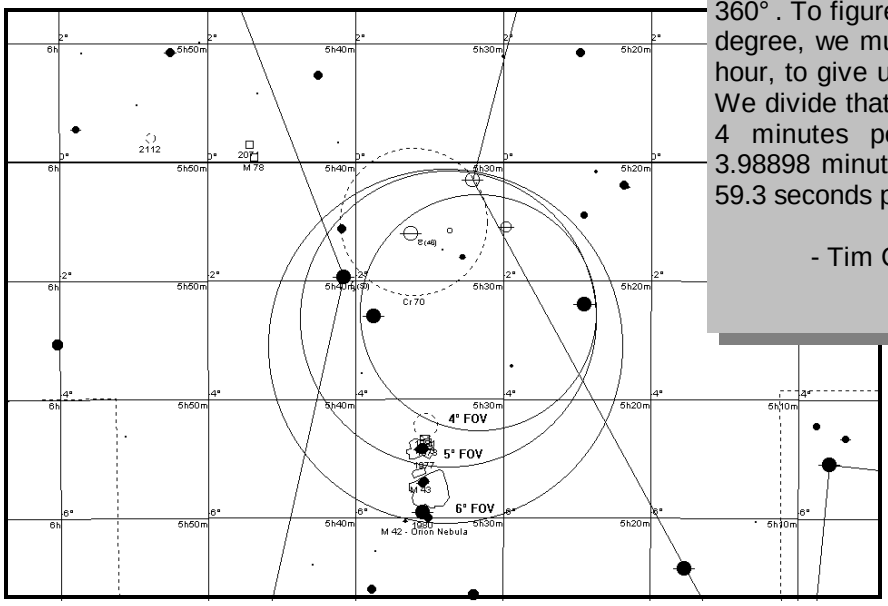
Another way to find the field of view is to time how long a star near the celestial equator drifts from edge to edge in minutes and divide that number by 4 to get the field of view. Good stars to use are δ Orionis (the top belt star in Orion), γ Virginis and θ Aquilae. The technique presented here is more useful for eyepieces than finderscopes.

It is useful to know your eyepiece field of view. This is handy when you have an object that is only a few degrees away from another object. You can "eyepiece" hop to the object if you have a star chart that can get you down to that level of detail such as the many computer planetarium programs.

If you are going to use this method for finding a finderscope's field of view, it will take a long time for the star to drift from edge to edge. For a 5° field of view this will take 20 minutes. I recommend centering the star in the finderscope and time how long it takes to get to the edge in minutes and divide that number by 2 instead of 4 to get the field of view.

You may be wondering where this magical number of 4 comes from. If you are interested, read further on. A day is 24 hours (or more precisely a sidereal day is 23 hours 56 minutes 4 seconds). This is the time that it takes the Earth to rotate 360° . To figure out how long it takes to rotate one degree, we multiply 24 hours by 60 minutes per hour, to give us the number of minutes in a day. We divide that result by 360 to get our answer of 4 minutes per degree (or more accurately 3.98898 minutes per degree, which is 3 minutes 59.3 seconds per degree).

- Tim Grunewald



Observers Corner

By: Tim Grunewald

The Andromeda Galaxy: M31

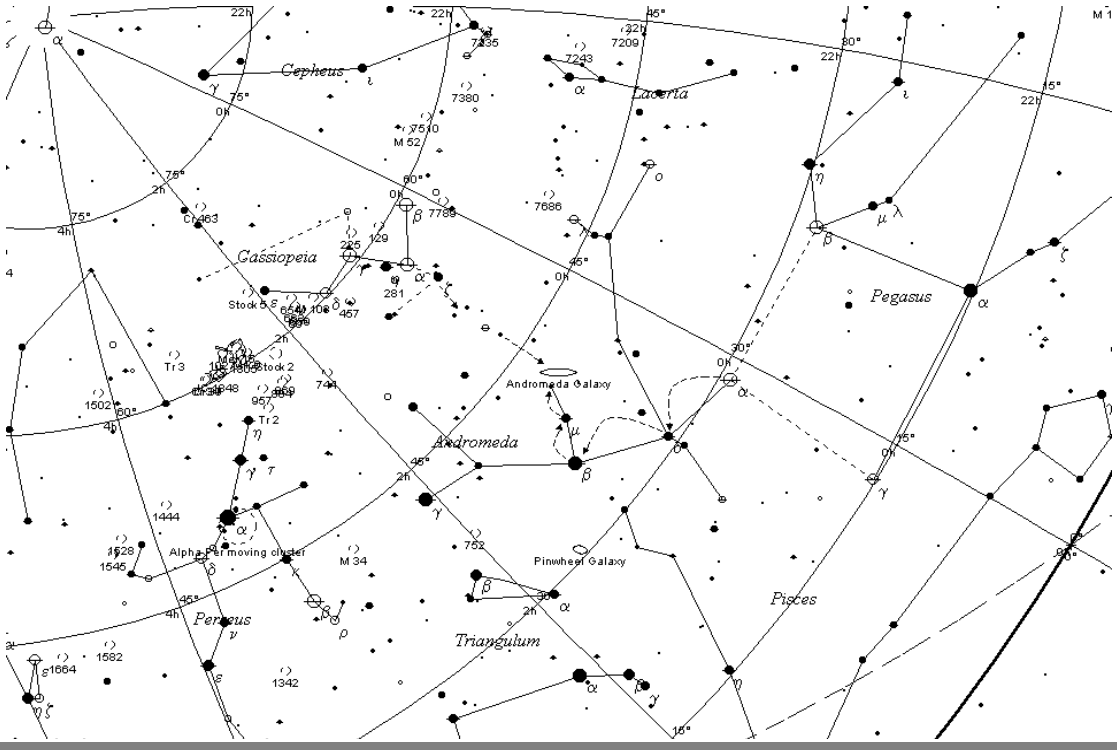
This quarter we are going to view the Andromeda Galaxy. This galaxy is the closest, large galaxy in our local group of galaxies. It is easily visible to anyone with binoculars and it is a great object to get started in observational astronomy. The Andromeda Galaxy is a rather large object, being 178 arc minutes in diameter. The moon is about 30 arc minutes in diameter, so this galaxy's apparent size is about 6 times that of the moon! It can be seen with the naked eye in relatively dark skies, but you are only seeing the bright core. Visually the outer edges of this galaxy are fairly faint.

This galaxy is sometimes referred to as the Great Andromeda Nebula. This was because the concept of objects outside the Milky Way Galaxy was not even considered until the early 1900's. It was William Huggins who noted that the spectra of the "nebula" didn't match the line spectra of other nebulae, but it had a continuous spectrum. In 1912, V. M. Slipher measured its radial velocity and he discovered that it was approaching us at 300 km/sec. In 1923, Edwin Hubble found the first Cepheid variable star in the Andromeda Galaxy and this put this "nebula" close to its true distance that we know today of 2.2 million light years.

I will be giving two methods on how to find the Andromeda Galaxy. The first method is a little easier, but you have to know how to locate the constellation Pegasus. The other method we start from Cassiopeia, an easy constellation to find, and star hop with binoculars or a finderscope from there.

First Method:

First, find the constellation Pegasus and locate the Great Square. Locate Alpheratz (α Pegasi) as a starting point. If Pegasus is in the East, then think of the square as a baseball diamond and this star will be third base. If Pegasus is in the West, then this star will be second base. If Pegasus is to the South, then it is the upper, left star of the square. Look away from the square along the constellation Andromeda in which there are two lines of stars that are in the same line as the diagonal of the square of Pegasus with a Pegasi. Hop over to a star that is dimmer than a Pegasi and then again to a star that is about the same brightness as a Pegasi, which is Mirach (μ Andromedae). Now put your binoculars or finderscope on this star. It should appear yellowish. Note that if you found a yellow star and it is in line with



the two right stars of the "W" of Cassiopeia, then you have found Almach (γ Andromedae.) Almach is another colorful double star like Alberio that are yellow and blue companions. Go perpendicular to the line we just used to get here and you should see another dim star. Keep going about the same distance and you should see two stars now. Between those stars a little to the left of center and above the line that joins them you should see a small, fuzzy smudge.

Second Method:

Starting from Cassiopeia, the "W" in the sky, we want to put our binoculars or telescope on the lower, right star of the "W", which is Schedar (α Cassiopeiae). In the same field of view, below the "W" you should see an open "L" pattern of stars. Follow the lower part of the "L" until you come to a dipper shaped asterism. Follow the handle of this asterism and it should lead you to the Andromeda Galaxy.

Also in the area, for telescopic observers, are M32 and M110. At low power, M32 is easily seen in the same field as the Andromeda Galaxy. Your will see four stars in an open square shape next to the Andromeda Galaxy. Notice that one of those stars is fuzzy. That is M32. M110 is somewhat fainter and may require dark skies to see it. It is just outside of a 1º field of view that is centered on the Andromeda Galaxy.

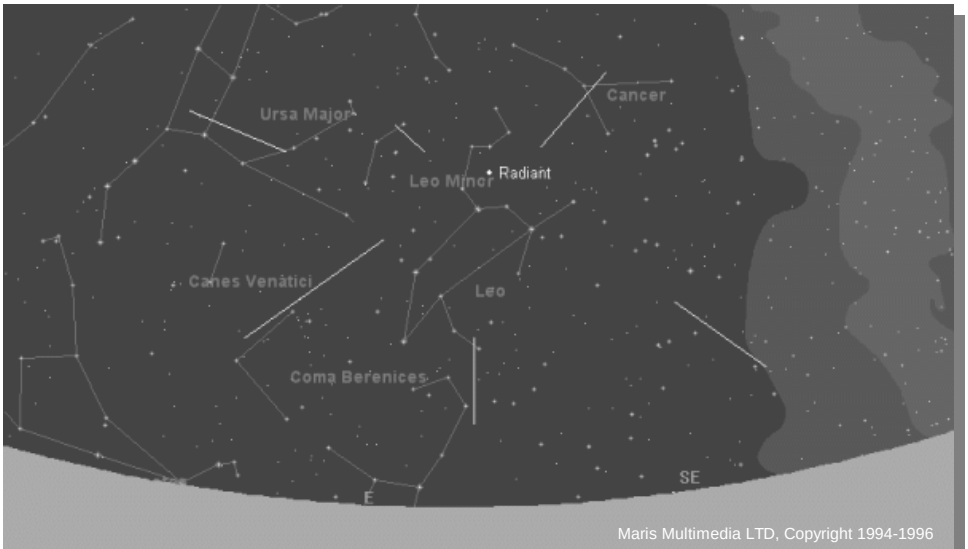
Lunar Phases

October 2	Full
October 10	Last Quarter
October 16	New
October 23	First Quarter
November 1	Full
November 8	Last Quarter
November 15	New
November 22	First Quarter
November 30	Full
December 7	Last Quarter
December 14	New
December 22	First Quarter
December 30	Full

Leonid Meteor Shower

November 18th is expected to bring the best performance of the Leonid meteor show in years. This shower is the result of the Earth passing through the debris in the tail of comet Swift-Tuttle and is denoted the Leonid's due to the position of radiant in the constellation Leo.

The peak occurs on November 18, with a nearly new moon. The best time to observe is in the early morning about 3:00 am. The hourly meteor rate is expected to be in the hundreds per hour. Hope for clear skies and that the predictions are correct.



Looking East November 18, 3:00 AM

SCHEDULED ACTIVITIES

FOR

The Wehr Astronomical Society

http://www.execpc.com/~tgrunewa/astro/was.html

Regular Meetings

(Free and Open to the Public)

Tuesday, October 9, 2001, at 7:00 p.m.

At the Wehr Nature Center

A presentation of space exploration By: Greg Gonia.

Tuesday, November 13, 2001, at 7:00 p.m.

At the Wehr Nature Center

A presentation on Australian Astronomy By:Gary Sampson

Tuesday, December 11, 2001,m at 7:00 p.m.

At the Wehr Nature Center

Gamma-ray Bursts, “The most energetic explosions in the universe.” By: Marina Orio

Observatory Activities

(Free and Open to the Public)

October 5	**7:30**	Deep sky observing Novice Night - Bring your telescope or binoculars and let us show you what you can see. Locate the Andromeda Galaxy. See Mars.
October 19	**7:00**	Observing the moon and deep sky objects. See a crescent moon and the brighter deep sky objects. See Mars.
November 2	**7:00**	Observing the moon and deep sky objects. See a full moon and the brighter deep sky objects. See Mars.
November 16	**7:00**	Deep sky observing Locate Pegasus, the winged horse. See Mars and Saturn.
December 7	**7:00**	Deep sky observing Locate Taurus, the Bull. See Mars and Saturn (closest December 3).
December 21	**7:00**	Observing the moon and deep sky objects. See a 1st quarter moon and the brighter deep sky objects. See Mars, Jupiter (closest December 31) and Saturn.

Note: All Observatory dates fall on a Friday, and are held at Froemming Park.