The Pocket Planetarium ★

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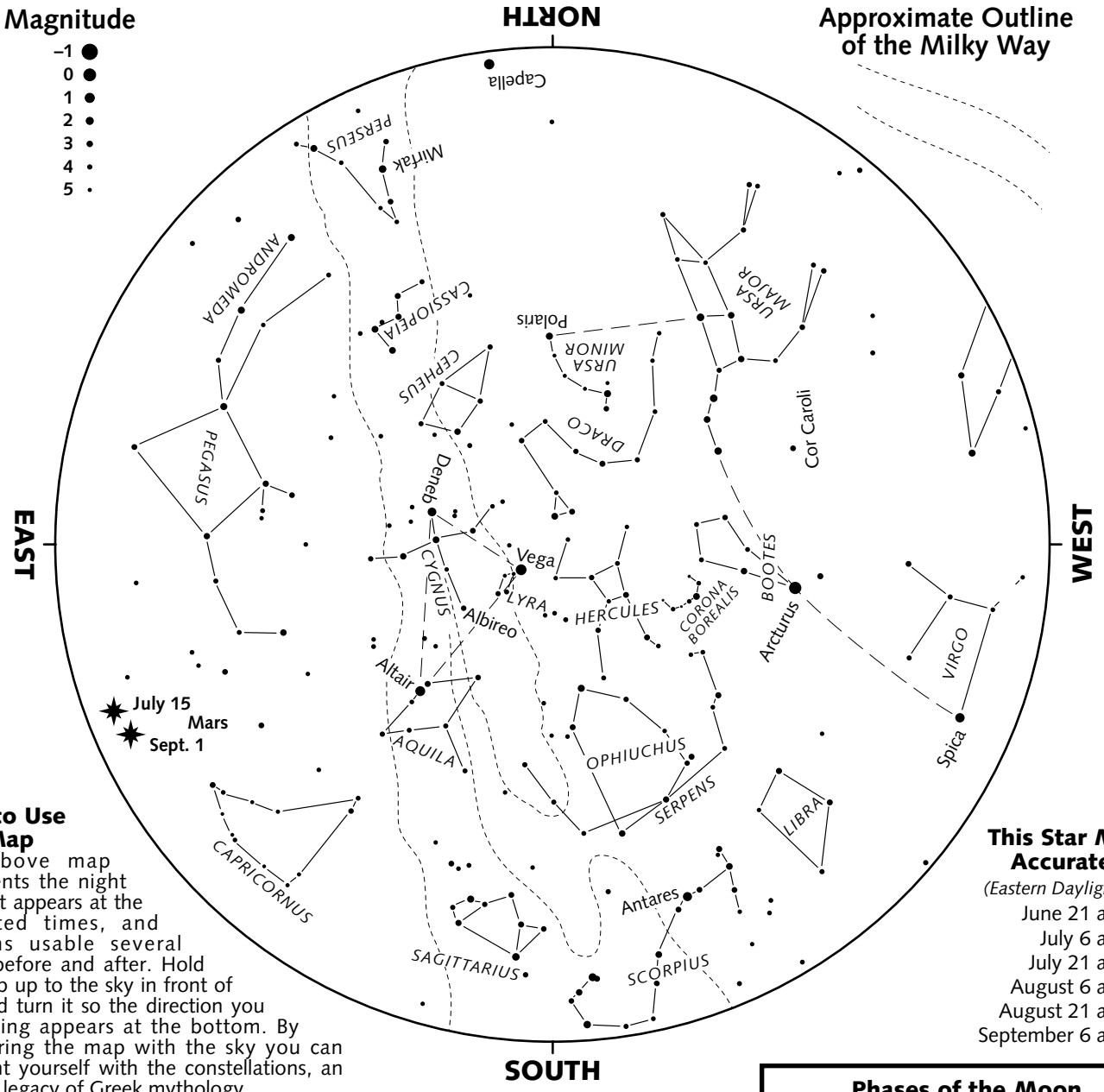
Astronomical Information Newsletter of the Planétarium de Montréal

The Starry Sky — Summer 2003



Marc Jobin / Planétarium de Montréal

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 Daylight Time)

June 21 at 01:00
July 6 at 00:00
July 21 at 23:00
August 6 at 22:00
August 21 at 21:00
September 6 at 20:00

Seasonal Milestones

The **summer solstice** occurs on June 21 at 15:10 EDT, and the **autumn equinox** on September 23 at 06:47. Summer, the longest season from an astronomical point of view, will last 93d 15h 37m.

The Earth will be at aphelion, its farthest orbital point from the Sun, on July 4 at 02:00. The distance between the Earth and Sun will then be 152.1 million km.

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Phases of the Moon

(Eastern Daylight Time)

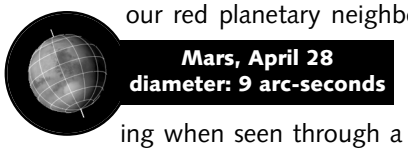
Full moon	Last quarter
June 14 at 7:16	June 21 at 10:45
July 13 at 15:21	July 21 at 3:01
August 12 at 0:48	August 19 at 20:48
Sept. 10 at 12:36	Sept. 18 at 15:03
New moon	**First quarter**
June 29 at 14:39	July 6 at 22:32
July 29 at 2:53	August 5 at 3:28
August 27 at 13:26	Sept. 3 at 8:34
Sept. 25 at 23:09	Oct. 2 at 15:09

The Sky This Summer

One after another, Saturn, Jupiter and then Venus disappear in the glow of sunlight. But as these bright planets fade from view all our attention is focused on Mars: This summer the Red Planet offers its best show in a very long time.

Summertime Mars

The mysterious Red Planet has fascinated, intrigued and titillated our imaginations like no other. Unfortunately, however, our red planetary neighbor is small and normally disappointing when seen through a telescope. But once about every 26 months Mars is in opposition, which means that its distance from us is reduced to a minimum. As a result, for a few weeks, the planet appears large enough for us to distinguish features on its surface — even through amateur telescopes.


Mars, April 28
diameter: 9 arc-seconds

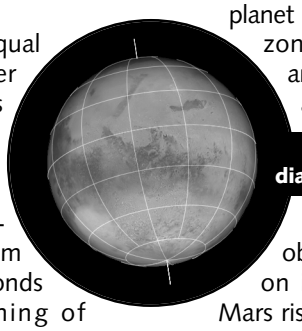
Not all oppositions are equal though. Mars' orbit is rather eccentric, and only when its opposition coincides with its closest approach to the Sun, which is the case this summer, does the planet's apparent diameter reach a maximum — slightly more than 25 seconds of arc! Early on the morning of August 27, the distance between Earth and Mars will be just 55.75 million kilometers. The Red Planet has not been this close in over 100,000 years, and it won't be again until August 28… 2287! So this year's opposition is really exceptional.

Through a telescope, when conditions are favorable, dark regions can be seen against Mars' rust-colored surface. Of course, if there's a Martian dust storm, surface features can be hidden for weeks at a time — as was the case in 2001.

If you don't have a telescope, you can still follow Mars as it moves against the background stars. Between the end of July and the end of September Mars is in **retrograde motion:** That is, it seems to move backward with respect to its normal motion. This apparent movement occurs when the Earth overtakes Mars in its orbit around the Sun. During this period, the Red Planet will perform its retrograde loop in the constellation of Aquarius.

At the end of June, Mars rises around midnight, and reaches its maximum altitude (about 30 degrees) roughly one hour before sunrise. Its appearance is remarkable even during this initial period. It is far brighter than any other star, and its orange color makes it truly distinctive.

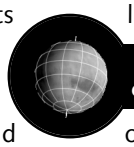
Starting in mid-July, Mars' apparent diameter will surpass 20 arc-seconds (and will remain so until the beginning of October). Its disk is then large enough to allow details to be seen on its surface. However, to make these observations, the planet must be well above the horizon: At mid-month, Mars rises around 23:00 and culminates at about 4 in the morning.


Mars, August 28
diameter: 25 arc-seconds

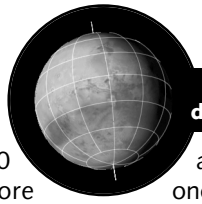
But conditions for observing the Red Planet keep on improving. In early August, Mars rises around 22:00, and its disk attains 23 arc-seconds.

At opposition, on August 28, Mars rises around 20:00 and culminates at 1 in the morning. At this point, the planet's disk will have attained 25 arc-seconds, and its magnitude will be –2.9: Brighter than Jupiter! It will be a very luminous object in a region of sky otherwise devoid of bright stars.

Around mid-September, Mars' disk will still be a very respectable 23 arc-seconds, but since the planet now rises around 19:00, the favorable window of observation gets displaced earlier and earlier in the evening. If you haven't seen Mars yet — it's now or never! This is your last opportunity to catch the Red Planet before it recedes, once more, into the depths of space.


Mars, December 28
diameter: 9 arc-seconds

The Moon appears close to Mars on the night of July 16/17; and again on August 12 & 13; and once more on September 8 & 9.


Mars, June 28
diameter: 16 arc-seconds

Last chance for Jupiter

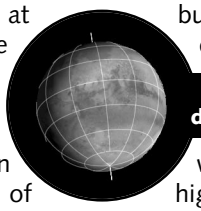
At the beginning of summer, Jupiter appears lower and lower in the western sky following sunset; and by the end of July it is completely lost in the glare of evening twilight. Then, around mid-September, we find Jupiter rising above the eastern horizon about 30 minutes before the Sun.

As for Venus

At the end of June and beginning of July, Venus rises 30 minutes before the Sun, and can be found in the east-northeast, close to the horizon. Despite its great brilliance, it gets progressively harder to see as it moves deeper into the glare of dawn. Venus ultimately disappears from view during the month of July.

Saturn reappears in the morning

Saturn passes behind the Sun on June 24, but it re-emerges in the east-northeast at dawn near the end of July. Over the subsequent weeks, the ringed planet moves higher and higher above the horizon. By mid-September, Saturn rises 30 minutes after midnight and is well up in the sky before dawn. A crescent Moon appears near Saturn on the mornings of July 26 & 27, on the morning of August 23, and again, during the night of September 19/20.


Mars, October 28
diameter: 16 arc-seconds

Mars images simulated with Starry Night Pro 4 (Space Software, www.starrynight.com)

Happy observing!

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