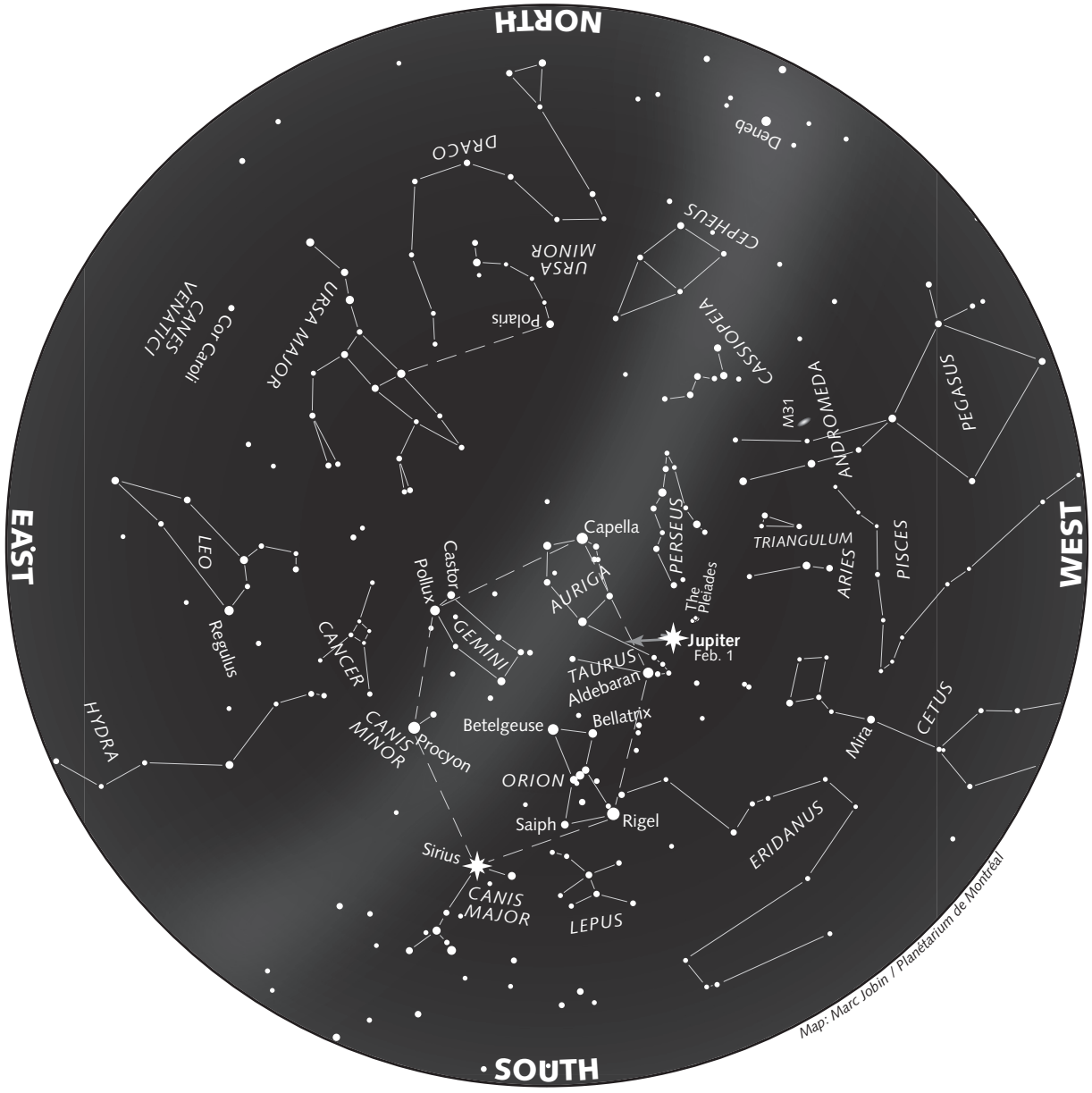
The Pocket Planetarium ★

Volume 17
Number 1
Winter 2012-13

Astronomical Information Newsletter of the Planétarium de Montréal

The Starry Sky — Winter 2012-13



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. Lines identify the constellations. The light-coloured area outlines the Milky Way.

Visit our Website: planetarium.montreal.qc.ca

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

espace pour la vie planétarium montréal

The Sky This Winter

Venus and Mars pass behind the Sun this winter, and Saturn is only visible after midnight. In the evening sky, all eyes are on Jupiter... and maybe, a bright comet!

Spotlight on Jupiter

Jupiter deserves our full attention: Seen with the naked eye, the largest planet in the Solar System is very bright and easily visible, even under light polluted skies. Through a telescope, details in its cloud bands are relatively easy to see; and the endless ballet of its four largest moons, discovered by Galileo 400 years ago, offers a fascinating show.

The giant planet was at opposition on December 2, so as winter begins, it will be near its closest point to Earth. Jupiter is currently moving in retrograde among the stars of Taurus, which contains two of the nicest star clusters in the sky: the famous Pleiades, and the Hyades — a "V"-shaped cluster that features an orange foreground star named Aldebaran. On January 30, Jupiter will gradually resume its normal eastward motion among the constellations.

The best time to observe a planet with a telescope is when it is highest in the sky and well above all the turbulent layers of atmosphere that prevail near the horizon. This winter, the ideal time for observing Jupiter comes progressively earlier in the evening. At the beginning of the season, the giant planet appears above the eastern horizon at twilight; it culminates high in the south around 9:30 P.M., and sets in the west-northwest a bit before dawn. Toward season's end, you'll find that Jupiter is already high in the south at twilight, and gradually approaches the western horizon over the course of the evening.

The giant planet has several spectacular encounters with the Moon over the coming months. First, the gibbous Moon will be less than one degree away from Jupiter on the evening of December 25, and until dawn on the 26th; a similar encounter will take place during the night of January 21 to 22. The Moon will also be near Jupiter on February 17 and 18, and once again on the evening of March 17.

Saturn returns

After passing behind the Sun in October, the ringed planet is now visible during the latter part of the night and dawn. **Saturn** rises progressively earlier: it appears above the east-southeast horizon around 3:00 A.M. at the beginning of January; around 1:00 A.M. at the beginning of February; and around 11:00 P.M. at the beginning of March. By season's end it will be high enough for telescopic observation slightly before dawn.

The ringed planet is stationary on February 18 and then begins its retrograde movement, westward, among the stars of Virgo. It arrives at opposition on April 28, which will be the best time to observe it.

The lunar crescent will be near Saturn on the mornings of January 6 and 7. The last quarter Moon will appear close to the ringed planet on the morning of February 3, and the gibbous Moon will accompany Saturn on the night of March 1 to 2.

Venus vanishes at dawn

Venus' presence is nearing an end in the morning sky. The dazzling planet gradually appears lower in the southwest at dawn, as it gets closer to the Sun, and the horizon. Starting in mid-January, Venus will rise less than an hour before the Sun: Despite its brilliance, the Morning Star will become harder and harder to spot in the growing light of day, and will disappear completely in February. Until what date can you spot Venus with the naked eye? How about with binoculars? Venus will pass behind the Sun (superior conjunction) on March 28, and will reappear in the evening sky this spring.

A thin crescent Moon will appear two degrees to the left of Venus on the morning of January 10: You'll find the two objects low on the southeast horizon about half-an-hour before sunrise. This will be the only encounter between Venus and the Moon that will be easy to see this winter.

Mars slowly leaves the scene

Mars seems to keep lingering in the evening sky! You'll find the Red Planet at about the same place, low in the western twilight, evening after evening. The relatively faint planet travels slowly along the horizon, moving from the southwest in December to due west in March. But the constellations continue to pass by normally in the background: Over the winter months, Mars moves from Capricornus, to Aquarius, and ends up in Pisces. But the Sun eventually catches up to the Red Planet, which will disappear in the twilight during March. Mars then passes behind the Sun on April 17, and will reappear in the morning sky in June.

The lunar crescent is to the right of Mars at twilight on January 12, and just above the planet on the following evening. The crescent Moon will be above Mars and Mercury on February 11, and above the Red Planet again on March 12.

Phases of the Moon

*(Eastern Standard Time, except * = Daylight Time)*

New moon	First quarter
December 13 at 3:42	December 20 at 0:19
January 11 at 14:44	January 18 at 18:45
February 10 at 2:20	February 17 at 15:31
March 11 at 15:51*	March 19 at 13:27*
Full moon	**Last quarter**
December 28 at 5:21	January 4 at 22:58
January 26 at 23:38	February 3 at 8:56
February 25 at 15:26	March 4 at 16:53
March 27 at 5:27*	April 3 at 0:36*

Will Comet PanSTARRS delight us?

Comet C/2011 L4 originated in the distant Oort cloud, and was discovered by an automated telescope known as PanSTARRS, in June 2011, when it was still far from the Sun. On March 10, 2013, its orbit will take it just 0.3 AU from our star — that's closer than Mercury.

From Earth, it will appear about 15 degrees away from the Sun and will be visible at twilight, low on the western horizon, a bit after sunset. It is expected to reach maximum brightness between March 8 and 12.

Comet PanSTARRS has the potential to become very bright, but past experience has taught us how difficult it is to predict a comet's brightness — especially one that hasn't been seen before. Nonetheless, this comet should be easy to see with the naked eye; though to be certain, we need to follow its evolution over the winter. Stay tuned for more...

Mercury appears in the evening

Mercury leaves the morning sky at the end of December and passes behind the Sun (superior conjunction) on January 18. It gradually reappears in the evening where it will stage a remarkable show, early in February.

Mercury will be quite bright, and will be less than 20 arc-minutes from Mars on the evening of February 8: Look for the two planets a few degrees above the west-southwest horizon, 45 minutes after sunset. On February 11, a thin crescent Moon will appear a few degrees above Mercury. Then on February 16, Mercury will reach its greatest elongation, 18 degrees east of the Sun. But within a few days, the tiny planet will dim and plunge back down toward the setting Sun, and the horizon. It will pass between the Earth and Sun (inferior conjunction) on March 4.

Clear skies!

Research and text: **Marc Jobin**
Adaptation: **Louie Bernstein**

Seasonal Milestones

The **winter solstice** occurs on December 21, 2012, at 6:12 A.M. EST, and the **spring equinox** will take place on March 20, 2013, at 7:02 A.M. EDT: Winter will last exactly 88 d 23 h 50 min.

Earth will be at **perihelion,** the point in its orbit closest to the Sun, on January 2, 2013, at 0:00 A.M. EST. The Earth–Sun distance will then be 147 098 161 kilometres.

We switch to **Eastern Daylight Time** during the night of Sunday, March 10: Clocks are set one hour ahead.

The Pocket Planetarium *is a seasonal information newsletter published by the Planétarium de Montréal, 1000, rue Saint-Jacques, Montréal (Québec) H3C 1G7*
Texts and illustrations are excerpted from HYPERESPACE, the newsletter of la Société d'astronomie du Planétarium de Montréal, and are published with permission.