# The Prairie Astronomer

January, 2011 Volume 52, Issue #1

The Official Newsletter of the Prairie Astronomy Club

January Program

## How To Use a Telescope

This will be a FREE telescope help session for the general public. It won't be "high-tech," just friendly, knowledgeable help provided by the members of the Prairie Astronomy Club. The session will take place at Hyde Memorial Observatory on the south side of Holmes Lake in Lincoln, Nebraska. Those who attend are invited to bring their own telescopes for instructions on their use.

## In This Issue:



Featured Photo

NASA's Cassini spacecraft captured this image showing Saturn's icy moon Rhea taking center stage, with cameo appearances by Saturn's rings and three clearly visible moons. In this image, Dione appears just above Rhea. Tethys is the larger circle toward the upper left and Epimetheus is the smaller dot to the left of Rhea. Prometheus is to the left of Dione, but barely distinguishable as a speck embedded in the rings. This wide-angle image was taken on Jan. 11, 2011 from a distance of approximately 60,000 kilometers away (37,000 miles).

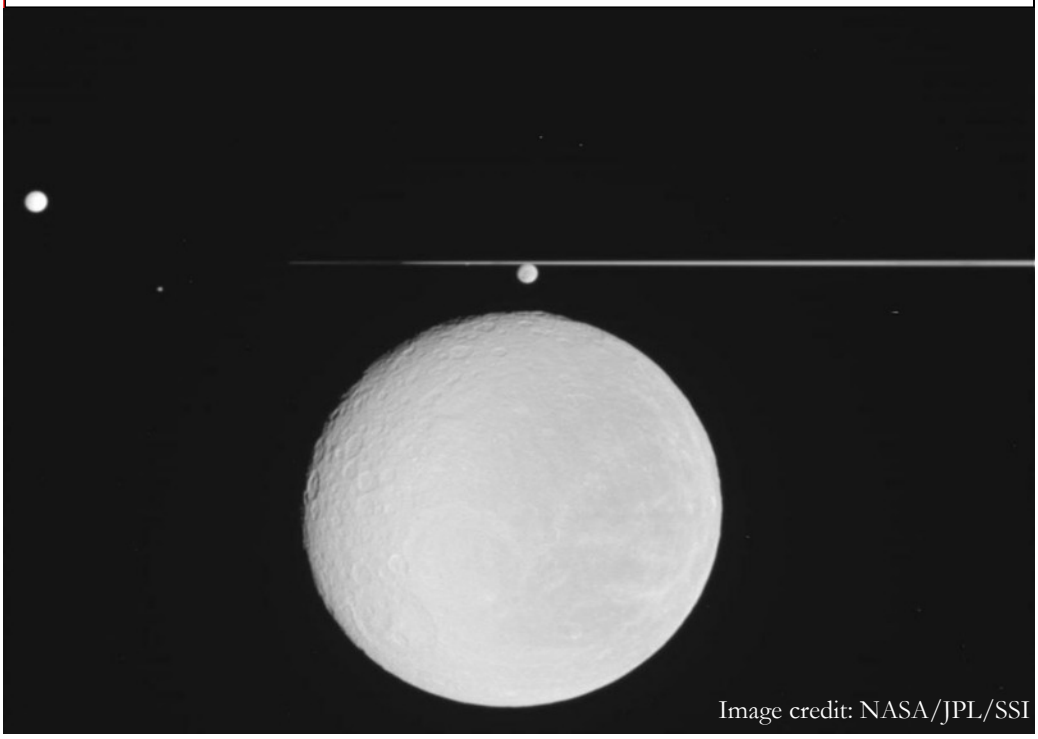


Image credit: NASA/JPL/SSI

# December Lunar Eclipse Photos

Brian Sivill

Brian Sivill

# Club Events

Newsletter submission deadline, February 15, 2011

PAC Club Meeting:
Tuesday, January 25, 2011 7:00pm @ Hyde Obsv.
Program: How to use your telescope

PAC Club Meeting:
Tuesday, February 22, 2011 7:30pm @ Hyde Obsv.
Program: Speaker John Reinert, club member and engineer who was part of the Shuttle engine design team. PAC member John W. Reinert will provide an overview of his experiences working with Space Shuttle Main Engines in Southern California in the late 80's and early 90's.

PAC Club Meeting:
Tuesday, March 29, 2011 7:30pm @ Hyde Obsv.
Program: How to Sketch Your Observations by Jim Kvasnicka.

**2011 PAC Star Party Dates**

| | | | |
|---|---|---|---|
| January | Jan 28th | **Feb 4th** | |
| February | Feb 25th | **Mar 4th** | |
| March | Mar 25th | **Apr 1st** | |
| April | Apr 22nd | Apr 29th | **May 6th** |
| May | May 27th | **Jun 3rd** | |
| June | Jun 24th | **Jul 1st** | |
| July | Jul 22nd | **Jul 29th** | |
| August | **Aug 26th** | Sep 2nd | |
| September | Sep 23rd | **Sep 30th** | |
| October | Oct 21st | **Oct 28th** | |
| November | Nov 18th | **Nov 25th** | |
| December | Dec 16th | **Dec 23rd** | |

**Lunar Party Dates:**

Mar 11th
Apr 8th
May 13th
Jun 10th
Jul 8th
Aug 5th
Oct 7th
Nov 4th

Dates in **BOLD** are closest to the New Moon. Lunar Party dates are possible dates and not official.

**Volunteer Activities**

Hyde Observatory on Saturday nights

PAC Beginners Field Class: To be determined – likely in the spring of 2011.

New Club Member's Instructional Class: To be determined.

Please see the Outreach Report for more information and as always additional volunteer events will occur when they are scheduled.

# ON THE NET

**PAC:**
**www.prairieastronomyclub.org**

**PAC E-Mail:**
**info@prairieastronomyclub.org**

**NSP:**
**www.nebraskastarparty.org**

**NSP E-Mail:**
**info@nebraskastarparty.org**

**OAS**
**www.OmahaAstro.com**

**Hyde Observatory**
**www.hydeobservatory.info**

**Panhandle Astronomy Club**
**Panhandleastronomyclub.com**

**PAC-LIST: You may subscribe to the PAC listserv by sending an e-mail message to: imailsrv@prairieastronomyclub.org. In the body of the message, write "Subscribe PAC-List your-email-address@your-domain.com"**

**For example:**
**Subscribe pac-list me@myISP.com**

**To post messages to the list, send to the address**

**pac-list@prairieastronomyclub.org**

**PAC can also be found on Twitter and Facebook.**

**Buy club apparel through the club website. Shirts, hats, mugs, mouse pads and more.**

# February Observing: What to View--Jim Kvasnicka

This is a partial list of objects visible for the upcoming month.

Planets

Venus: Rises about 3 hours before sunrise. Venus fades in magnitude to -4.1.

Saturn: Rises in Virgo around 10:30 pm to start the month and by 8:30 pm to end the month. The rings are tilted 10° from edge on.

Mars and Neptune: Both reach conjunction and are not visible.

Jupiter: Dims to -2.1 magnitude. Jupiter sets by 9:30 pm to start the month and by 8:00 pm to end the month.

Uranus: Look for Uranus 4° to Jupiter's lower right.

Mercury: Rises about 45 minutes before the Sun but will not be visible after a couple of days into February.

February Messier List

M1: The Crab Nebula in Taurus.
M35: Open cluster in Gemini.
M36/M37/M38: Open clusters in Auriga.
M42: The Orion Nebula.
M43: Emission nebula just north of M42.
M45: The Pleiades in Taurus.
M78: Emission nebula in Orion.
M79: Class V globular cluster in Lepus.
Last Month: M33, M34, M52, M74, M76, M77, M103
Next Month: M41, M44, M46, M47, M48, M50, M67, M81, M82, M93

NGC and Other Deep Sky Objects

NGC 1501: Planetary nebula in Camelopardalis, light blue color.
NGC 2264: The Christmas Tree Cluster in Monoceros.
NGC 2362: The Tau Canis Majoris Cluster.
NGC 2392: The Eskimo Nebula in Gemini.
NGC 2403: Oval shaped galaxy in Camelopardalis.

Double Star Club List

32 Eridani: Yellow primary with a white secondary.

55 Eridani: Yellow and pale yellow stars.

Gamma Leporis: Pair of yellow stars.

Epsilon Monocerotis: White primary with a pale yellow secondary.

Beta Monocerotis: Three bluish white stars.

Kappa Puppis: Equal pair of white stars.

Alpha Ursa Minoris: Polaris, the north star. Yellow-white and white stars.

N Hydrae: Equal yellow stars.

## Focus On Constellations - Jim Kvasnicka

Canis Major

Canis Major, the Big Dog, along with Canis Minor are the two hunting dogs of Orion who help him track and fetch game. Canis Major is located southeast of Orion, standing beside the hunter's feet. The Big Dog has his eye, Sirius, fixed on Lepus, the Hare, crouched at Orion's feet. Canis Major contains Sirius, the brightest star in the sky at a magnitude -1.4. The constellation covers only 380 square degrees but it is not lacking for deep sky objects. It is rich in open clusters including Messier 41. There are several complex nebulosities and galaxies, a planetary nebula, and numerous double stars. Canis Major is best seen in the month of February.

Mythology and History

Canis Major is the larger of Orion's two hunting dogs. The Arabic title for the constellation was The Dog of the Giant. The ancient Egyptians believed the flooding of the Nile was caused by the power of the star Sirius. The name Sirius comes from the Greek meaning "scorching". Sirius, the Dog Star, was associated with the Sun. During the hot summer months the ancients believed the heat of Sirius was added to the Sun. To this day we call the hottest portion of the summer the "dog days".

Objects Magnitude 12.0 and Brighter

Galaxies: NGC2280, NGC2217, NGC2292, NGC2207, NGC2293, NGC2380, NGC2325, NGC2223, NGC2272, IC456
Open Clusters: M41, Cr140, Cr132, NGC2362, NGC2354, NGC2360, NGC2384, NGC2345, NGC2367, NGC2374, NGC2383, NGC2204, NGC2243, Basel11A, Hafner6, Hafner8, Ru18, Ru20, Tr6, Tombaugh1
Globular Clusters:
Planetary Nebulae: PK242-11.1, PK221-12.1
Bright Nebulae:
SNREM:
Dark Nebulae:
Named Stars: Sirius (Alpha), Murzim (Beta), Muliphen (Gamma), Wezen (Delta),
Adara (Epsilon), Furud (Zeta), Aludra (Eta)

Number of Objects in Various Observing Clubs
Messier Club: 1 object
Double Star Club: 1 object
Herschel 400 Club: 4 objects
Globular Cluster Club: 0 objects
Open Cluster Club: 4 objects
Planetary Nebula Club: 1 object
Urban Club: 1 object

ANNUAL MEMBERSHIP

**REGULAR MEMBER - $30.00 per year. Includes club newsletter, and 1 vote at club meetings, plus all other standard club privileges.**

**FAMILY MEMBER - $35.00 per year. Same as regular member except gets 2 votes at club meetings.**

**If you renew your membership prior to your annual renewal date, you will receive a 10% discount.**

**Club members are also eligible for special subscription discounts on Sky & Telescope Magazine.**

## Club Telescopes

To check out one of the club telescope contact **Jason Noelle.** If you keep a scope for more than a week, please check in with Jason once a week, to verify the location of the telescope and how long you plan to use it. The checkout time limit will be two weeks, but can be extended if no one else has requested use of a club scope.

## Program Chair Minute - Dave Churilla

**January 2011 PAC Program**
**"How to Use Your Telescope"**

A telescope can be your window to the universe.

But it's just a telescope right? How hard can it be to use one – you just look through it? Well, it really isn't hard once you learn some basics.

For November's program we helped people learn how to buy a telescope. For a number of years now PAC has presented a very successful program in January to help people learn how to use their telescope. We'll be doing the same thing this month and we can use everyone's help.

Club members will be presenting "Collimating Your Telescope", "Aligning Your Finderscope", and "Basics of Reading Star Charts" as very brief presentations. After each presentation members of the club will help mentor guests with their scopes to help them learn how to use them or answer questions they have. Jim Kvasnicka and Bob Kacvinsky will coordinate assigning guests to club members for help.

So come out and join us on January 25th at 7 PM at Hyde Observatory and help us assist our guests with their telescopes. We could use extra collimators, especially laser collimators, and basic tools to assist guests with their telescopes. You have no idea how much this means to them.

**PLEASE NOTE THE TIME: THE PAC MEETING WILL START AT 7:00 PM ON JANUARY 25th.**

Following are upcoming programs you won't want to miss.

**February 2011**: Working on Shuttle Engines by John Rheinert. I'll have more information in the February Newsletter.

**March 2011**: How to Sketch Your Observations by Jim Kvasnicka. For years Jim has sketched what he sees in his telescope adding an extra measure of enjoyment to his viewing and creating some very good work. Jim will share some of his secrets, show you step by step how he does it and help you get started in sketching your own observations.

**April 2011**: A Dummy's Guide to Filters by Dave Knisely. This will be a very beneficial program as filters can enhance your observing enjoyment of many objects and Dave is extremely knowledgeable about them. He'll try to give you in plain English a good idea of what to use, which are the best, and which are the best for the money.

**May 2011**: Safely Viewing the Sun by Dave Churilla. This will be a short presentation on Solar Filters, both White Light and H-Alpha, how to view the sun safely, how to get started, what's new in the past few years and what are the best buys. Its will be, by necessity, very NON-TECHNICAL. If the sky is clear a short demo will be held prior to the PAC meeting outside Hyde Observatory with Dave's telescopes in both White Light and H-Alpha.

**June 2011**: We are considering a swap meet & possibly a BBQ in June. Keep watch for details.

I'll try to keep you apprised of upcoming programs so you can plan to attend.

The members of the PAC Executive Committee work together to plan the monthly PAC Programs. Our goal for the programs is to provide a good mix of information, entertainment, and to make them relevant for all experience levels. We'd love to have your comments and suggestions concerning what you'd like see in a program. Let us know your ideas.

## Cryptoquip

Solution from last month:

SINCE A CERTAIN DWARF PLANET SPINS AROUND, COULD ONE REFER TO IT AS THE WHIRLED CERES?

# Challenge Observing Objects for Jaunary

Each month I will have two objects, one for the more seasoned observer and one for the beginning observer. Each object I hope will challenge you just a little bit. I will provide you with a little bit of information about the object. It is your job to find it and if you would write a little report or draw what you see. The first person to report back on each object will have their report published in the next issue of the newsletter. Happy Hunting!

Advanced Object

## IC 405: The Flaming Star Nebula

An emission/reflection nebula in the constellation Auriga, surrounding the bluish star AE Aurigae. The nebula measures approximately 37.0' x 19.0', and lies about 1,500 light-years away.[2] It is believed that the proper motion of the central star can be traced back to the Orion's Belt area. The nebula is about 5 light-years across. Use a UHC or O-III filter to see it.

Apparent Magnitude: 6.0?

Beginner Object

## NGC 457: The Owl Cluster

An open star cluster in the constellation Cassiopeia. It was discovered by Friedrich Wilhelm Herschel in 1787. It lies over 7,900 light years away from the Sun. It has an estimated age of 21 million years. Two bright stars, magnitude 5 Phi-1 Cassiopeiae and magnitude 7 Phi-2 Cassiopeiae can be imagined as eyes. The cluster features a rich field of about 150 stars of magnitudes 12-15.

Apparent Magnitude: 6.4

## Hubble Eyes Hanny's Voorwerp by Tammy Plotner of Universe Today

Almost four years ago a group of astronomers known as the Galaxy Zoo made a very exciting discovery – one they named "Hanny's Voorwerp". Although the action occurred a hundred thousand years ago and somewhere in the neighborhood of 700 million light years away, a once upon a time quasar burned brighter than its neighboring galaxy. While the tidal pull of massive spiral IC 2497 shredded a gas rich dwarf galaxy, the incredible outpouring of ultraviolet and X-ray radiation combined with the quasar ignited the gases to light… but what exactly is it? The Hubble Space Telescope turned its eye in the direction of Leo Minor to find out.

According to the American Astronomical Society press release: "One of the strangest space objects ever seen is being scrutinized by the penetrating vision of the NASA/ESA Hubble Space Telescope. A mysterious, glowing green blob of gas is floating in space near a spiral galaxy. Hubble uncovered delicate filaments of gas and a pocket of young star clusters in the giant object, which is the size of the Milky Way. The Hubble revelations are the latest finds in an ongoing probe of Hanny\rquote s Voorwerp (Hanny's Object in Dutch). It is named after Hanny van Arkel, the Dutch schoolteacher who discovered the ghostly structure in 2007 while participating in the online Galaxy Zoo project. Galaxy Zoo enlists the public to help classify more than a million galaxies catalogued in the Sloan Digital Sky Survey. The project has expanded to include Galaxy Zoo: Hubble, in which the public is asked to assess tens of thousands of galaxies in deep imagery from the Hubble Space Telescope." In the sharpest view yet of Hanny's Voorwerp, Hubble's Wide Field Camera 3 and Advanced Camera for Surveys have uncovered star birth in a region of the green object that faces the spiral galaxy IC 2497 — a bright, energetic object that is powered by a black hole.

This Hubble view reveals new details in colorful clarity – such as a area of star clusters whose members are only a couple of million years old… and the chemically charged yellowish-orange area at the tip of Milky Way sized Hanny's Voorwerp. The image was made by combining data from the Advanced Camera for Surveys (ACS) and the Wide Field Camera 3 (WFC3) onboard Hubble, with data from the WIYN telescope at Kitt Peak, Arizona, USA. The ACS exposures were taken 12 April 2010; the WFC3 data, 4 April 2010.

"The star clusters are localized, confined to an area that is over a few thousand light-years wide," explains astronomer William Keel of the University of Alabama in Tuscaloosa, leader of the Hubble study. "The region may have been churning out stars for several million years. They are so dim that they have previously been lost in the brilliant light of the surrounding gas."

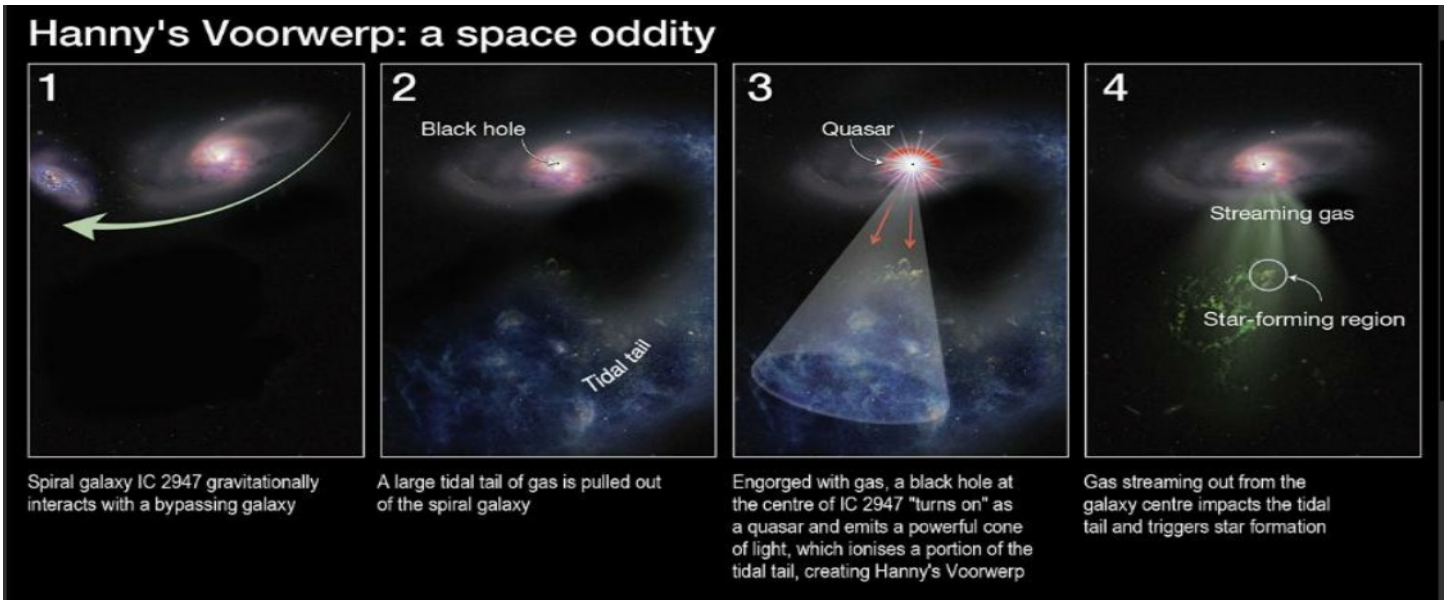
The press release goes on to state that recent X-ray observations have revealed why Hanny's Voorwerp caught the proverbial eye of astronomers. The galaxy's rambunctious core produced a quasar, a powerful light beacon powered by a black hole. The quasar shot a broad beam of light in Hanny's Voorwerp's direction, illuminating the gas cloud and making it a space oddity. Its bright green color is from glowing oxygen. "We just missed catching the quasar, because it turned off no more than 200,000 years ago, so what we're seeing is the afterglow from the quasar," Keel says. "This implies that it might flicker on and off, which is typical of quasars, but we've never seen such a dramatic change happen so rapidly."

The quasar's outburst also may have cast a shadow on the blob. This feature gives the illusion of a gaping hole about 20,000 light-years wide in Hanny's Voorwerp. Hubble reveals sharp edges around the apparent opening, suggesting that an object close to the quasar may have blocked some of the light and projected a shadow on Hanny's Voorwerp. This phenomenon is similar to a fly on a movie projector lens casting a shadow on a movie screen. (Or your little brother Tom making a duck face with his hand while your Mom isn't looking.) Radio studies have revealed that Hanny's Voorwerp is not just an island gas cloud floating in space awaiting a three-hour tour. The glowing blob is part of a long, twisting rope of gas, or tidal tail, about 300,000 light-years long that wraps around the galaxy. The only optically visible part of the rope is Hanny's Voorwerp. The illuminated object is so huge that it stretches from 44,000 light-years to 136,000 light-years from the galaxy's core. The quasar, the outflow of gas that instigated the star birth, and the long, gaseous tidal tail point to a rough life for IC 2497.

"The evidence suggests that IC 2497 may have merged with another galaxy about a billion years ago," Keel explains.

"The Hubble images show in exquisite detail that the spiral arms are twisted, so the galaxy hasn't completely settled down." In Keel's scenario, the merger expelled the long streamer of gas from the galaxy and funneled gas and stars into the center, which fed the black hole. The engorged black hole then powered the quasar, which launched two cones of light. One light beam illuminated part of the tidal tail, now called Hanny's Voorwerp." says Keel. "About a million years ago, shock waves produced glowing gas near the galaxy's core and blasted it outward. The glowing gas is seen only in Hubble images and spectra. The outburst may have triggered star formation in Hanny's Voorwerp. Less than 200,000 years ago, the quasar dropped in brightness by 100 times or more, leaving an ordinary-looking core.

New images of the galaxy's dusty core from Hubble's Space Telescope Imaging Spectrograph show an expanding bubble of gas blown out of one side of the core, perhaps evidence of the sputtering quasar's final gasps. The expanding ring of gas is still too small for ground-based telescopes to detect. "This quasar may have been active for a few million years, which perhaps indicates that quasars blink on and off on timescales of millions of years, not the 100 million years that theory had suggested," Keel says. He added that the quasar could light up again if more material is dumped around the black hole. Fascinating evidence which confirms the team's original explanation… Go Zoo!




Credits: NASA, ESA, William Keel -University of Alabama, Tuscaloosa, the Galaxy Zoo team and STScI Press releases.

# Photo Recap from the Holiday Planetarium Social



Moon Rocks


PLANETARIUM
LASER SHOWS ASTRONOMY & SPACE SCIENCE · STAR SHOW


ETARIUM
Y & SPACE SCIENCE · STAR SHOWS

# THE *Prairie Astronomy Club*

Amateur Astronomy --
A Hobby as Big as the Universe

The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc. Membership expiration date is listed on the mailing label. Membership dues are: **Regular $30/yr, Family $35/yr**. Address all new memberships and renewals to: **The Prairie Astronomy Club, Inc., PO Box 5585, Lincoln, NE 68505-0585**. For other club information, please contact one of the club officers listed to the right. Newsletter comments and articles should be submitted to: **Jason Noelle at oegrad2002@yahoo.com,** no less than ten days prior to the club meeting. The Prairie Astronomy Club meets the last Tuesday of each month at Hyde Memorial Observatory in Lincoln, NE.



The Prairie Astronomer
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Lincoln, NE 68505-0585

FIRST CLASS MAIL

**Next PAC Meeting**
**TUESDAY**
**January 25 , 2011**
**7:00 PM**
**Hyde Observatory**