

# Gemini

a publication of the Minnesota Astronomical Society



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## Astronomy Day

April 28, 2001

The Minnesota Astronomical Society will host an "Astronomy Day" **open house** at its Onan Observatory, located in Baylor Regional Park. The event is scheduled for April 28, 2000. It will begin at 6:00 p.m., and end at 10:00 p.m.

**What exactly is Astronomy Day?** Astronomy Day is a grass roots movement to share the joy of astronomy with the general population. Astronomy clubs, science museums, observatories, universities, planetariums, laboratories, libraries, and nature centers host special events and activities to acquaint their population with local astronomical resources and facilities. For more information, visit the Astronomical League's Astronomy Day page at:

<http://www.astroleague.org/al/astroday/astroday.html>

**When exactly is Astronomy Day?** Astronomy Day is usually celebrated between mid-April and mid-May, on the Saturday closest to the first-quarter Moon. For this year, it occurs on April 28, 5 days from the new moon. The formula for the date is to determine the date of the first-quarter Moon between mid-April and mid-May and then choose the closest Saturday to this date such that the age of the Moon is nine days or less. Astronomy Week is the week containing Astronomy Day starting on the preceding Monday and ending on the following Sunday. Choosing Astronomy Week in this fashion allows for some groups to hold an Astronomy Weekend.

**Why is Astronomy Day held in the spring instead of the fall?** In a survey we did, four out of five respondents preferred a spring date. Although there were a few suggestions to hold the event at new Moon, 86% agreed that the purpose of the event was to attract urban viewers to the sky, and an evening quarter Moon filled with craters is one of the most impressive celestial sights visible from all urban areas.

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## NCRAL 2001

NPAMAS

The Neville Public Museum Astronomical Society cordially invites you to the North Central Region Astronomical League NCRAL 2001 Convention in Green Bay, Wisconsin.

Planning is well underway for the 2001 North Central Regional Convention in beautiful Green Bay Wisconsin. Our convention will be held at the Ramada Inn and the dates are Friday May 4th to Saturday May 5th, 2001. We will be having a Friday evening registration and welcoming party at the hotel. We are also planning on Friday evening tours of Parmentier Observatory, which is about 20 miles east of Green Bay.

A printable registration form will be available from our web site ([http://www.npmas.com/NCRAL\\_2001/ncral2001frames.html](http://www.npmas.com/NCRAL_2001/ncral2001frames.html)) beginning January 2nd, 2001. Due to our currently scheduled speakers and our centralized location in the region, we anticipate reaching our 200 person maximum limit so we encourage you to sign up early.

We have established room rates with the Ramada and they are as follows: \$65.00/night Single \$75.00/night Double. Please call the Ramada Inn directly at 920-499-0631 to make your reservations. They are holding a block of rooms for us until April 10, 2001. The block is held under the name Neville Public Museum Astronomical Society, North Central Region.

This particular section of Green Bay has 10 hotels all within one block of each other so lodging on any budget should not be a problem. We have assembled a hotel information list for your convenience.

**Speakers:** We already have an awesome lineup of speakers including Brian Pickett, Visiting Assistant Professor of Physics and Astronomy, Purdue University Calumet. Jason Mofle from Rocketdyne Power and Propulsion in California, and the infamous John Dobson from the San Francisco Sidewalk Astronomers. Please see our speakers page for more details.

See our website for a preliminary schedule of events. Please note that the schedule is subject to change. The actual program will have the correct schedule of events but this should give you a pretty good idea of what is happening.

**Editor**

Thor Olson

**Circulation**

John Treadwell

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thor.olson@mn.efi.com

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MAS Gemini

P.O. Box 583011

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Send all MAS membership dues, change of address cards, subscriptions, and renewals to the current MAS treasurer.

Subscriptions alone cost \$4.50 annually for members of astronomy clubs or \$9.00 for other persons. Materials for Gemini are due on the 10th of the month preceding the month of publication.

**Minneapolis Planetarium: 612-630-6150**

Cost for most shows: \$4.50 for adults, \$3.00 for kids 12 and under.

April 21 - June 14, 2001:

**EXPLORERS OF MAUNA KEA**

Sat & Sun at 2:15 pm

Thurs at 7:00 pm

**WISH UPON A STAR**

Sat & Sun at 1:00pm

A portion of all admission sales to this show benefits the Planetarium's Wish-Upon-A-Star Grant Program, which provides astronomy education assistance to area schools with a high percentage of students in free & reduced school lunch program

**Eisenhower Observatory: 952-988-4077**

Come view the night sky through a powerful telescope on top of the Eisenhower Community Center in Hopkins, MN. Viewing time varies throughout the month and is open to the general public. There is no charge, although a \$2.00 donation is requested. Space is limited, so call Diane for reservations: 612-988-4077.

**University of Minnesota:**

Observing from the telescope on top of the Physics building, East Bank. Open to the general public. Fridays during the school year: **612-626-0034** for more info.

**MAS Star Parties:**

The Minnesota Astronomical Society hosts star parties, open to the general public. Come on out, get a look through a telescope, enjoy the view. Call **651-649-4861** for more info or log-on to the web at <http://www.mnastro.org>.

**Patron Members**

MAS offers a patron membership to anyone who wants to help support our activities by paying a slightly higher annual membership fee (\$40 instead of the regular \$16). We would like to thank the following patron members who helped support MAS this year:

**Gregory J. Baril**

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**President: Ben Huset**

651-639-9109 (H) 651-633-7337 (W)

benhuset@skypoint.com

**Vice President: Dave Olmstead**

612-559-5940

david@davidolmstead.com

**Secretary: Sam Hunt**

651-748-1588

samhunt@worldnet.att.net

**Treasurer: Chuck Jorgensen**

612-332-1140

jorg0140@tc.umn.edu

**Board Member: John Treadwell**

651-645-7581(H) 612-624-4007 (W)

j-trea@maroon.tc.umn.edu

**Board Member: John Connery**

612-544-5786

jmcon@mninter.net

## Member Photos



The smoke trail from the launch of Space Shuttle Atlantis carrying the Destiny science module. This photo was taken about 150 miles from the Cape from a location in St. Petersburg Beach, FL on Feb. 7 at 6:13 EST. We could easily see the bright light of the engines behind the Shuttle but we could not see the Shuttle nor hear anything. Photo by MAS member Peter Santi

St Paul skyline from Indian Mounds Park. along Mounds Blvd. View is overlooking the river with the St. Paul airport on the other side of the river. Photo by MAS president Ben Huset.



The following received a 'Certificate of Merit' from MAS for their science fair projects on February 24, 2001

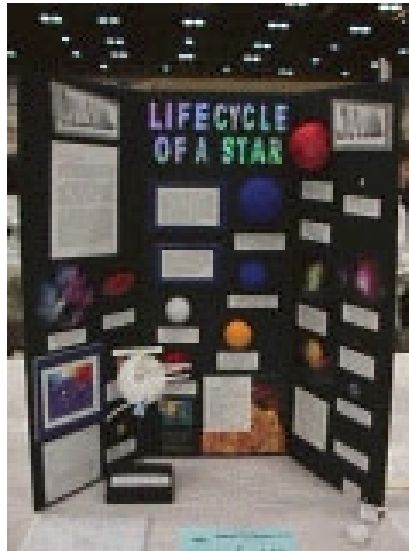
Megan Wang  
Lifecycle of a Star  
610t

Laura Bukowski  
Meteorite Mystery 2000  
611t

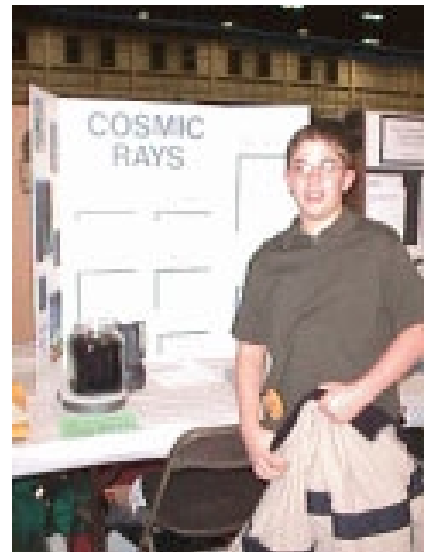
Micah Hensley  
Cosmic Rays  
8034s

Ellen Oaks  
What Age Group Knows the Most About Our Galaxy?  
8092s

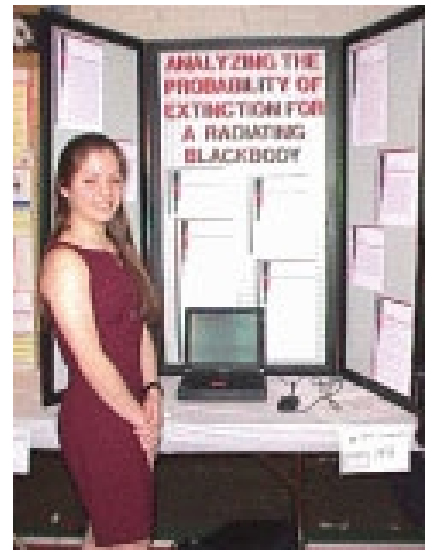
Rayna DeMaster  
Analyzing the Probability of Extinction for a Radiating Blackbody  
148t



Megan Wang, Lifecycle of a Star



Micah Hensley, Cosmic Rays



Rayna DeMaster, Analyzing the Probability of Extinction for a Radiating Blackbody

Each member received a frameable certificate, and several nice space science handouts.

Thanks to Radio City, Mpls Planetarium and MN SFS for providing the handouts.

Thanks also to MAS Secretary Sam Hunt who helped pick the winners.

### Cool Links

<http://www.jpl.nasa.gov/cassini/acoustic>

Listen to the eerie sounds of space near Jupiter from Cassini's radio and plasma wave science instrument. They have converted to sound waves to make the patterns audible.

<http://www.virtualcolony.com/sac/>

Database of deep sky objects maintained by the Saguaro Astronomy Club. It is searchable by constellation and object type.

<http://msowww.anu.edu.au/library/thesaurus/>

Trying to remember how to say "telescope" in German, or "mirror" in Italian? Check out this site.

*This article first appeared in the July 29th 2000 edition of West Central Tribune*

As the Civil War waged on, a small candle was lit against the dark background by Wilson Cannon and Mary Jump; the light of the candle was called Annie Jump Cannon. Born on December 11, 1863 in Dover, Delaware, Annie's light would brightly grow and one day she would become an acclaimed astronomer.

In her teens, Annie developed an interest in the stars which was nurtured by her mother, who showed her the constellations. Although, Annie suffered from a hearing loss, this did not prevent her from satisfying her curiosities and furthering her education.

Cannon attended Wellesley College in Massachusetts where she excelled in physics and astronomy. Upon graduation, she returned home rather than pursue a career in physics or astronomy; women at that time rarely entered a career in science which was considered a "man's domain."

Shortly after her return home, her mother died and Cannon returned to Wellesley as a junior physics instructor and later became a "special student" of astronomy at Radcliffe. It was at Wellesley that the seeds of Cannon's career in astronomy were planted. Inspired by Sarah Whiting, lab director in physics, Annie learned about the light from stars using spectral analysis.

Spectral analysis separates starlight into components that tell a story about a star's temperature and chemical makeup. Making an analysis of starlight involves

looking at photographic plates of a star's spectrum and identifying patterns of dark and light bands which represent atomic activity. Specific patterns of banding indicate that a star is rather hot, while other patterns demonstrate a cooler star.

Annie became so prodigious at classifying the spectra of stars that she was hired in 1896 by the eminent Professor Edward Charles Pickering, director of the Harvard College Observatory. While at Harvard, Cannon worked along side other women, who were called "Pickering's Women," a group of proficient, energetic, and bright women. Their main duties were to catalogue and record data about stars, something considered to be drudgery by male astronomers.

Working for piecemeal wages, 50 cents an hour, Annie classified 5,000 stars per month from 1911 to 1915 and completed the project in 1915 with a grand total of 225,300 spectra. The information from the classifications were used to produce a number of important catalogues, including "The Henry Draper Catalogue."

Cannon created a modest classification scheme that survives today in introductory astronomy texts which describes the relationship between a star's temperature and its spectrum: O B A F G K M. (Astronomy students remember this by saying: "Oh Be A Fine Girl/Guy Kiss Me.") The "O" classifies the hottest stars, while "M" the coolest, with intermediate temperatures in between.

Annie went on to win numerous awards for her work, including being the first woman to win the Draper Medal of the National

Academy of Science, and in 1938, she received a permanent position at the Harvard College Observatory. Months before her death in 1941, she wrote to a former classmate, "At the observatory, I am classifying, classifying and now getting ready to start on a large piece for Yale Observatory ... Of course I love to do it."

Pat Thibault

Information for this article from: "Career: Annie Jump Cannon" Logan Hennessey (Internet);

"Astronomy" by Dinah L. Moche.

August Sky 2000 from: "Celestial Delights" Reddy and Walz-Chojnacki.

Patrick Thibault is a member of the Des Moines Astronomical Society. He can be reached at [thibault@midstate.tds.net](mailto:thibault@midstate.tds.net)

## What Color is the Sky in *Your World*?

A preview of the upcoming MAS meeting topic for May 1, 2001

"If a tree falls in the forest with no one to see it, what color is it?"

This is a question that is addressed by a hybrid branch of science called psychophysics. The answer is that it has no color. Without a human to perceive the light there is no brain to interpret it, and no color to assign to it. Color is a construct that is "all in your mind."

Most people see stars as whitish points of light. Yet we know that the spectral contents of stars vary enormously. If our eyes were just a bit more sensitive, we could discern the color each spectrum would make. What colors would they be?

Photographic film "sees" the light of stars differently than we do. How did astronomers use film to determine the spectral types of stars?

The dynamic range of starlight is enormous. Our visual range is limited to around 100:1 however, and despite dark adaptation, there is an absolute limit somewhere around magnitude 6. Amateur telescopes can extend this well past magnitude 15, a million to 1 dynamic range!

When we want to make a representative map of the sky

(a star chart), we are limited to what can be printed with ink on paper. How can we depict this enormous range of starlight to make the map useful?

The sun is a 6800 degree star, which should be slightly bluish in appearance. Why then does it look yellow to us?

And if the sun is yellow, then why does the moon (reflecting the light of the sun) look white?

And why is the sky blue, really?

What color is the sky at night?

These questions and more will be covered at the May 1, 2001 MAS meeting. ***The Colors of the Stars***, presented by MAS member Thor Olson, will explain how we perceive color and how we can depict astronomical objects using modern methods of color and perceptual science.

Thor is a Color Imaging Scientist working at Electronics For Imaging Inc, a manufacturer of color printer controllers. His work over the years has included developing film imaging technology for which the company received an Academy Award.

When he is not calibrating toner, ink, or dye colorants, he can sometimes be found outside in the dark, experimenting with what colors get recorded from long exposures onto film at the focal plane of his telescope.

## Wanted/For Sale

FOR SALE: 16" Meade Starfinder Dobsonian Telescope f/4.5 with 2" focuser, 6x30 finder and excellent optics! New in 1998. \$950.00.

15" f/4.5 Pyrex primary mirror \$500.00.

4.5" Dobsonian telescope with 1 1/4" focuser and 6x30 finder. \$55.00.

Contact Kelly Vickerman at 763-413-2980 or leave message.

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For Sale: Orion Argonaut 150mm telescope, 7X35 finder-scope, SkyView Deluxe equatorial mount w/ polar alignment scope, reducer, 1.25" 45-degree erecting diagonal, 2" to 1.25" eyepiece adapter, solar filter and one 26mm Sirius Plossl (1.25") eyepiece.

Also included: counterweights, tripod bag and custom padded case for telescope. This outfit has been used only four times since purchased, and is in like-new condition. Original cost of telescope and accessories \$1245.00 Additional cost of 150mm solar filter \$109.00 Asking price only \$1000 including solar filter! This is an excellent telescope for the avid amateur or semi-professional astronomer.

Contact Patte Rehak by phone at 612-388-0275 (between 7am and 9pm only, please!) or email at patte@qwest.net

## 2001 Star Parties

*Star parties are held on Friday if weather permits, otherwise on Saturday. Call (651) 649-4861 after 6:00 PM on a star party date to hear whether it will be held.*

### Metcalf

Metcalf is the grassy parking lot of Metcalf Nature Center, about 20 miles east of St. Paul along highway 94. About 6 miles E of the 694/494 crossing is county road 15 (Manning Ave.). Turn right, then left onto the frontage road and continue east, crossing over county road 71. Turn right (south) onto Indian Trail; follow it 1.1 miles to an chicken-wire gate on the right, (marked by three blue reflectors), opening onto a dirt driveway, which is the entrance to Metcalf.

### Baylor Regional Park

Baylor Regional Park is roughly 25 miles W of the SW corner of 494. Head west on highway 5, through Waconia, to Young America. Turn right onto county road 33 and follow it about 2 miles to the park, a right turn. The observing site is through the gate and roughly 100 yards beyond. Card-carrying MAS members may observe at Baylor at any time; call the park keepers in advance at 448-6082.

When visiting Baylor Regional Park, MAS members are requested to NOT park on the grassy areas next to the observatory (or any other grassy areas for that matter). This is a matter of being considerate to the park, its caretakers, and other visitors, so PLEASE PARK in the PARKING AREA.

### Cherry Grove

Cherry Grove is about 20 miles south of Cannon Falls. Head south on Hwy 52. Around 6 miles south of Cannon Falls, take a right onto Goodhue County 1 and follow it around 16 miles, where it ends in a T with Dodge County A. The observatory and warming house are at your right, nestled in the corner of the T.

Date	Location	Sunset
March 2 or 3	Metcalf	6:02pm
March 16 or 17	Baylor/Onan	6:20pm
March 23 or 24	Cherry Grove	6:29pm
March 30 or 31	Metcalf	6:38pm
April 13 or 14	Baylor/Onan	7:56pm*
April 20 or 21	Cherry Grove	8:06pm*
April 27 or 28	Metcalf	8:14pm*
May 18 or 19	Baylor/Onan	8:39pm*
May 25 or 26	Cherry Grove	8:46pm*
June 1 or 2	Metcalf	8:53am*
June 15 or 16	Baylor/Onan	9:02pm*
June 22 or 23	Cherry Grove	9:04pm*
June 29 or 30	Metcalf	9:04pm*
July 13 or 14th	Baylor/Onan	8:58pm*
July 20 or 21	Cherry Grove	8:53pm*
July 27 or 28	Metcalf	8:45pm*
August 10 or 11	Baylor/Onan	8:27pm*
August 17 or 18	Cherry Grove	8:16pm*
August 24 of 25	Metcalf	8:04pm*
September 7 or 8	Baylor/Onan	7:39pm*
September 14 or 15	Cherry Grove	7:26pm*
September 28 or 29	Metcalf	6:59pm*
October 12 or 13	Baylor/Onan	6:33pm*
October 19 or 20	Cherry Grove	6:21pm*
October 26 or 27	Metcalf	6:10pm*
November 9 or 10	Baylor/Onan	4:50pm
November 16 or 17	Cherry Grove	4:43pm
November 23 or 24	Metcalf	4:37pm
December 7 or 8	Baylor/Onan	4:32pm
December 14 or 15	Cherry Grove	4:32pm
December 21 or 22	Metcalf	4:34pm

\* Central Daylight Time

## how to pay your dues

Your MAS membership expires at the beginning of the month shown on your Gemini mailing label and your membership card. Send your payments to the MAS treasurer (Chuck Jorgensen) at 1615 E. River Rd. Minneapolis, MN 55414-3627. Make checks payable to MAS. The current annual membership dues and subscription fees are:

<b>Regular membership</b>	<b>\$ 16.00</b>
<b>Patron membership</b>	<b>\$ 40.00</b>
<b>Student membership</b>	<b>\$ 10.00</b>
<b>Subscription to Gemini for members of other astronomy clubs</b>	<b>\$ 4.50</b>
<b>Subscription to Gemini for other persons</b>	<b>\$ 9.00</b>

### To Renew Your Sky and Telescope Subscription

If you get *Sky and Telescope* at the club's discounted rate, you must renew your subscription through the club. When you get a renewal notice from S&T, send the notice along with a check for the amount indicated on the notice (currently \$29.95) to the MAS Treasurer (Chuck Jorgensen) at 1615 E. River Rd. Minneapolis, MN 55414-3627. Make checks payable to MAS. If desired, you may renew your MAS membership at the same time, and write one check to cover both payments.

**GEMINI**

**MNASTRONOMICAL SOCIETY**

**P.O. Box 583011**

**Minneapolis, MN 55458-3011**

ADDRESS SERVICE REQUESTED

To subscribe to the MAS e-mail list send e-mail to:  
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with the single line  
**subscribe**  
in the body (not subject) of the message.

The list has about 40% of the membership on it.

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