

Our Fascination with Mars

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Introduction

Ancient mythology refers to it as the God of War. Tuesday, the second day of the week, is translated from the Latin 'dies Martini' and from French 'mardi'. In fact the seven days of the week come from the five wandering planets, the Sun and Moon. It has been the love of science fiction writers and movie makers. Commonly known as the red planet, Mars has always had to extra bit of interest over the other planets of our solar system.

During the great opposition of 1877 when Mars was closest to Earth in its 26 month orbit around the Sun, the Italian astronomer and science historian Giovanni Schiaparelli took advantage of the planet's position by making observations of the Martian terrain with his telescope. His records state that he saw dark markings which he called "canali" or canals in English. To him, this meant systems of water and hence a living civilization must exist so far away. This ultimately led to the idea that "Martians" live there.

Mass panic erupted amongst millions of radio listeners in October 1938 as news bulletins interrupted regular scheduled programming stating Martians have landed on Earth. Narrated by Orson Wells, the news seemed bleak as space ships were landing and taking over the world. This was in fact the famous radio broadcast put on by The Mercury Theatre on the Air (radio drama) and was part of their Halloween episode. Seeing the wide spread reaction and panic, the radio station had to retract and admit it was only theatre and no such invasion existed. Earth was safe.

What some people pass off as pure science fiction, others keep an open mind to the possibility of life residing somewhere else beginning with our next door neighbour, Mars. Throughout time people other visionaries have had the notion life must exist past the confines of Earth. Dating back more than two thousand years, the Greek philosopher Anaxagoras (510–428 BC) contemplated this notion which led to the term Panspermia meaning "seeds everywhere" with the hypothesis that life exists on or around all celestial bodies.

For the most part, observations of Mars were conducted from ground based telescopes until we started sending unmanned space probes to the red planet. Of the fifty-five missions that were constructed since 1960, half of them partially or fully failed. At the top of the successful list were Viking 1 and 2, identical space crafts that each consisted of an orbiter and a lander, with missions lasting 2,245 and 1,281 sols or days respectively. Now the real science began to answer many questions including, did water once flow on Mars and what about the never ending question, the possibility of life.

Since then an array of orbiting space crafts, landers and movable rovers, have photographed and analyzed the landscape first hand with state of art technology, looking for evidence of water. Photographs have revealed many melt zones as well as dry river and lake beds. Running water seems to have eroded various areas and formed round

pebbles. Scientists have also come across small "blueberries" which are tiny hematite-rich spherules most likely formed by microbes.

On June 20, 2008 the Pathfinder lander dug a trench a few inches deep and came across a white substance. Pathfinder concluded this was frozen water ice and proof water does exist away from the polar region. In 2011 recurring slope lineae which are dark lines measuring 0.5 to 5 metres wide and hundreds of meters long have been seen running down hill sides. They only seem to occur during the warmer months of spring and summer and retreat in fall and winter. They seem to be hydrated salt that is precipitating from liquid water, a kind of brine. The Trace Gas Orbiter is part of the ExoMars mission currently examining the atmosphere for methane and other gases of possible biological importance.

There are countless examples that led to a recent NASA report outlining the fact Mars had a lot of water about 3.5 billion years ago. Measuring half the size of Earth, Mars once had more water flowing on its surface than the Arctic Ocean. We had two wet planets in our solar system. This was big news to astronomers and astro-biologists because if there was liquid water, there is a great chance life could have existing long ago. So how did a planet lose all its water?

When Mars and the other seven planets formed after the Sun was created 4.5 billion years ago, the centre of the planet had a solid core surrounded in a liquid region. As the liquid rotates around the solid core a magnetic field is generated just like our planet. A magnetic field is critical in protecting the atmosphere by deflecting the Sun's deadly solar winds which are made up of charged particles. The same kind of magnetic field allows life to continue on Earth. Since Mars is half the size of the Earth about a billion years after creation the planet cooled and the liquid region surrounding the core froze solid thus putting a stop to the magnetic field? With the defensive shields down, solar winds were free to strip away the atmosphere and eventually evaporated its vast amounts of water. This left behind a dry, lifeless planet. Our core is still going strong.

Of the tens of thousands of meteorites that have been discovered on Earth, 124 have been identified as coming from Mars. Ancient impacts hit the red planet, ejected material into space that orbited the Sun for millions of years before landing on Earth. There might even be ancient fossilized bacteria in some of these samples.

So many discoveries point to the possibility of alien life so long ago. The search continues from above and on the surface of Mars with amazing results thus far. However it will most likely take human expeditions to find life either ancient or surviving. Plans for the Mars One missions commencing in 2025 are in the works with the goal of establishing a permanent human settlement on Mars.

The selection process of personnel is ongoing until they reach the final six sets of four astronauts, with a set being sent to Mars every two years. A one way trip to the red planet takes seven potentially

dangerous months. The hazards of space travel consist of deadly solar wind (space radiation) from our Sun and meteoroids hitting the ship at high velocity. Our atmosphere and magnetic field protect us on Earth but space is the bad lands of travel. Both x-rays and cosmic rays can affect the astronaut's DNA thus leading to future health concerns.

Unlike the six Apollo missions (1969-1972) that went to and safely returned from the Moon seeking out the unknown, Mars has been studied since 1976 and we have learned a lot thus far in the four decades. But photos and rovers cannot replace the greatest creation

ever-humans. When our brave men and women set up colonies on Mars, their hands will touch another planet to study its resources and processes. Discovery, even on Earth is sometimes a game of chance, being in the right place at the right time. It could come from an experienced geologist who trained eye might pick up that one in a million rock. The same will eventually happen on Mars when the world will one day receive news; life has once existed on a dry, red planet, millions of kilometres away, shining in the night sky.

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