The Pocket Planetarium ★

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Astronomical Information Newsletter of the Rio Tinto Alcan Planetarium

The Starry Sky — Spring 2014

Map: Marc Jobin / Planétarium Rio Tinto Alcan

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.

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This Star Map is Accurate on...

(Eastern Daylight Time)

March 21 at 1 a.m.
April 6 at midnight
April 21 at 11 p.m.
May 6 at 10 p.m.
May 21 at 9 p.m.

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The Sky This Spring

Mars, Saturn and Jupiter are featured in the evening sky this spring along with Mercury, which pays us a brief visit in May. As for Venus, the brilliant Morning Star shines alone at dawn.

Spotlight on Mars

Mars will be at opposition on April 8. For a few days surrounding this date, the Red Planet will rival Sirius, the brightest star in the sky, which shines in Canis Major at magnitude –1.4; Sirius sets in the southwest as evening begins. From March 1 to May 21, Mars will be in retrograde, moving westward among the stars of Virgo: Compare its colour with the blue-white hue of Spica, the bright star shining nearby, and you'll understand how the Red Planet got its name! Use Spica as a marker, which will allow you to track the movement of Mars over the coming weeks.

The opposition of Mars represents the middle of the prime period for observing the planet. This window arrives every two years and only lasts a few weeks, so take advantage of it! Usually, Mars is too far from Earth for small telescopes to reveal any detail. This year the planet's apparent diameter will reach 15" (arc seconds) at opposition and will remain larger than 12" until the end of May: Unfortunately this is far below its largest attainable maximum of 25". In order to benefit from optimum atmospheric conditions, it's best to observe Mars when it culminates (its highest point in the sky) about 40 degrees above the southern horizon.

At the beginning of April, Mars rises in the east at twilight, culminates around 1:00 in the morning and sets at dawn. Over the following weeks, the Red Planet culminates progressively earlier: By the end of May it will have already reached its highest point in the sky when it becomes visible at nightfall.

The full moon will appear near Mars during the nights of April 13 to 14 and 14 to 15. The gibbous moon will reside next to the Red Planet on the evening and night of May 10 to 11, and again on June 7 to 8.

Saturn at opposition

A month after Mars, it will be **Saturn's** turn to arrive at opposition. At the beginning of Spring, the ringed planet rises in the east-southeast around 11 P.M. and culminates around 3:00 in the morning. When it reaches opposition on May 10, Saturn will be visible all night long, rising in the southeast at nightfall, culminating around 1 A.M. and setting in the southwest at dawn. By June, Saturn will have already reached its highest point in the sky at twilight. The ringed planet shines among the stars of Libra, which means it is only about 30 degrees above the horizon when it culminates in the south. To observe Saturn with a telescope, wait until it's as high as possible: Even a modest instrument will reveal its famous rings, whose north face is tilted 22 degrees in our direction... and Titan the planet's largest moon.

A waning gibbous moon will appear near Saturn on the nights of March 20 to 21 and April 16 to 17. An almost-full moon will be in the ringed planet's vicinity during the night of May 13 to 14. And finally, a waxing gibbous moon will pass next to Saturn on the nights of June 9 to 10 and 10 to 11.

Jupiter is still visible

Jupiter was at opposition at the beginning of the year and is still visible, shining brilliantly among the stars of Gemini during the evening hours. As spring begins, the giant planet comes into view at twilight, about 65 degrees above the southern horizon, and sets in the northwest around 3:00 in the morning. Nightfall is, therefore, the best time to observe Jupiter's cloud bands through a telescope. The planet's four Galilean moons, which change position from evening to evening, are easy to see — even with a small instrument.

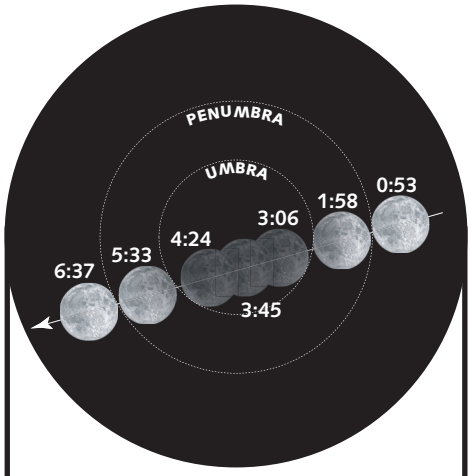
The gap between Jupiter and the sun gradually diminishes, and conditions for observing the gaseous giant decline as the season advances. Over the coming weeks, as the planet loses altitude, it appears ever-lower in the sky by nightfall and sets earlier as well. In June, it appears low on the west-northwest horizon at twilight and becomes difficult to find when summer arrives.

The first quarter moon passes near Jupiter on the evening of April 6. A lunar crescent will be in the giant planet's vicinity on the evenings of May 3 & 4, and again on May 31 and June 1.

Venus in the morning

Venus maintains its presence in the dawn sky. The Morning Star reaches its greatest elongation (47 degrees west of the Sun) on March 22. However, this apparition has a less-than-favourable geometry and Venus will remain close to the horizon. At the beginning of spring, the dazzling planet appears in the east-southeast an hour before sunrise. But over the following weeks, Venus gradually moves left along the horizon: As summer arrives, it will appear in the east-northeast. Through a telescope, the planet changes phase, from a "half-Venus" to gibbous, as its sunlit side turns to face us.

On the morning of March 27, a crescent moon will shine less than 3 degrees to Venus's upper left. The lunar crescent will appear near Venus again on the mornings of April 25 & 26, and once more on May 25.



M. Jobin / Planétarium Rio Tinto Alcan; data courtesy of F. Espenak, NASA/GSFC; moon images simulated with Starry Night Pro/Imaginova

A total eclipse of the Moon

A total lunar eclipse will take place early in the morning on April 15: It's the first one visible in Quebec since December 21, 2010. Partial phases begin at 1:58 A.M. EDT; the Moon will be totally eclipsed between 3:06 and 4:24 A.M. (mid-eclipse is at 3:45); final partial phases will end at 5:33, as dawn breaks over southwest Quebec and the Moon sinks toward the west-southwest horizon.

During totality, the Moon acquires a deep red colour, caused by sunlight filtered through Earth's atmosphere. The bright star, Spica, will be less than 2 degrees to the lower right of the eclipsed Moon; Mars will also be in the picture, about 10 degrees to the Moon's right.

Mercury in the evening

Mercury has another excellent apparition in the evening sky. Starting on May 5, the tiny planet is visible above the west-northwest horizon about 30 minutes after sunset. Over the following days, the gap between Mercury and the Sun increases advantageously, making it visible against a much darker sky 60 minutes after sunset. The best time to observe Mercury occurs around mid-May, when its angular separation from the Sun is nearly maximum and its brightness hasn't yet waned appreciably. Even though the furtive planet reaches its greatest elongation, 23 degrees east (left) of the Sun, on May 25, its brightness diminishes rapidly after the 20th and it becomes increasingly harder to find in the glow of twilight. Mercury disappears completely at the end of May as it plunges sunward, heading toward inferior conjunction on June 19.

Clear skies!

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

Seasonal Milestones

The **spring equinox** occurs on March 20, 2014, at 12:57 P.M. EDT; the **summer solstice** will take place on June 21 at 6:51 A.M. Spring will last exactly 92 d 17 h 54 min.

Phases of the Moon

(Eastern Daylight Time)

Full moon	**Last quarter**
March 16 at 13:08	March 23 at 21:46
April 15 at 3:42	April 22 at 3:52
May 14 at 15:16	May 21 at 8:59
June 13 at 0:11	June 19 at 14:39
New moon	**First quarter**
March 30 at 14:45	April 7 at 4:31
April 29 at 2:14	May 6 at 23:15
May 28 at 14:40	June 5 at 16:39
June 27 at 4:08	July 5 at 7:59

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