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THE CANALS OF MARS

Ken Tapping, 18th October, 2016

Until recently, we have only been able to see Mars as a shimmering reddish disc with polar caps and vague darker patches. Turbulence in our atmosphere makes the planet seem to shimmer, shake and blur, with rare moments when the image gets sharper. The difficulty in observing Mars using ground-based telescopes, with a good dose of observer fatigue and wishful thinking, led to a misconception that lasted at least a Century.

In the 19th Century, Giovanni Schiaparelli pointed his telescope at Mars, and over a long period of staring at that shimmering disc he drew a map of Mars. He saw larger darker areas joined together by lines, which he called "channels". These are usually naturally occurring, as are the drainage channels formed by floods of meltwater at the end of the last ice age. However, Schiaparelli, being Italian, used the Italian word "canali", and in doing so changed our view of Mars for over 100 years. Channels may be natural, but a mistranslation of "canali" into "canals" leads to something really different: the idea that Mars is inhabited by intelligent beings capable of massive engineering.

Percival Lowell was a successful businessman in 19th Century America. He was fascinated by the idea of these Martian canals and built himself an observatory near Flagstaff, Arizona, intended mainly for the study of Mars. Lowell dedicated a lot of time to observing the Red Planet and produced maps showing showed darker areas connected by straight lines, which, if real, almost certainly had to be artificial. Thus began the idea of Mars slowly drying up and its inhabitants carefully managing their declining resources. This was the basis for the landmark science fiction story by British author Herbert G. Wells. In his story "War of the Worlds", the Martians got fed up with their cold, drying up world and decided to move in on ours. He started the long tradition of stories, radio programmes and movies with the theme of "Invasions from Mars". It seemed for a while in the public consciousness that a Martian invasion was just a matter of time.

Ray Bradbury wrote instead of the effect on Martians of invaders from Earth. In the meantime, Edgar Edgar Rice Burroughs was writing swashbuckling stories about Martian heroes and princesses. It was interesting that many astronomy textbooks as late as the 1950's showed pictures of Mars with canals. Mars was part of popular culture.

The idea of canals fitted well with one other observation: a wave of darkening that appears near the Martian poles in spring and which moves equatorward. This was interpreted as meltwater moving down from the poles and triggering the growth of vegetation. I have an astronomy book, published in 1962, containing the text "The planet cannot be regarded as overwhelmingly hostile, and the presence of vegetation can hardly be denied, though there is as yet no positive proof".

However around that time scepticism was growing. Amateur astronomers and others noticed that when observing conditions were so-so, they could persuade themselves they were seeing canals. However, when observations were good, the canals broke up into dots, blobs and streaks. Then, in 1965 the spacecraft Mariner 4 flew past Mars and sent back close-up pictures. They showed just a cold, cratered desert – no canals.

In 1975 the two Viking spacecraft landed on Mars. The data and images they sent back showed a desert, with rocks and craters, a thin atmosphere with a pressure of only 0.4 kilopascals, compared with our sea-level pressure of about 100, and consisting of an unbreathable atmosphere of mainly carbon dioxide and some nitrogen. This does not rule out the possibility of life on Mars, but we have had to give up on those princesses.

Mars lies low in the southwest after sunset, with Saturn to its right. The Moon will reach Last Quarter on the 22nd.

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