

# Resources

## Societies

### The Society for Popular Astronomy (SPA)

SPA website: <http://www.popastro.com>

Address: The Secretary, 36 Fairway, Keyworth, Nottingham, NG12 5DU, United Kingdom.

Email: [membership@popastro.com](mailto:membership@popastro.com)

Founded in 1953, the SPA is the largest astronomical society in the UK. It is aimed at amateur astronomers of all levels. The SPA produces an excellent bimonthly magazine, *Popular Astronomy*, which contains astronomy articles, news, notes and observing reports. The SPA hosts quarterly London meetings.

SPA Planetary Section website: <http://popastro.com/planetary/>

The SPA has a thriving Planetary Section directed by Alan Clitherow.

### The British Astronomical Association (BAA)

BAA website: <http://www.britastro.org>

Address: The Assistant Secretary, The British Astronomical Association, Burlington House, Piccadilly, London, W1J 0DU, United Kingdom.

A UK based astronomical association aimed at amateurs with an advanced level of knowledge and expertise.

BAA Mars Section website: <http://www.britastro.org/mars/>

The BAA Mars Section is directed by Dr Richard McKim.

### The Royal Astronomical Society (RAS)

Website: <http://www.ras.org.uk>

Address: Royal Astronomical Society, Burlington House, Piccadilly, London, W1J 0BQ, United Kingdom.

Founded in 1820, the RAS is the UK's leading professional body for astronomy & astrophysics, geophysics, solar and solar-terrestrial physics, and planetary

sciences. Its bimonthly magazine, *Astronomy and Geophysics*, features occasional informative articles about the planets. Fellowship of the RAS is open to non-professionals.

## **Association of Lunar and Planetary Observers (ALPO)**

Website <http://www.lpl.arizona.edu/alpo>

This large association, based in the United States, has a superb Mars Section and plenty of online resources and web links.

## **Unione Astrofili Italiani (UAI)**

Website: [http://www.uai.it/sez\\_lun/english.htm](http://www.uai.it/sez_lun/english.htm)

Based in Italy, the UAI has active planetary observing sections, with a very informative English version of its website.

## **Internet Resources**

Astronomy Picture of the Day: <http://antwrp.gsfc.nasa.gov/apod/astropix.html>

NASA/JPL Solar System Simulator: <http://space.jpl.nasa.gov/>

USGS Astrogeology Research Program, Gazetteer of Planetary Nomenclature: <http://planetarynames.wr.usgs.gov/index.html>

## **USGS Gazetteer of Planetary Nomenclature**

<http://planetarynames.wr.usgs.gov>

## **NASA's Planetary Photojournal**

<http://photojournal.jpl.nasa.gov/targetFamily/Mars>

## **Views of the Solar System**

<http://ftp.uniovi.es/solar/eng/homepage.htm>

## **JPL Solar System Simulator**

<http://space.jpl.nasa.gov/>

# Books

## The Planet Mars

By E.M. Antoniadi

Publisher Reid (1975)

Originally written in 1930, Antoniadi's work includes his own observations of Mars. Much of it remains very useful to visual observers today. It's now out of print, but if you can get hold of a copy you won't be disappointed!

## Astronomical Cybersketching: Observational Drawing with PDAs and Tablet PCs

By Peter Grego

Publisher: Springer (2009)

ISBN-10: 0387853502

ISBN-13: 978-0387853505

A guide to electronic sketching of astronomical objects using handheld computers.

## Solar System Observer's Guide

By Peter Grego

Publisher: Collins (2006)

ISBN-10: 0540088277

ISBN-13: 978-0540088270

An observational guide, contains a section on observing Mars.

## The Compact NASA Atlas of the Solar System

By Ronald Greeley and Raymond M. Batson

Publisher: Cambridge University Press (2002)

ISBN-10: 052180633X

ISBN-13: 978-0521806336

A detailed reference work containing charts of Mars.

## The Planet Mars: A History of Observation and Discovery

By William H. Sheehan

Publisher: University of Arizona Press (1996)

ISBN-10: 0816516405

ISBN-13: 978-0816516407

A beautifully researched history of Mars observation and a (now dated) outline of plans to explore the Red Planet.

## **Mars: The Lure of the Red Planet**

By William H. Sheehan and Stephen James O'Meara

Publisher: Prometheus Books (2001)

ISBN-10: 157392900X

ISBN-13: 978-1573929004

A beautifully researched history dealing with Mars observers and their drive to understand the Red Planet.

# Glossary

<b>Albedo</b>	A measure of an object's reflectivity. A pure white reflecting surface has an albedo of 1.0 (100 percent). A pitch black, non-reflecting surface has an albedo of 0.0.
<b>Altitude</b>	The angle of an object above the observer's horizon. An object on the horizon has an altitude of 0°, while at the zenith its altitude is 90°.
<b>Aperture</b>	The diameter of a telescope's objective lens or primary mirror.
<b>Aphelion</b>	The point in an object's orbit furthest from the Sun.
<b>Apparition</b>	The period of time during which a planet, asteroid or comet can be observed between conjunctions with the Sun.
<b>Arcminute</b>	One minute of arc. 1/60th of a degree. Indicated with the symbol'.
<b>Arcsecond</b>	One second of arc. 1/60th of an arcminute. Indicated with the symbol''.
<b>Asteroid</b>	A minor planet. A large solid body of rock in orbit around the Sun.
<b>Astronomical Unit</b>	A convenient measure of distances within the Solar System, based on the average distance of the earth from the Sun. 1 AU is equal to 149,597,870 km.
<b>Atmosphere</b>	The mixture of gases surrounding a planet, satellite or star.
<b>Axis</b>	The imaginary line around which a planet rotates.
<b>Basin</b>	A very large circular structure, usually formed by impact and comprising multiple concentric rings.
<b>Caldera</b>	A sizeable depression in the summit of a volcano, caused by subsidence or explosion.
<b>Catena (plural: Catenae)</b>	A chain of craters.
<b>Central peak</b>	An elevation found at the centre of an impact crater, usually formed by crustal rebound after impact.

<b>Conjunction</b>	The apparent close approach of a planet to the Sun or another planet, seen from Earth. Mars is in conjunction with the Sun when the Sun lies between that planet and the Earth.
<b>Crater</b>	A circular feature, often depressed beneath its surroundings, bounded by a circular (or near-circular) wall. Almost all of the large craters visible in the Solar System have been formed by asteroidal impact, but a few smaller craters are endogenic, of volcanic origin.
<b>Culmination</b>	The passage of a celestial object across the observer's meridian, when it is at its highest above the horizon.
<b>Dark side</b>	The hemisphere of a solid body not experiencing direct sunlight.
<b>Degree</b>	As a measurement of an angle, one degree is 1/360th of a circle. Indicated by the symbol °. In terms of heat, degrees are increments of a temperature scale. Scales most commonly used in astronomy are Celsius (C) and Kelvin (K). 0°C, or 273.16°K, is the freezing point of water. 0°K, or -273.16°C, is known as absolute zero, where all molecular movement ceases.
<b>Dome</b>	A low, rounded elevation with shallow-angled sides. They can be formed volcanically or through sub-crustal pressure.
<b>Eccentricity</b>	A measure of how an object's orbit deviates from circular. A circular orbit has zero eccentricity. Eccentricity between 0 and 1 represents an elliptical orbit.
<b>Ecliptic</b>	The apparent path of the Sun on the celestial sphere during the year. The ecliptic is inclined by 23.5° to the celestial equator. Mars follows a path close to the ecliptic.
<b>Ejecta</b>	A sheet of material thrown out from the site of a meteoroidal or asteroidal impact that lands on the surrounding terrain. Large impacts produce ejecta sheets composed of melted rock and larger solid fragments, in some cases producing bright ray systems.
<b>Elongation</b>	The apparent angular distance of an object from the Sun, measured between 0 to 180° east or west of the Sun.
<b>Ephemeris</b>	A table of numerical data or graphs that gives information about a celestial body in a date-ordered sequence, such as the rising and setting times of the Moon, the changing illumination of Mars, the longitude of Jupiter's central meridian, etc.
<b>Equator</b>	The great circle of a celestial body whose plane passes through its centre and lies perpendicular to its axis of rotation.
<b>Fault</b>	A crack in a planet's crust caused by tension, compression or sideways movement.

<b>Gibbous</b>	The phase of a spherical body between dichotomy (50% illuminated and Full (100% illuminated).
<b>Graben</b>	A valley bounded by two parallel faults, caused by crustal tension.
<b>Highlands</b>	Heavily cratered or mountainous region.
<b>Impact crater</b>	An explosive excavation in a planet's crust formed by a large projectile striking at high speed.
<b>Lava</b>	Molten rock extruded onto a planet's surface by a volcano.
<b>Limb</b>	The apparent edge of a planet.
<b>Lithosphere</b>	The solid crust of a planet.
<b>Mare</b> (Latin: Sea. Plural: Maria)	A large, dark albedo region.
<b>Massif</b>	A large mountainous elevation, usually a group of mountains.
<b>Meteorite</b>	A meteoroid which has survived its passage through a planet's atmosphere.
<b>Meteoroid</b>	A small solid body composed of rock or metal in orbit around the Sun.
<b>Mons (Latin: Mountain.</b> <b>Plural: Montes)</b>	The generic term for a mountain.
<b>Occultation</b>	The disappearance or reappearance of a star or planet behind the lunar limb.
<b>Opposition</b>	The position of a planet when its celestial longitude is 180° to that of the Sun.
<b>Perihelion</b>	The point in an object's orbit when it is nearest the Sun.
<b>Phase</b>	The degree to which a planet or satellite is illuminated by the Sun. Phases can be crescent (less than 50% illuminated) or gibbous (more than 50% illuminated).
<b>Planet</b>	One of eight large objects in orbit around the Sun, ranging from small solid Mercury to the large gas giant Jupiter.
<b>Quadrature</b>	The position of a planet when it has an elongation of 90° from the Sun.
<b>Ray</b>	A bright (though sometimes dark) streamer of material radiating from an impact crater.
<b>Rift valley</b>	A graben-type feature caused by crustal tension, faulting and horizontal slippage of the middle crustal block.
<b>Rille</b>	A narrow valley. Some rilles are linear, caused by crustal tension and faulting. Others are sinuous, believed to have been produced by fast-moving lava flows.
<b>Satellite</b>	A small body revolving around a larger body.
<b>Secondary cratering</b>	Craters produced by the impact of large pieces of solid debris thrown out by a large impact. Secondary craters often occur in distinct chains, where piles of material impacted simultaneously.

<b>Seeing</b>	A measure of the quality and steadiness of an image seen through the telescope eyepiece. Seeing is affected by atmospheric turbulence, caused largely by thermal effects.
<b>Solar System</b>	The Sun and everything within its gravitational domain.
<b>Sun</b>	The central star of the Solar System.
<b>Terminator</b>	The line separating the illuminated and unilluminated hemispheres of a planet or satellite.
<b>Universal Time (UT)</b>	The standard measurement of time used by astronomers over the world. UT is the same as Greenwich Mean Time, and it differs from local time according to the observer's position on the Earth and the time conventions adopted in that country.
<b>Volcano</b>	An elevated feature built over time up by the eruption of molten lava and ash.
<b>Zenith</b>	The point in the sky directly above the observer.



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