The Pocket Planetarium ★

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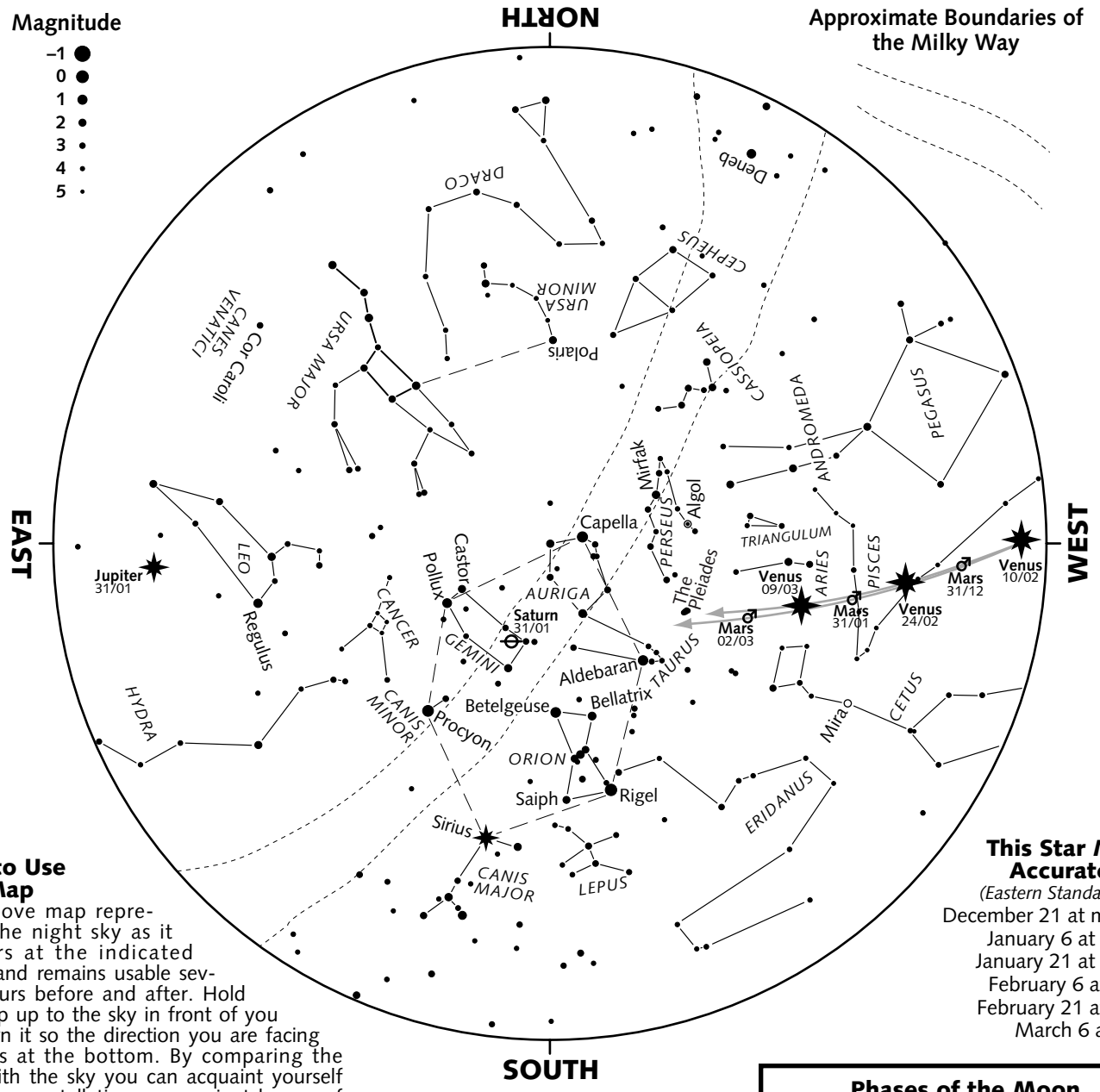
The Starry Sky — Winter 2003-04



How to Use this Map

The above map represents the night sky as it appears at the indicated times, and remains usable several hours before and after. Hold the map up to the sky in front of you and turn it so the direction you are facing appears at the bottom. By comparing the map with the sky you can acquaint yourself with the constellations, an ancient legacy of Greek mythology.

This Star Map is Accurate on...

(Eastern Standard Time)

December 21 at midnight
January 6 at 11 p.m.
January 21 at 10 p.m.
February 6 at 9 p.m.
February 21 at 8 p.m.
March 6 at 7 p.m

Seasonal Milestones

The **winter solstice** occurs on December 22 at 02:04 EST. The **spring equinox** will take place on March 20 at 01:29. Winter 2003 / 2004 will last 88d 23h 45m.

On January 4 at 13:00, the Earth is at **perihelion**—its closest approach to the Sun. At that point the Earth-Sun distance is 149 094 300 kilometers.

Phases of the Moon

(Eastern Standard Time)

Full moon	Last quarter
Dec. 8 at 15:37	Dec. 16 at 12:42
Jan. 7 at 10:40	Jan. 14 at 23:46
Feb. 6 at 3:47	Feb. 13 at 8:40
March 6 at 18:14	March 13 at 16:01
New moon	**First quarter**
Dec. 23 at 4:43	Dec. 30 at 5:03
Jan. 21 at 16:05	Jan. 29 at 1:03
Feb. 20 at 4:18	Feb. 27 at 22:24
March 20 at 17:41	March 28 at 18:48

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The Sky This Winter

This year the winter the sky is adorned with Planets:
Venus, Mars, Jupiter and Saturn are visible, in order, at one time or another during the evening.
The Moon also joins the show on several occasions over the coming months.

Venus — an eyeful

Brilliant **Venus** is the first planet to appear during twilight at day's end. The dazzling "evening star" shines in the southwest at the beginning of January; then, as the weeks pass, it moves farther westward and appears progressively higher. At the end of December Venus sets 2 ½ hours after the Sun, however, by March it remains in view 4 hours after sunset.

Venus has phases like the Moon, and they're easy to see even in a small telescope. When the planet is on the opposite side of the Sun from Earth, it's lit nearly "face on," but it appears small because it is far away. As it catches up to us in its orbit, Venus gets closer and appears larger; but it also presents more of its "back" to us: The planet's illuminated portion gradually becomes thinner and thinner.

This explains what we're seeing this winter. At the end of December, Venus' disk measures 12 arcseconds across and is 85% illuminated; by early February, the disk is 75% illuminated and measures 15 arcseconds. By mid-March, Venus' diameter grows to 22 arcseconds, but the planet is just half-illuminated. In the spring, these changes will accelerate.

On **December 25,** at day's end, a thin crescent Moon appears 4 degrees to the left of Venus: The two provide a magnificent sight in the twilight. The crescent Moon will again appear to the left of Venus on the evenings of January 24 and February 23.

Saturn is back

Saturn also highlights the sky this winter: It appears like a creamy-white "extra" star in the constellation Gemini.

The ringed planet is at opposition on December 31, which means it will be closer to the Earth than at any other time of the year. Saturn will be ideally placed for observation over the weeks that follow. It rises around sunset and climbs progressively higher each evening, providing a better view.

Once again this year, Saturn's rings appear wide open. A small telescope reveals them easily, and in a larger instrument they are truly a spectacular sight.

You can use the Moon to locate Saturn. On the evening of January 6, the full Moon is 4 degrees to the left of the ringed planet; on February 2, a nearly full Moon appears just above it; and the Moon is near Saturn once again on February 29 and March 1.

Jupiter late in the evening

Toward the end of fall, **Jupiter** is only visible late in the evening: By mid-December it rises just before midnight. But the banded planet gradually appears earlier and earlier, shining below the constellation Leo in the east. On March 3, Jupiter is at opposition: It rises at sunset and sets at sunrise, thus remaining visible all night. Beginning early in February, Jupiter and Venus are at counterpoints in the sky: The former rises in the east while the latter sets in the west.

Through a telescope, Jupiter is an unforgettable sight. Its four largest moons, discovered by Galileo in 1609, are plainly visible, as are the light and dark parallel bands in the planet's atmosphere. When conditions are right, Jupiter provides a wealth of detail for the well-equipped amateur.

The Moon appears near Jupiter on several occasions this winter. On the night of January 11 to 12, a gibbous Moon is positioned 4 ½ degrees above the planet; the two appear together again on February 7 & 8, and once more on March 5 & 6.

Mars — nearing the end

The grand opposition of **Mars**, which marked the summer of 2003, is now but a memory. The planet's brightness is steadily decreasing as it gets farther and farther away. This means Mars is no longer a suitable target for telescopes: Its disk appears tiny and without detail.

Viewed from Earth, the planet seems to be rushing eastward through the constellations, as if in a futile effort to escape from the Sun. In fact, over the next few months, the tiny planet appears in the same place at twilight, desperately trying to avoid the engulfing glow of sunset. This winter, Mars leaves the constellation Pisces and crosses Aries. By mid-March the red planet is in Taurus.

The first quarter Moon appears near Mars on December 29 & 30; then, a fat lunar crescent looms 3 degrees below the planet on January 27; and a somewhat thinner crescent appears one degree to the left of Mars on February 25.

Around March 20, the red planet appears 3 degrees from the Pleiades star cluster in Taurus. The pale-orange hue of Mars, contrasted with the blazing blue-white colour of the Pleiades, should provide a stunning sight in binoculars. This is also an excellent opportunity to witness the orbital motion of Mars as it moves past the background stars.

Happy observing!

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