

## Scope it out!

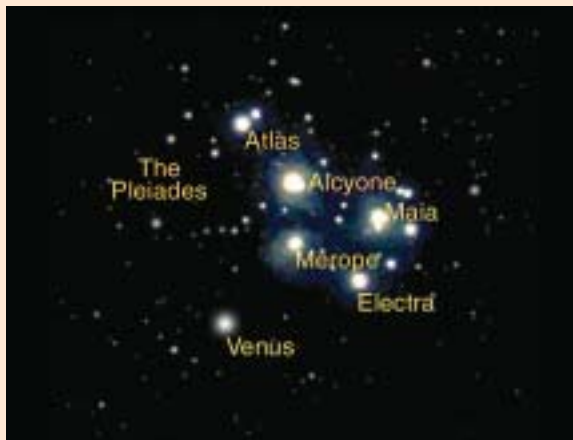
This is another great month for evening observing as four planets continue to remain easily visible. Venus, Mars, and Saturn can be viewed over the western horizon, and Jupiter is shining high over the southeastern horizon. Opportunities will also exist for using binoculars or low-power telescopes to observe conjunctions between the planets, the Moon, and some bright stars. The typical binocular, providing a field of view of about 7 degrees in diameter, is very well suited for this type of observation. As a visual, the full Moon is approximately one half of a degree in apparent size, as is the Sun. A hand, held straight out at arm's length, is about 8–10 degrees across, and the width of your little finger is about 1 degree.

### Conjunction function

For two evenings this month, the brightly-shining Venus comes within a couple of degrees of the stars making up the Pleiades, or the Seven Sisters (see Figure 1). On April 2nd, Venus passes Merope and, by the next

FIGURE 1

Venus near the Pleiades on April 2nd



evening, is moving past Atlas. This eastward motion gradually takes Venus past the Pleiades toward an April 25th near-rendezvous, as it comes within about 5 degrees of Mars. At the same time, the considerably-dimmer Mars will be moving eastward past the Hyades, a V-shaped open star cluster, and the reddish star Aldebaran.

Our Moon will also be in conjunction with the planets and bright stars as it follows its eastward path across the stars this month. On the evening of April 1st, look for the waxing gibbous Moon to be near Regulus, the brightest star in Leo. The Moon is in conjunction with the Sun on the 19th as it passes between the Earth and the Sun in a partial solar eclipse that, unfortunately, will not be visible from North America. On the evenings of the 22nd and 23rd, the waxing crescent Moon passes by Venus and then Mars. On the evening of the 24th it passes Saturn and, two days later, passes by Gemini's brightest stars, Castor and Pollux. By the 29th, the waxing gibbous Moon has reached the planet Jupiter and the constellation Leo.

### Celestial events

**Daylight Saving Time**—On April 4th at 2:00 A.M. local time, we will “spring forward” as our clocks are set one hour ahead in observation of the switch from Standard Time to Daylight Saving Time. This is not an event that is observed everywhere. In England the clocks were set an hour ahead on the last Sunday of March, while in Arizona clocks are not set an hour ahead, but rather stay on Mountain Standard Time.

**A slow Sun?**—Typically, a sundial does not match local clock time. Clock time is standardized across a time zone, while sundial time is dependent on the location of the Sun relative to the horizon. In the northern hemisphere, a sundial shows noon solar time when the Sun is “on the noon meridian,” due south, and at its maximum altitude above the south horizon. However, depending on longitudinal location, the Sun may still be over the southeast horizon when a clock shows noon, or the Sun may already be over the southwest horizon at noon clock time. This difference between the two is referred to as the *Equation of Time*, and the amount of difference can vary from day to day throughout the year.

**Bob Riddle** is a science educator living in western Missouri. You can reach him via e-mail at [starwalk@currentsky.com](mailto:starwalk@currentsky.com) or visit his website at [www.currentsky.com](http://www.currentsky.com).

Variation in the length of the Equation of Time comes from the slightly elliptical orbit the Earth has around the Sun. The difference ranges from about 15 minutes slow to 15 minutes fast. As we learned from Kepler, a planet moves more quickly at perihelion (closest to the Sun) and moves more slowly when at aphelion (most distant from the Sun). So, on a few days during the year (such as April 15th this year), sundials and clocks show noon at the same time. At most other times the sundial is a few minutes either behind clock time or ahead of it. So, how fast or slow is the Sun today? Check with an *analemma*—that strange, figure-eight shape that is on some globes. (See resources if you don't have a globe with an analemma and want to read more about them).

Astronomy Day—Celebrate astronomy during this annual event scheduled for the week of April 19–25. Most local events will probably take place on Saturday the 24th. Local astronomy organizations, science centers, museums, planetaria, and many schools typically sponsor local Astronomy Day events (see Resources for more information).

### Visible planets

- The four brightest visible planets are stretched across the sky at sunset from the western horizon to the southeastern horizon this month.
- Venus is visible over the western horizon at sunset and sets about four hours later.
- Mars is visible over the western horizon at sunset and sets before midnight.

## Tracking our Sun

### Sun distance

April 15th—Distance: 1.0035 AU, Apparent diameter: 32'

### Along the ecliptic

April 18th—Constellation: Aries, Declination: 11 degrees 8.5', Right ascension: 1<sup>h</sup> 48<sup>min</sup>

- Jupiter is over the southeastern horizon at sunset and is visible most of the night.
- Saturn is visible over the southwestern horizon at sunset and sets after midnight.

### Moon phases

Full Moon	4/05
Last quarter	4/12
New Moon	4/19
First quarter	4/27

### Internet resources

Partial solar eclipse—[sunearth.gsfc.nasa.gov/eclipse/SEplot/SEplot2001/SE2004Apr19P.gif](http://sunearth.gsfc.nasa.gov/eclipse/SEplot/SEplot2001/SE2004Apr19P.gif)  
 Astronomy Day—[www.astroleague.org/al/astroday/astroday.html](http://www.astroleague.org/al/astroday/astroday.html)  
 Cassini-Huygens Mission to Saturn and Titan—[saturn.jpl.nasa.gov/index.cfm](http://saturn.jpl.nasa.gov/index.cfm)  
 Saturn Observation Campaign—[soc.jpl.nasa.gov/index.cfm](http://soc.jpl.nasa.gov/index.cfm)  
 Solar System Educator Program—[sseforum.jpl.nasa.gov/index.cfm](http://sseforum.jpl.nasa.gov/index.cfm)  
 Analemma—[www.analemma.com](http://www.analemma.com)