IRRIGATING AN ARID WORLD

LIFE SUSTAINED ON MARS THROUGH THE MEDIUM OF ITS WONDERFUL CANALS

Camille Flammarion

FANCY a company of Martian laborers, imported from their distant planet to dig the Panama Canal. How the dirt would fly!

Digging such a little ditch would be a matter of merely a few weeks' exercise. Each Martian, according to the most recent estimates of scientists, could toss over his shoulders two and a half tons at a shovelful—and the supreme achievement of the race is canal digging.

For the giants of Mars are canal makers through stern necessity. It is not for purposes of commerce that they have lined and ribbed their dying planet with a vast system of waterways. Only through the most gigantic network of canals conceivable are they able to keep life in their arid world and provide sustenance for themselves.

Scientists now declare that the many lines and dark spots on Mars represent verdure along a most wonderful canal system, which the inhabitants of the planet have constructed for purposes of irrigation.

Through these artificial waterways the melting snow and ice of the poles are carried to various parts of the planet, and so the Martians are able to raise their crops in season and to stay, for a time, the menacing dry decay of their world.

SEVERAL of the greatest present-day astronomers—Lowell, Pickering, Flammarion, Morse and others—have practically agreed on the theory that Mars contains no rivers, lakes, oceans or any other source of water supply than the great caps of snow on the north and south poles.

In the summer time, when the people must produce vegetation or starve, the melting snow from those extremities of the sphere is carefully, systematically coaxed through artificial waterways to the furthermost sections where it is needed. The Martians even make the water run up hill, it is declared.

Among recent contributions to the learning of nations on the subject of Mars is the result of thirty-four days' study of the planet made in the Lowell Observatory at Flagstaff, Ariz., by Professor E. S. Morse, member of the American National Academy of Science.

Of course, Professor Morse believes that Mars is inhabited. The astronomers all do, now. It is with relation to how the inhabitants live that his investigations are of value.

He goes on the assumption that Mars is a very old planet—millions of years older than this earth; that with the gradual flattening of her hills and filling in of her valleys, combined with seismic disturbances, she has retained none of her great bodies of water so necessary to life, and that her people would perish if their ingenuity did not every year bring water at critical times from the poles.

In one important matter Morse disagrees with some of the leading astronomers—with respect to the weather conditions in Mars.

Other authorities have stated that the atmosphere there is perfectly placid, so much so that when the weather becomes cold enough to cause frost and snow, the settling of the flakes cannot be considered a storm, only an accumulation.

But Morse is said to have become convinced that winds sweep over the surface of Mars; that there are dust storms on its deserts—in short, that it is a world in many respects like ours.

But most tragic of all the deductions which the astronomer has made from his thirty-four nights in the observatory is that Mars is making the greatest fight for existence ever recorded—the attempt of a planet to hang on to existence after its resources for the sustenance of life have been exhausted.

And the way in which this is done is the perfecting of a canal system.

The curious markings on the face of Mars which are now accepted to be canals were first discovered by Professor Giovanni Schiaparelli, an Italian astronomer, many years ago. Of the recent studies as to the meanings of these lines, by far the most important have been made at the Lowell Observatory.

"The lines of Mars are," Professor Morse says, "almost without exception, geodetically straight, supernaturally so—and this is in spite of their leading in every possible direction. They invariably begin and end at definite places."

As to the meaning of the lines, the scientist believes that they cannot possibly be earthquake fissures, because Mars long since ceased to show any activities which might have caused cracks in her surface; and the old ones would have been long ago eliminated.

Therefore he thinks it perfectly reasonable to suppose that they were designed for a definite purpose—to conduct water from those regions where water is found for the purpose of irrigation.

He admits that he had not been a believer in the idea of canals on Mars when he began his study; he desired to acquire all his information relating to the subject at first hand.

"As to the existence of water," he says, "one has only to consider the polar snowcaps. In the height of the southern winter the snowcaps measure more than 2000 miles across, covering 55 degrees of latitude unbrokenly. As the spring advances the snow begins to melt, disappearing rapidly as summer comes on, its place being taken by dark patches of water."

Some time ago actual photographs of the Martian canals were taken at the Lowell Observatory by C. O. Lampland. This was a wonderful accomplishment, considering that the nearest point of Mars is 35,050,000 miles from the earth, and even when the atmosphere is clear enough to permit a view of the fine lines, the dancing rays of nebulous light make it almost impossible to see with distinctness.

The photographs in themselves were small and of little worth pictorially, but it has been possible from them to make a chart of the Martian canals which may be accepted as practically correct.

But even when the atmosphere is perfectly clear, the canals are not visible all the year round. In fact, they appear and disappear with seasonal regularity.

Some critics have used this fact as argument against the lines being really canals for, they said, if it be assumed that a finite power dug the canals, how can we account for that power's foolishly filling them up again?

This, Professor Percival Lowell, non-resident professor of astronomy at the Massachusetts Institute of Technology, explains in a novel way.

The strips which we see, says Professor Lowell, are not really the canals, but are strips of vegetation which spring up along the canals when the great sluices are full of water, and are not visible at other times.

And this he apparently substantiates by saying that the green strips deepen in color as the days pass, just as foliage deepens in hue with the advance of the season.

Another argument. The photographs show that one or two of the canals show double lines, while the others are in single lines. This might indicate that the double-lined ones are the main canals—the feeders—which are so much wider than the others that the vegetation on both sides may be distinguished, while in the narrower ones it seems—so great is the distance—like a single line.

On Mars, not only do two and three lines run through a common point, but as many as seventeen lines may be observed running through a common centra. Such exceptional accuracy of form points to a mind which directed the power that wrought the change.

Ordinarily—leaving the lines out of the question—the surface of Mars, as revealed by the telescope, consists of spaces of two different colors—some orange, others blue-green.

A few years back the blue-green spaces were considered seas, and were christened by various names. The orange parts, on the other hand, were presumed to be continents.

Changed are these old physical geography notions.

Now the blue-green spaces are practically known to be the vegetation created by the annual inundation from the canals, while the orange spaces are called deserts.

In other words, Mars is all land, except that the parts which sometimes show up blue-green have water in them at one season of the year, while the orange parts are continuous Saharas.

What are the spots where the canals interlace? Professor Pickering's polariscope has apparently dispelled the idea that they are lakes.

Professor Lowell, who has located 185 of these spots, is said to be of the opinion that they are oases, and that they are each spring irrigated by the canals, which approach them from different directions.

"Whatever constitutes the canals," said Professor Lowell recently, "it is evident that their development proceeds from the pole down the disk, and, furthermore, that it advances over the surface at a fairly regular rate.

"It starts at the summer solstice; that is, it follows the melting of the polar cap. In consequence of the water then let loose, the canals come into being."

Professor Lowell believes that practically the only source of water supply for the planet is about the poles. So long as the sun remains over the equator there is no water.

On Mars the vegetation spreads from the poles, because the snow must melt and the water flow into the canals before verdure can grow. And in this connection Professor Lowell has made one of the most astounding of all his statements. He says:

"The quickening proceeds rapidly, and very nearly, if not quite, uniformly down the disk. It takes the darkening only five days to descend from the seventy-fifth parallel to the equator, a journey of 2800 miles. This means a speed of fifty-three miles a day, or two and two-tenths miles an hour. And it does this in the face of gravity."

In fact, in plain language, the astronomer declares that not only does human intelligence in Mars dig the vast canals thousands of miles in length, but that, by some mysterious method, it causes the water to run up hill!

Professor Camille Flammarion, who has made a careful study of the planet, has been for several years watching the snowfalls on Mars. He believes that the Martian seasons may be subject to as many vicissitudes as ours, instead of being actuated by the exceptional constancy hitherto attributed to them. He agrees that the canal systems are artificial and were constructed with a view to irrigation.

What manner of people are these who do such remarkable things? Obviously, a quite different kind from the inhabitants of this earth.

According to the best authorities, founded on the most recent investigations, the Martian is a creature immensely more powerful, physically, than earth mortals, even earth giants. This is deduced from the lesser pull of gravity on Mars.

A Martian could run 100 yards in three or four seconds, could leap over a high tree, could kick a football a quarter of a mile.

Because of the lesser attraction of gravity he may be at least three or four times as big as the average human being, perhaps even much larger than that. Another thing which, perhaps, adds weight to this belief is that, on account of the rarefied air on Mars, a Martian must require three times as much lung space as an earth mortal to get enough air to live; and his body must be proportioned accordingly.

Bodies on the planet Mars weigh but a third as much in proportion to size as they do here; so it is believed that a Martian laborer could perform as much work in a given time as fifty or sixty terrestrial ditch diggers; that he could handle two and a half tons of dirt at a shovelful. So his annual irrigation work may not be as difficult as it seems.

The Martian year is much longer; in fact, nearly twice as long as ours. It takes Mars 687 days to travel on its orbit around the sun.

The next few years may see the secrets of Mars disclosed as never before. It is conceded that in the clear light of the earth's South Pole telescopic observations may be made with unprecedented success, and Don Philipe Beyrier, a wealthy Argentine citizen, is equipping an expedition which, headed by three Americans, will start toward the South Pole in June with this end in view.

Surface of Mars Showing the Lines of the Canals.

Prof. W. H. Pickering

Prof. Percival Lowell