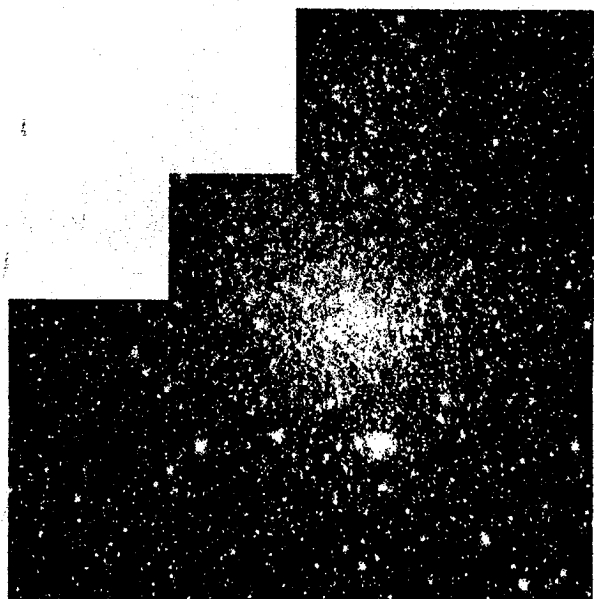


SAAA



The Shoreline **Observer**

March 1995

President - Phil Sherman

Vice President - Arlin Ten Kley

Secretary/Treasurer/Editor - Mike Henry

March Meeting

The March meeting of SAAA will be held on Thursday March 16th at 7:00 PM in the West Ottawa Middle School Planetarium. Bring a Friend.

- ♦ Business Meeting.
- ♦ Sandy will give a tour of the March night sky and hopefully a St. Patricks Day Show.
- ♦ Someone is bringing refreshments.

Yea Bob!!

Congratulations go out to Bob Wade for receiving a Honorary Messier Award from the Astronomical League. Bob has personally viewed and logged over 110 "M" objects to achieve this honor. If you would like to accomplish a similar goal, then check out the back of your Reflector for more info. I would also ask Bob for some advice.

Messier Marathon

If you missed it in the past, I don't recommend that you miss it again. You remember, it's all we talked about at the next meeting. Afterall, those of us that did attend the prestigious event won't forget. Last year, we viewed over 30 different "M" objects. There were 4 or 5 different scopes to view through ranging from 6 inches to Big Eye's 22 inches.

The date this year is Friday March 31st, and will be held at the Monastery. In the event of bad weather on Friday, it will be held on Saturday. If you need directions or want to car pool, call or talk to Mike. BE THERE OR BE SQUARE!!

April Evening Skies

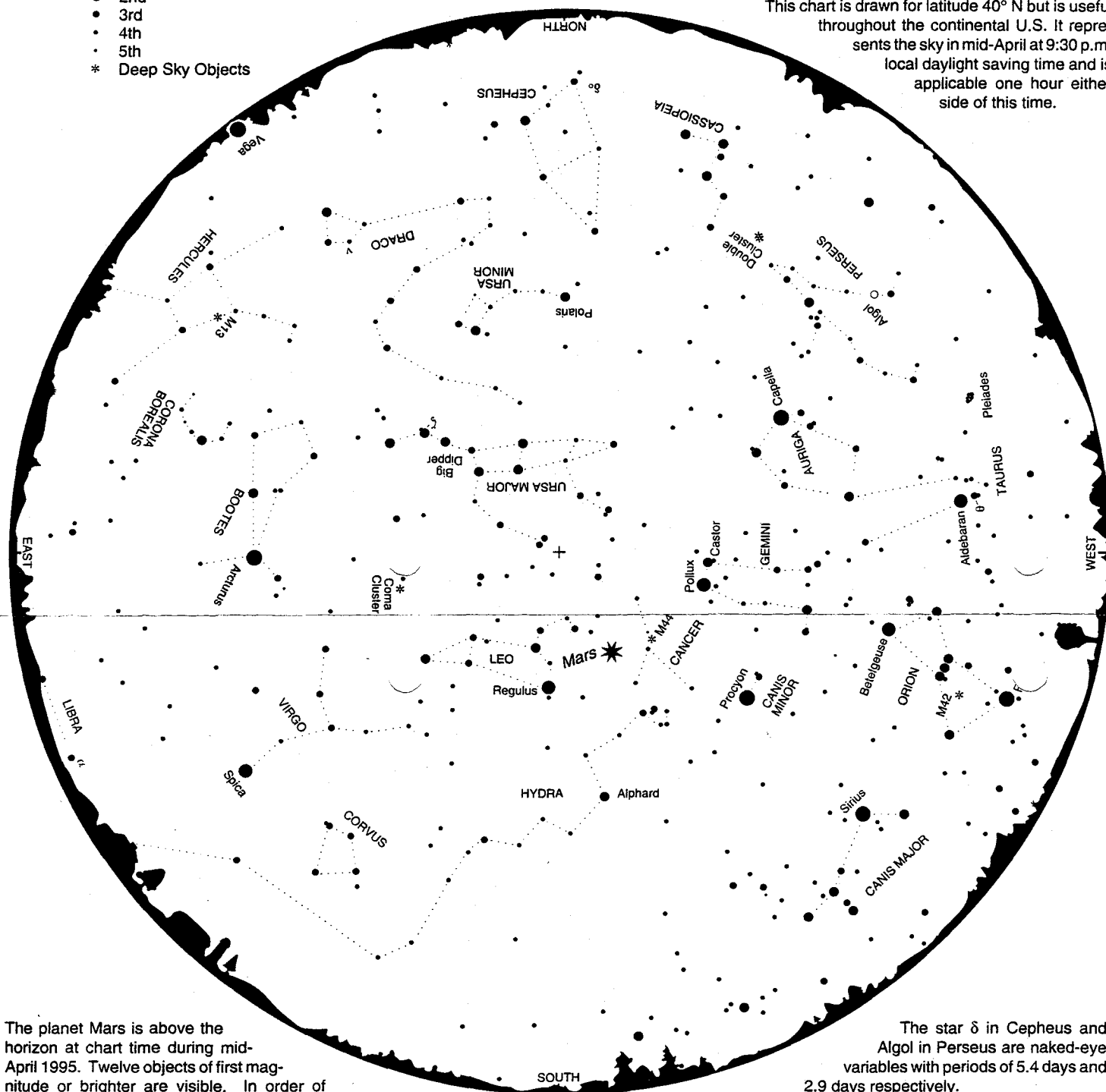
LEGEND Star Magnitudes

- Zero or brighter
- 1st
- 2nd
- 3rd
- 4th
- 5th
- * Deep Sky Objects

© 1995 Abrams Planetarium

Subscription: \$7.50 per year, from *Sky Calendar*, Abrams Planetarium, Michigan State University, East Lansing, MI 48824-1324.

This chart is drawn for latitude 40° N but is useful throughout the continental U.S. It represents the sky in mid-April at 9:30 p.m. local daylight saving time and is applicable one hour either side of this time.



The planet Mars is above the horizon at chart time during mid-April 1995. Twelve objects of first magnitude or brighter are visible. In order of brightness they are: Sirius, Arcturus, Vega, Capella, Rigel, Mars, Procyon, Betelgeuse, Aldebaran, Spica, Pollux, and Regulus.

Our usual monthly maps are designed for stargazers just beginning to find their way around the sky. This month's map is useful for serious stargazing from dark locations. It contains many more stars, inclusive to magnitude 4.5, and some fainter stars as needed to complete patterns or assist in locating special objects.

A selection of double stars (labeled with Greek letters) and "deep sky objects" is also plotted. All are visible with modest equipment; most are within the range of the unaided eye or binoculars.

The double stars, in order of decreasing angular separation, are ζ in Ursa Major, θ in Taurus, α in Libra (just rising), and ν in Draco.

The star δ in Cepheus and Algol in Perseus are naked-eye variables with periods of 5.4 days and 2.9 days respectively.

Three open or galactic clusters are noted: the Coma Cluster below the handle of the Big Dipper; the Beehive or Praesepe (M44) in Cancer; the Double Cluster between Perseus and Cassiopeia.

The Hercules Cluster (M13) is a fine example of a globular cluster, and M42, the Orion Nebula, is a gas cloud out of which stars are forming.

SKY CALENDAR APRIL 1995

An aid () enjoying the changing sky

Use this scale to measure angular distances between objects on diagrams below.

0° 10° 20°

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>Evening Planets: Mars, high in SE to SSW at dusk, continues to fade rapidly in April, from mag -0.1 to +0.5. From April 20 to May 17, Mars is more than 800,000 miles farther from Earth with each passing day. Watch Mars close in on Regulus. Planet and star are 16" apart on April 1, and within 10" apart on April 30; see April 9-11, 29. On May 24, reddish Mars will pass only 1" north of blue-white Regulus. Mercury passes beyond the Sun on April 14 and emerges quickly to begin its best evening appearance of the year; see April 21, 23, 30, and diagrams on May Sky Calendar. During April 20-30, early in its monthlong apparition, Mercury is nearly fully illuminated and is very bright, mag -1.6 to -0.8.</p> <p>Sunday at dusk: 2 Moon</p> <p>Dusk: 3 Aries, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Monday at dawn: 11 Mars, high SSE, Sickle, Regulus in SE</p> <p>Tuesday at dusk: 16 Dusk, 3 evenings, Saturn, Venus, ESE</p> <p>Wednesday at dusk: 23 Dusk, 5 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Thursday at dusk: 30 Dusk, 6 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Friday at dusk: 31 Dusk, 7 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Saturday at dusk: 1 Dusk, 8 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p>	<p>Evening Planets: Mars, high in SE to SSW at dusk, continues to fade rapidly in April, from mag -0.1 to +0.5. From April 20 to May 17, Mars is more than 800,000 miles farther from Earth with each passing day. Watch Mars close in on Regulus. Planet and star are 16" apart on April 1, and within 10" apart on April 30; see April 9-11, 29. On May 24, reddish Mars will pass only 1" north of blue-white Regulus. Mercury passes beyond the Sun on April 14 and emerges quickly to begin its best evening appearance of the year; see April 21, 23, 30, and diagrams on May Sky Calendar. During April 20-30, early in its monthlong apparition, Mercury is nearly fully illuminated and is very bright, mag -1.6 to -0.8.</p> <p>Sunday at dusk: 2 Moon</p> <p>Dusk: 3 Aries, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Monday at dawn: 11 Mars, high SSE, Sickle, Regulus in SE</p> <p>Tuesday at dusk: 16 Dusk, 3 evenings, Saturn, Venus, ESE</p> <p>Wednesday at dusk: 23 Dusk, 5 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Thursday at dusk: 30 Dusk, 6 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Friday at dusk: 31 Dusk, 7 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Saturday at dusk: 1 Dusk, 8 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p>	<p>Evening Planets: Mars, high in SE to SSW at dusk, continues to fade rapidly in April, from mag -0.1 to +0.5. From April 20 to May 17, Mars is more than 800,000 miles farther from Earth with each passing day. Watch Mars close in on Regulus. Planet and star are 16" apart on April 1, and within 10" apart on April 30; see April 9-11, 29. On May 24, reddish Mars will pass only 1" north of blue-white Regulus. Mercury passes beyond the Sun on April 14 and emerges quickly to begin its best evening appearance of the year; see April 21, 23, 30, and diagrams on May Sky Calendar. During April 20-30, early in its monthlong apparition, Mercury is nearly fully illuminated and is very bright, mag -1.6 to -0.8.</p> <p>Sunday at dusk: 2 Moon</p> <p>Dusk: 3 Aries, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Monday at dawn: 11 Mars, high SSE, Sickle, Regulus in SE</p> <p>Tuesday at dusk: 16 Dusk, 3 evenings, Saturn, Venus, ESE</p> <p>Wednesday at dusk: 23 Dusk, 5 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Thursday at dusk: 30 Dusk, 6 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Friday at dusk: 31 Dusk, 7 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Saturday at dusk: 1 Dusk, 8 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p>	<p>Evening Planets: Mars, high in SE to SSW at dusk, continues to fade rapidly in April, from mag -0.1 to +0.5. From April 20 to May 17, Mars is more than 800,000 miles farther from Earth with each passing day. Watch Mars close in on Regulus. Planet and star are 16" apart on April 1, and within 10" apart on April 30; see April 9-11, 29. On May 24, reddish Mars will pass only 1" north of blue-white Regulus. Mercury passes beyond the Sun on April 14 and emerges quickly to begin its best evening appearance of the year; see April 21, 23, 30, and diagrams on May Sky Calendar. During April 20-30, early in its monthlong apparition, Mercury is nearly fully illuminated and is very bright, mag -1.6 to -0.8.</p> <p>Sunday at dusk: 2 Moon</p> <p>Dusk: 3 Aries, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Monday at dawn: 11 Mars, high SSE, Sickle, Regulus in SE</p> <p>Tuesday at dusk: 16 Dusk, 3 evenings, Saturn, Venus, ESE</p> <p>Wednesday at dusk: 23 Dusk, 5 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Thursday at dusk: 30 Dusk, 6 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Friday at dusk: 31 Dusk, 7 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Saturday at dusk: 1 Dusk, 8 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p>	<p>Evening Planets: Mars, high in SE to SSW at dusk, continues to fade rapidly in April, from mag -0.1 to +0.5. From April 20 to May 17, Mars is more than 800,000 miles farther from Earth with each passing day. Watch Mars close in on Regulus. Planet and star are 16" apart on April 1, and within 10" apart on April 30; see April 9-11, 29. On May 24, reddish Mars will pass only 1" north of blue-white Regulus. Mercury passes beyond the Sun on April 14 and emerges quickly to begin its best evening appearance of the year; see April 21, 23, 30, and diagrams on May Sky Calendar. During April 20-30, early in its monthlong apparition, Mercury is nearly fully illuminated and is very bright, mag -1.6 to -0.8.</p> <p>Sunday at dusk: 2 Moon</p> <p>Dusk: 3 Aries, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Monday at dawn: 11 Mars, high SSE, Sickle, Regulus in SE</p> <p>Tuesday at dusk: 16 Dusk, 3 evenings, Saturn, Venus, ESE</p> <p>Wednesday at dusk: 23 Dusk, 5 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Thursday at dusk: 30 Dusk, 6 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Friday at dusk: 31 Dusk, 7 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Saturday at dusk: 1 Dusk, 8 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p>	<p>Evening Planets: Mars, high in SE to SSW at dusk, continues to fade rapidly in April, from mag -0.1 to +0.5. From April 20 to May 17, Mars is more than 800,000 miles farther from Earth with each passing day. Watch Mars close in on Regulus. Planet and star are 16" apart on April 1, and within 10" apart on April 30; see April 9-11, 29. On May 24, reddish Mars will pass only 1" north of blue-white Regulus. Mercury passes beyond the Sun on April 14 and emerges quickly to begin its best evening appearance of the year; see April 21, 23, 30, and diagrams on May Sky Calendar. During April 20-30, early in its monthlong apparition, Mercury is nearly fully illuminated and is very bright, mag -1.6 to -0.8.</p> <p>Sunday at dusk: 2 Moon</p> <p>Dusk: 3 Aries, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Monday at dawn: 11 Mars, high SSE, Sickle, Regulus in SE</p> <p>Tuesday at dusk: 16 Dusk, 3 evenings, Saturn, Venus, ESE</p> <p>Wednesday at dusk: 23 Dusk, 5 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Thursday at dusk: 30 Dusk, 6 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Friday at dusk: 31 Dusk, 7 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Saturday at dusk: 1 Dusk, 8 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p>	<p>Evening Planets: Mars, high in SE to SSW at dusk, continues to fade rapidly in April, from mag -0.1 to +0.5. From April 20 to May 17, Mars is more than 800,000 miles farther from Earth with each passing day. Watch Mars close in on Regulus. Planet and star are 16" apart on April 1, and within 10" apart on April 30; see April 9-11, 29. On May 24, reddish Mars will pass only 1" north of blue-white Regulus. Mercury passes beyond the Sun on April 14 and emerges quickly to begin its best evening appearance of the year; see April 21, 23, 30, and diagrams on May Sky Calendar. During April 20-30, early in its monthlong apparition, Mercury is nearly fully illuminated and is very bright, mag -1.6 to -0.8.</p> <p>Sunday at dusk: 2 Moon</p> <p>Dusk: 3 Aries, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Monday at dawn: 11 Mars, high SSE, Sickle, Regulus in SE</p> <p>Tuesday at dusk: 16 Dusk, 3 evenings, Saturn, Venus, ESE</p> <p>Wednesday at dusk: 23 Dusk, 5 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Thursday at dusk: 30 Dusk, 6 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Friday at dusk: 31 Dusk, 7 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p> <p>Saturday at dusk: 1 Dusk, 8 evenings, Bull's horns, Wed 5, Aldebaran, Hyades, Pleiades, Moon in W</p>

Planets at dawn: Brilliant Venus, very low in ESE to SE, and Jupiter, bright in S to SSW, continue spreading apart. They're 90" apart on April 9, 120" apart on May 3. Jupiter begins retrograde 8° NE of Antares on April 1, and will shift 10° W by August 2. Saturn emerges near Venus. See April 5, 11-14, 16, 22, 25-28. Saturn's rings close to only 1" from edge-on by April 25, 3/4" from edge-on by May 1, causing planet to fade to mag +1.3. Saturn's low altitude at dawn offers difficult telescopic views of the needle-like rings.

Spica occultation & partial lunar eclipse on morning of April 15: Full Moon occults (covers) Spica for most of contiguous U.S. except East, South-central and Midwest U.S. will see star disappear (D) behind Moon after twilight gets underway. For Great Plains, D occurs in dark pre-dawn sky, but reappearance (R) is in twilight. From Rockies westward, both D and R occur in dark pre-dawn sky. Since Moon is Full, a telescope is required to see star's sudden D or R at Moon's brilliant edge.

Here are times (all a.m.) of Spica's D and R for selected cities. Each time marked with an asterisk* signifies the event occurs during twilight.
PDT: Vancouver 2:25-3:34; Los Angeles 2:57-3:54. **MDT:** Denver 4:02-5:03. **CDT:** Austin 5:32-6:13. **D only** in following cities -- **CDT:** Chicago 5:13*, Kansas City 5:14*, EDT: E Lansing 6:14*, Atlanta 6:34*.

For western U.S., a partial lunar eclipse follows the occultation by a couple of hours. All times below are a.m. **PDT:** Moon enters umbra 4:41. **Greatest eclipse** (12%) 5:18 (S limb of Moon is in shadow with Spica about 1° W of Moon). **Moon leaves umbra** 5:55. Entire unbral eclipse is visible in Hawaii, Alaska, and rest of U.S. west of line from central Arizona to Panhandle of Idaho. From that line eastward through Texas and Dakotas, Moon sets while unbral eclipse is in progress. Farther east, none of unbral eclipse can be seen.

Robert C. Victor, Jenny L. Pon, Robert D. Miller

ISSN 0733-6314

Subscription:

\$7.50 per year, starting anytime, from Sky Calendar, Abrams Planetarium, Michigan State University, East Lansing, MI 48824.

Lunar Lunacy

- The word moon shares its roots with month, menopause, menstruation, and measure; all from the Greek meno-, a prefix for month.
- The craters of the moon are generally named after famous people, even the one called Hell. That's Father Maximilian Hell, Hungarian astronomer (1720-1792).
- Galileo likened a meteor crater on the moon to Bohemia, which roughly corresponds to the present-day Praha basin in Czechoslovakia. Geologists now believe that the Praha basin is an ancient meteor crater. Curious that Galileo saw a resemblance 370 years earlier!
- Earlier yet, Leonardo da Vinci correctly surmised why, during any crescent phase of the moon, we can see the unlit part of the disc. It's because sunlight is reflected from Earth: Earthshine.
- Although the moon appears to be larger when it's near the horizon than when it's high in the sky, photographs show this to be an optical illusion (almost entirely: the moon is fractionally larger on the horizon due to refraction). However, the moon's apparent size really does change every couple of weeks, by about 10%, as it moves on its elliptical path from the point closest to Earth (perigee) to the point farthest away (apogee).
- The moon is the most important component in creating tides in Earthly oceans. Its influence is half again as much as the sun's.
- With a surface area of 16 million miles, the moon could be wrapped in a cloth cut to the size of North and South America.
- Earth has fifty times the volume and eighty times the mass of the moon.
- The sun and the moon appear to be about the same

$$12.5 \overline{) 1500} \begin{array}{r} 120 \\ 125 \\ \hline 250 \end{array}$$

QUIZ TIME

And now for another exciting adventure of everybody's favorite Quiz.

- 1) What is the magnifying power of a 150 mm, f/8 telescope when an eyepiece of 12.5 mm is used? **12**
- 2) If the measured parallax of a star is $0''.38$, then what is the distance from earth in parsecs? **2.63**
- 3) A difference in magnitude of 6.0 has brightness ratio of **251**
- 4) What is the sun's luminosity in watts? **3.83×10^{26}**
- 5) What is the most distant object visible to the unaided eye? **M31**
- 6) " $v=H_0d$ " is what law?

On the Cover

A wonderful shot of NGC 1850 taken by the HST WFPC2. I downloaded from a bulletin board. If you have a computer and a modem, then you to could have wonderful photos like this.