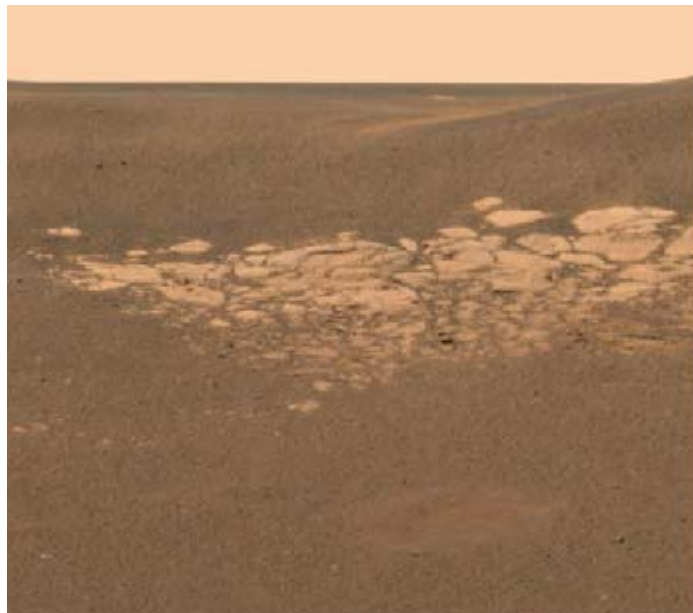




February 2004 Newsletter of the Omaha Astronomical Society Issue 194

View of Mars from Opportunity



General Meeting of the  
Omaha Astronomical Society  
Friday, February 6th at 7:30 PM  
Durham Science Center, Room 169  
UNO Campus

Program: See Page 3

## **Events**

### **FEBRUARY CLUB STAR PARTY**

**Saturday, Feb. 21  
Platte River State Park**

### **MAHONEY PUBLIC STAR PARTIES**

**Will Start in April or May**

### **PLANNING MEETING FOR 2004**

#### **NEBRASKA STAR PARTY**

**12 February, 7:30 pm  
Mahoney State Park Lodge  
Join us and do your part to help plan NSP 10!**

### **NEALE WOODS NATURE CENTER PROGRAMS**

**Phone number: (402) 453 - 5615**

**Friday, 20th February 7:00 - 8:30 PM Gaseous Giants**

**Friday, 5th March 7:30 - 9:00 PM Gaseous Giants**

**OAS members are encouraged to help out with these events.**

**STELLA is a publication of The Omaha Astronomical Society. Please send related correspondence to: STELLA, c/o Omaha Astronomical Society, P O Box 540424, Omaha, NE**



# **BULLETINS**

## **February Meeting**

Open Discussion - Bring your questions

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### **NOTICE to Members**

Any member whose dues were due in 2003 and are not taken care of by the March meeting will be deleted from the roles.

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### **Good February Dates to Observe at the OAS Club Site or at any good location**

Friday 13 Feb, last quarter moon  
Saturday 14 Feb, last quarter moon  
Friday 21 Feb, new moon  
Saturday 22 Feb, new moon

### **Upcoming Events**

15 February at 9:00 to 10:00 pm CST;  
Io, Europa, and Callisto in compact group on one side of Jupiter

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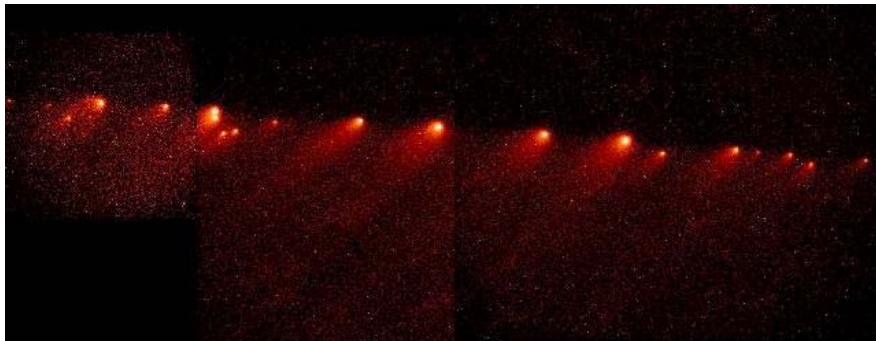
## An Astronomy Quiz

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This Month Quiz - Answers next month.

1. What was John Dobson's first telescope mirror made from?
2. What event will happen June 8th, 2004 between 0530 and 1130 Universal Time?
3. How is Mare Crisium different from other Mare?
4. Who discovered Titan, and what is it?
5. Who or what is Merak?
6. What is the brightest know asteroid?
7. Who was the second man to set foot on the moon?
8. What is another name for NGC 2169?
9. How long does it take light from the sun to reach us by way of Jupiter?
10. What is the picture below?



The cookies at the January meeting were sent by Sara from Fontenelle Forrest/Neale Woods - Millard Observatory, as a thank you for the help we have given them. For that we say, you're welcome.

## January Quiz Answers

1. Venus occults Jupiter
2. Johannes Hevelius
3. Aldebaran
4. Reverse nova normally Mag. 5.9 fades to Mag. 13
5. Equuleus the Colt
6. De Cheseaux
7. The Double Cluster
8. Saturn
9. Binary, Triangulum
10. M78

### FOR SALE

"Antique" Astrophotography Setup - \$250

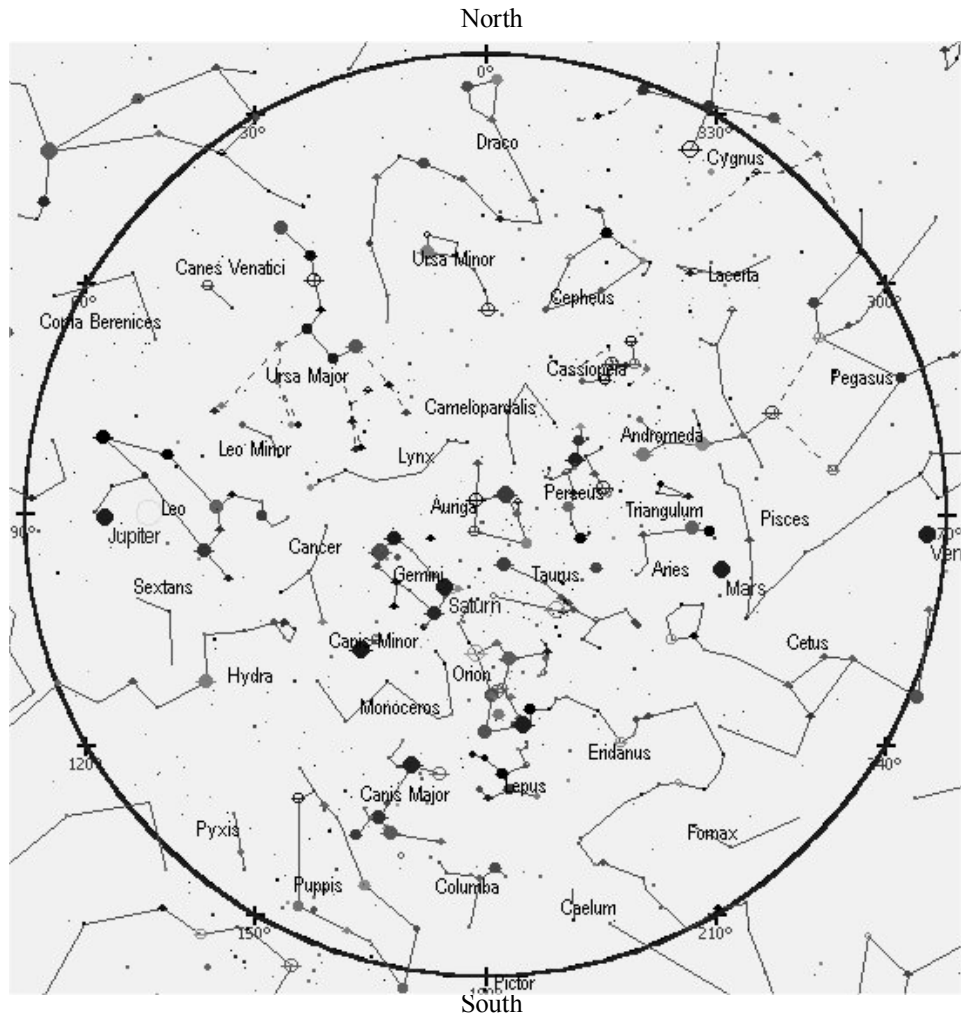
Olympus OM-1 Camera Body  
Zyko 135mm f/2.8 Telephoto Lens w/hood  
Zyko 50mm f/1.4 lens w/hood & skylight(1a) filter  
Zyko 28mm f/3.5 lens w/hood & skylight(1b) filter  
Olympus camera body adapter for use with T-Mount

Miscellaneous

TeleVue - 5x Powermate for 1.25" eyepieces  
- \$125  
LV-Zoom 8mm-24mm 1.25" eyepiece lnib  
- \$100  
Astrosystems LightPipe/SightTube collimator  
- \$20

Jim Rippey - [jrippy@conpoint.com](mailto:jrippy@conpoint.com)  
or 293-0650

# The February Sky



This map reflects the Northern Hemisphere sky at the following times:

Early February, 2004	9 pm
Late February, 2004	8 pm
Early March, 2004	7 pm

## February Sky Calendar

6th Full moon  
13th Last quarter  
25th New Moon  
27th First Quarter Moon

### Recent Observing Awards

No new awards this month

Visit the club web site at: **[www.OmahaAstro.com](http://www.OmahaAstro.com)**

Save the club money... and get your newsletter in full color by signing up for the email edition of the Stella. Signing up is easy... just go to:

**[Http://www.omahaastro.com/DigitalStella](http://www.omahaastro.com/DigitalStella)**

### Welcome New Members...

No new members

Mia Culpa and Saturn's Moons  
Harlan Seyfer

I blew it. Last month I wrote that, at the time of opposition, Saturn's ring system had an angular size of 55.6 arc-minutes. That should have been arc-seconds, as more than one person pointed. 55.6 arc-minutes is a little less than twice the angular diameter of the moon to the unaided eye.

But wouldn't a view of Saturn's rings nearly twice the size of our full moon be spectacular! Determined to salvage something from the goof, the question this month is: where would we be if we could see the rings at 55.6 arc-minutes? A little trigonometry places us 20,115,377 kilometers (12,471,534 miles) from the center of Saturn. (Astronomers measure distances from the center of objects in order to simplify calculations of orbits.) Next question: what is 20,115,377 km from Saturn? This is where our story takes an interesting turn. Four years ago, in February 2000, the answer would have been "nothing".

But let's go back to the beginning, to the night of March 25, 1655, to be exact. Christiaan Huygens is observing from his home in The Hague, The Netherlands. That night he discovers Saturn's largest moon, which he named Titan, after the brother of Cronos in Greek mythology. Saturn is the Roman name for Cronos. The discovery of Titan was significant, since this was the first moon found orbiting a planet other than Jupiter and demonstrated that the Galilean moons around Jupiter were no fluke. Other planets could have moons. Huygens set the trend of naming Saturn's moons after the relatives of Cronos, a system that worked pretty well until modern times when astronomer began to exhaust the Cronos family tree.

Sixteen years after Huygens' discovery, on the night of October 25, 1671, Gian Domenico Cassini was observing Saturn when he noticed a star west of the planet that seemed to be traveling along with it. This was Iapetus, the second of Saturn's moons to be discovered. By timing when it reached western elongation — when it was farthest from Saturn — Cassini had no trouble working out its orbital period at about 80 days. Today we know its period is 79.33 days. But try as he might, he could never observe Iapetus when it was east of Saturn!

Back then it was assumed that all moons would behave as the earth's moon; that is, that all moons kept the same face towards their planets. If this was true, then Cassini reasoned either Iapetus was irregularly shaped or the moon had a dark and a light side. He suspected the latter, which Voyager 2 confirmed in August 1981. Half of Iapetus reflects 5% of the light falling on it, while the other hemisphere reflects 30%. That is enough to make a difference of two magnitudes. At opposition Iapetus is a magnitude 10 object west of Saturn and a magnitude 12 when on the east side. Its leading face is dark. Why still remains a mystery.

Cassini went on to discover three more satellites of Saturn, the last two (Tethys and Dione) on a single night in March 1684. There was then a pause of over 100 years in satellite discoveries, until William Herschel found Mimas and Enceladus

in 1789. It was nearly another fifty years before W.C. and G.P. Bond, father and son, observing from Harvard College Observatory in Cambridge, Massachusetts, discovered Hyperion on September 16, 1848. As often happens in astronomy, it was only two nights later that William Lassell, an amateur astronomer observing across the Atlantic in Liverpool, England, also found Hyperion. Nonetheless, Lassell was given the honor of naming the new moon after one of the brothers of Cronos.

Hyperion has the distinction of being the last moon anywhere in our solar system to be discovered visually. All others thereafter have been discovered by ground-based or space-borne photography. The first of the Sun's "photogenic" moons was Saturn's ninth, Phoebe. William Pickering discovered her at Harvard Observatory in April 1899 while examining plates that had been taken at the Observatory's southern station in Araequipa, Peru, on August 16, 1898. Phoebe is remarkable for being the first known retrograde satellite. It "goes the wrong way around". Up until that time all known moons orbited counterclockwise when viewed from the north ecliptic pole. Phoebe was the first to break that tradition.

No more Saturnian moons were unveiled until the space age. In 1980 there was a flurry of activity as Voyager 1 and 2 approached Saturn. Four moons were discovered before the probes arrived. Voyager 2 photometry added three more moons that year and another in 1981.

In 2000 an international team of eight astronomers led by Brett Gladman of Nice Observatory in France, added 11 more to Saturn's total in August and September. M. Holman added another on November 9, 2000. And still the count continues. The International Astronomical Union (IAU) reported that yet another moon of Saturn was uncovered in February of last year, bringing the total number of known Saturn satellites to 31. Thirteen of these have been discovered in the past four years.

Which brings us around to answering the questions poised earlier. Where would we be if we could see Saturn's rings at 55.6 arc-minutes? What is 20,115,377 kilometers from Saturn? Prior to 2000, the farthest known moon from Saturn was Phoebe at 12,952,000 kilometers. Today the closest known satellite to our hypothetical point is Thrym, one of the September 2000 discoveries. Named for a giant in Norse mythology, Thrym orbits Saturn leisurely once every 1089 days at a distance of 20,470,000 kilometers. Like Phoebe it has a retrograde orbit. Its average radius is 2.8 kilometers, about 1.6 miles. I wouldn't bother looking for Thrym. His magnitude is about a dim 24.

By the way, for comparison the Moon is about 406,700 kilometers at its farthest from the Earth. Its sidereal orbital period (with respect to the stars) is

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## Bits of News

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OPPORTUNITY READY TO ROLL, SPIRIT ON THE MEND

Although the long-feared "Martian gremlin" temporarily derailed Spirit's science mission at Gusev Crater, NASA is back on track. Engineers continue to mend Spirit, and normal operations may resume in just a couple of days.

Meanwhile, on the other side of Mars, in Meridiani Planum, things are going so smoothly with Opportunity that it will egress from the lander in the early morning on Saturday, January 31st, several days ahead of schedule. Better yet, preliminary reports indicate that Opportunity's Miniature Thermal Emission Spectrometer (Mini-TES) has registered the spectral signature of hematite, an iron-bearing mineral that often forms in lakes and hot springs on Earth. Understanding hematite's role in Meridiani Planum is what lured scientists there in the first place.

Hubble's Future

The battle over the future of the Hubble Space Telescope has taken a turn for the better, at least from the perspective of the observatory's supporters. The conflict began on January 16th, when NASA administrator Sean O'Keefe shocked astronomers worldwide by announcing that there will be no more Space Shuttle missions to maintain and upgrade the orbiting telescope. Five days later Senator Barbara Mikulski, whose home state of Maryland hosts both the NASA/Goddard Space Flight Center and the Space Telescope Science Institute, sent a letter to O'Keefe asking him to reconsider his decision. In the week thereafter, her request was bolstered by a huge outcry from professional astronomers, backyard stargazers, and the public -- including many SKY & TELESCOPE readers who wrote to express their concerns. Apparently

bowing to all this pressure, O'Keefe has now agreed to reconsider his decision to abandon Hubble.

### **This Week's Planet Roundup**

**Mercury** (magnitude  $-0.2$ ) is deep in the glow of dawn. You can scan for it with binoculars a little above the southeast horizon about 30 minutes before sunrise. Early in the week is best.

**Venus** (magnitude  $-4.1$ ) is the brilliant white "Evening Star" shining in the west-southwest during twilight and early evening. Every week it's getting a little higher and brighter.

**Mars** (magnitude  $+0.8$ , at the Pisces-Aries border) glows weakly orange high in the south-southwest at dusk. Look for it three or four fist-widths at arm's length to the upper left of brilliant Venus. Mars gets lower in the southwest later in the evening and sets by midnight. It continues to fade and shrink; it's now only 6 or 7 arcseconds in diameter.

**Jupiter** (a brilliant magnitude  $-2.4$  in the hind feet of Leo) rises in the east around 8 p.m. and is well up in the eastern sky by 10 or 11. If you're out at dawn, look for Jupiter shining in the west-southwest. Plus as always watch for grouping and other events of Jupiter's moons

**Saturn** (magnitude  $-0.3$ , in the feet of Gemini) shines high in the east during evening — between Orion to its right or lower right, and Castor and Pollux to its left or lower left.

**Uranus** and **Neptune** are hidden in the glare of the Sun.

**Pluto** (magnitude 14, in Ophiuchus) is low in the southeast just before dawn.



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**Stella Editor:** Mark Weiss 291-5322

*Stella@OmahaAstro.com*

## BENEFITS OF MEMBERSHIP

- ◆ Members receive the STELLA, our monthly newsletter.
- ◆ Each member is automatically a member of the Astronomical League, the only nation-wide organization for amateur astronomers.
- ◆ Use of the observing site at Weeping Water, NE
- ◆ The opportunity to borrow one of several club-owned telescopes.
- ◆ Organized trips to local observatories, planetariums and museums.
- ◆ Significant savings on subscriptions to **Sky & Telescope** and **Astronomy** magazines.
- ◆ Savings on astronomy books and printed materials.

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Newsletter Only  
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