# Let's make some observations of Mars

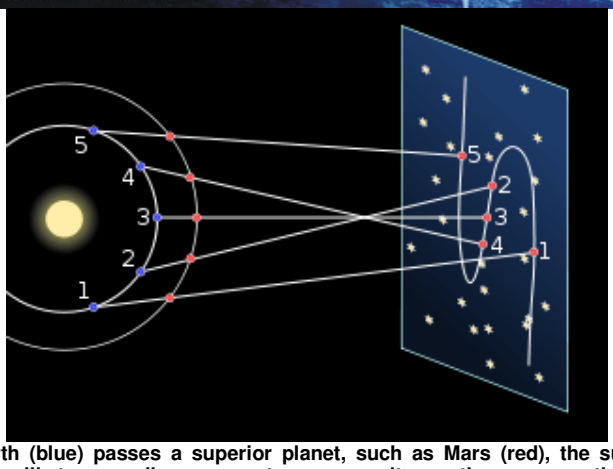
If you have made the observation suggested last month, and you have been following Observational Highlights that Bob Larcher has been posting, you must be quite familiar with Orion and were probably curious to learn more about some of the bright stars that are near to Orion from the constellations on its vicinity. You probably saw a red dot (in fact its orange) that you can find imagining a straight line starting Bellatrix(Orion) passing by Betelgeuse(Orion) and getting away from Orion between Procion and Pollux (see image bellow).

**Mars can be found drawing a straight line from Bellatrix(Orion) passing Betelgeuse(Orion) and between Procion(Canis Minor) and Pollux(Gemini).This image was made using *Stellarium* (see Astronomy News, Number 1).**

Mars came into Opposition on January 29, 2010 in the constellation of Cancer. Two days before, on January 27, 2010, the planet came to its closest approach to Earth during this apparation: 99.33 million km (0.66399 AU). This is not very close, as Mars was quite close to its aphelion at the time of this opposition; the aphelion is passed on March 31, 2010. Now its the Northern Spring and Southern Autumn on Mars, so the Northern hemisphere of Mars is the primarly visible part of Mars.

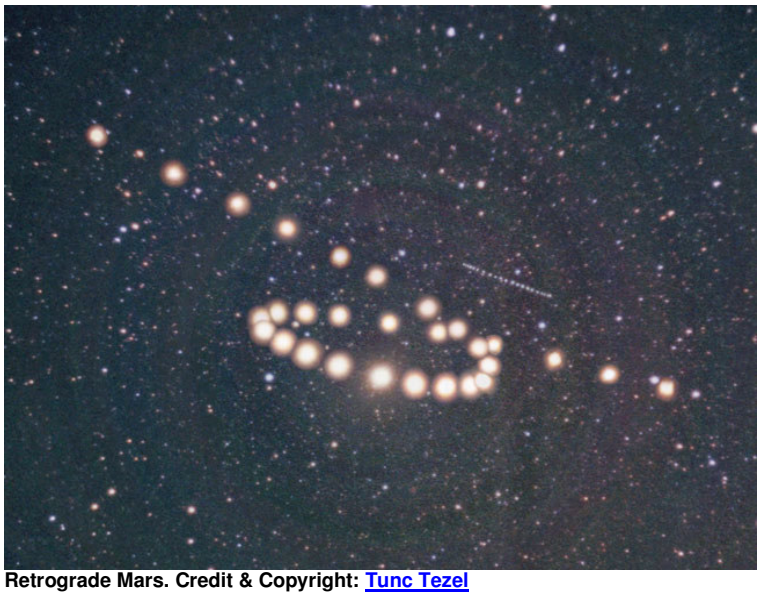
If you have the will you will have time to see the end of Mars retrogradation along this year. The planets have an apparently retrograde movement at some point. This apparent motion can be seen with naked eye in the cases of Mercury, Venus, Mars, Jupiter and Saturn. From ancient times, astronomers were fascinated by the retrogradation of Mars and found it difficult to understand. Retrogradation was easily explained by the heliocentric model and was one the most important arguments that Copernicus could present against Ptolomy's geocentric model. Today, retrogradation is explained easily using mathematical laws of celestial mechanics.

A schematic explanation of retrogradation is given in the following image.




**As Earth (blue) passes a superior planet, such as Mars (red), the superior planet will temporarily appear to reverse its motion across the sky. Credit: Wikimedia.**

Retrogradation occurs because the speed of these planets in their orbits is higher or lower than the Earth's speed that is about 30 km/s. In the case of Mars, its speed is only 24 km/s. Therefore when the Earth catches up with Mars and overtakes it (at the point of opposition or Sun-Earth-Mars alignment), Mars seems to move backwards. This apparent retrograde motion lasts an average of 73 days. In the beggining of February Mars is in the middle of the loop.



**Retrograde Mars. Credit & Copyright: Tunc Tezel**

Take some time to look at the red planet this month.

**Links:**
Wikipedia - Mars
NASA's Mars Exploration Program