Canals on Mars

The saga of these elusive waterways began with Schiaparelli’s claims following the opposition of Mars in 1877. Schiaparelli used the Italian word *canali* to describe linear markings that he observed in that year and at subsequent oppositions. He drew increasingly elaborate maps in which the canals became a more and more prominent feature, even seeming to double on a seasonal basis ("gemination," of canals). On balance, he favored the view that they were natural waterways, although he never opposed the suggestion that they might have been intelligently constructed. To begin with, he received little encouragement from the astronomical community. Observers of the caliber of Asaph Hall, who first glimpsed the two tiny Martian moons, and Edward Barnard, discoverer of Amalthea, a faint inner satellite of Jupiter, never saw linear markings on the Red Planet. In 1894, Barnard wrote:

I have been watching and drawing the surface of Mars. It is wonderfully full of detail. There is certainly no question about there being mountains and plateaus. To save my soul I can’t believe in the canals as Schiaparelli draws them. I see details where he has drawn none. I see details where some of his canals are, but they are not straight lines at all. When best seen these details are very irregular and broken up . . . I verily believe . . . that the canals . . . are a fallacy and that they will so be proved before many favorable oppositions are past.

Barnard’s skeptical stance represented the majority position of professionals throughout the period of the canal debate. Yet, enough reputable astronomers *did* verify Schiaparelli’s *canali* to keep the controversy alive. Moreover, such was Schiaparelli’s reputation as a skilled observer that, even among opponents, his claims concerning the mysterious lines were treated with respect and Mars became the subject of intense scrutiny at the world’s leading observatories.

Several matters needed resolving, both intellectually and optically. First was the question of whether there really were lines on Mars at all. Many astronomers doubted it, suspecting they were an illusion, but verification of Schiaparelli’s markings came, in 1886, from Perrotin and Thollon at Nice and Wilson in Cincinnati.

Next was the question of whether, if the lines were real, they were water courses or some other phenomenon such as glacial crevasses or "stripes . . . due to differences in vegetation." The last suggestion was made by William Pickering in 1888 and won considerable support. Finally, came the question of whether, if the canals were waterways, they were natural or artificial. Although the latter view won very little support among professional astronomers, it proved irresistible to the general public whose imagination was fired by the pro-canal writings of Camille Flammarion in France and especially of Percival Lowell in the United States. In his widely read and translated *La Planète Mars* (1892), Flammarion wrote:

... it would be wrong to deny that [Mars] could be inhabited by human species whose intelligence and methods of action could be far superior to our own. Neither can we deny that they could have straightened the original rivers and built a system of canals with the idea of producing a planet-wide circulation system.
Even Flammarion’s enthusiasm, however, paled beside that of Lowell who, from 1894 to his death in 1916, painted a picture of an extant Martian civilization infinitely more alluring than the prosaic (yet more accurate) portrayals by mainstream science.

Lowell managed to capture the mood of the age. By the closing decades of the 19th century, through a bombardment of extraordinary fact and fiction, people had become habitualized to high-speed technological progress and increasingly ambitious civil engineering schemes. So the suggestion that beings on another world, more evolved than mankind, might be able to carry out projects on a planet-wide scale seemed perfectly credible. What humans could do, perhaps the Martians, older and wiser, could do bigger and better. Regarding transport systems, for instance, the year 1869 saw not only the term canali first applied (by Secchi) to a feature on Mars, but also the opening of the Suez Canal and the completion of the first rail-track linking the East and West coasts of the United States. Ordinary folk were primed ready to believe in advanced Martians, so that when Lowell speculated about a canal-building super-race, he found an eager and sympathetic audience.

Many people felt the haunting, other-worldly allure of the Martian canals and novelists were not slow to weave romantic tales around the theme, further stimulating public interest. Percy Greg, George Griffith, Garrett Serviss, H. G. Wells (most influentially), and others at the end of the nineteenth century, Edgar Rice Burroughs in the early decades of the twentieth, and, more recently, Ray Bradbury in *The Martian Chronicles* and Robert Heinlein in *Stranger in a Strange Land* drew inspiration from the Lowellian myth. For myth, is what it proved to be. By the dawn of the twentieth century, it was becoming clear that the Martian atmosphere was too thin, the temperature too low, and water too sparse, to support any kind of life except possibly primitive vegetation and microbes. Hopes of finding canals or their builders had all but disappeared.

References


Adapted from *The Encyclopedia of Astrobiology, Astronomy, and Spaceflight* (http://www.daviddarling.info/encyclopedia/ETEmain.html)