The potato from Mars

BY MARIE ABI DAOUD

Before the announcement made on Wednesday, August 7, 1996, not many people were interested in the planet Mars. Most people knew that Mars is a red planet, it neighbours earth, and has a chocolate bar named after it. Today, ask a person on the street what they know about the planet, and you're likely to have them say, "They've discovered life on Mars!"

For centuries it has been the substance of myth: Mars, the fourth planet from the sun, the Earth's brother. Great minds, including Ptolemy, Aristotle, and Copernicus, have — with the naked eye — peered at the ripples and craters that sweep across Mars' amber-red surface. They have wondered, "This planet, so similar to our earth — could it support life?"

The discovery last summer that life apparently existed on Mars was hailed as the greatest discovery of the century, one that could have far-reaching effects for philosophy and science. Even President Clinton said, "If this discovery is confirmed, it will surely be one of the most stunning insights into our universe that science has ever uncovered. Its implications are as far-reaching and awe-inspiring as can be imagined." So what is this all about?

This is all about a 4.2 pound, potato-sized meteorite that, scientists say, was formed under the surface of Mars about 4.5 billion years ago. Between 3.6 to 4 billion years ago, water penetrated fractures in the rock and deposited carbonate materials. Some 16 million years ago a comet or asteroid struck Mars, sending pieces of its crust hurtling into space. A mere 13, 000 years ago a few pieces entered our atmosphere and finally, in 1984, the "potato" was discovered by a research team in the ice of Antarctica.

A team of NASA and Stanford University scientists believe living organisms may have been involved in the formation of the carbonate and some of the microscopic organisms may have fossilized in the rock. Inside the microscopic scraps of carbonate, the scientists found detectable amounts of polycyclic aromatic hydrocarbons, the mineral compounds associated with microscopic organisms, and possible microscopic fossils.

The NASA and Stanford team do not claim to have exclusively proven that life existed on Mars, but rather want to publicize their findings so that the scientific community can verify, enhance, attack, or disprove any of their work. As well, they do not want the public to think of "little green men," as there is no suggestion that higher life may have existed on Mars. The possible fossils include egg-shaped and tubular structures so small that they can only be seen under an electron microscope.

The make-up of the meteorite matches chemical compositions of the surface of Mars measured by the Viking spacecraft that landed on the planet in 1976. The NASA researchers said it was unlikely the evidence of the living organisms was deposited deep inside fissures of the rock after it entered the Earth's atmosphere. They expect, however, that this and other facets of their research will be challenged.

Some attacks against the rock have already been formed. Paleobiologist J. William Schopf, from UCLA, argues that the polycyclic aromatic hydrocarbons can be made inorganically. They are even found in car exhaust. The hydrocarbons have been found before in debris from space, but have not been claimed to be evidence of extraterrestrial life. Also, some believe that the micro fossils are too small to be fossils. They are a hundredth of the size of the smallest terrestrial bacteria. Though, if scientists can get inside of these micro fossils and find a membrane or cell wall, then a claim for conclusive evidence could be made.

Dr. Richard Wassersug, professor of Anatomy and Neurobiology at Dalhousie University, believes that "The strongest evidence is the hydrocarbon. The weakest evidence...is the fact that they're speculating that these little [tubular] bodies may in fact be unicellular organisms. My problem with that is that, in palaeontology, unicellular organisms do not preserve as free standing spheres unless they are actually buried...you would not expect them to maintain their circular shape. Microfossils are rarely found with those types of features, they are usually flattened or distorted."

Presently, there are international programs set to explore Mars. The first of ten small U.S. robotic spacecraft was launched in December and is to land on Mars this summer. Each is an orbiter and a lander. While the orbiter will map the red planet, a tiny rover will roll around the surface and radio back details of the chemistry of the rocks. The idea is for the orbiter and rover to find the best places to look for life so that a later robot can land, grab a sample and bring it back. Buoyed by the circumstantial evidence that life may once have existed on Mars, scientists hope it may still be there somewhere, maybe underground or in water.

Scientists have also come to realize that Mars wasn't always inhospitable. In fact, 3.8 billion years ago, when the first living things were getting a tenuous hold on our home planet, Mars was probably warmer and more moist, a place of shallow lakes and flowing springs that resembled the young Earth. A place, in short, where microbes and other small creatures might sprout and thrive.

Is Mars inhabitable? With the way earth is going, human beings may need another planet to live on. Some believe that terra-forming on Mars (creating an Earth-like environment) is possible. By importing resources, the habitat of Mars can be made similar to Earth. Vegetation, surface water, climate change and the creation of an ozone layer can all be solved, leaving gravity as the only remaining problem for life on Mars. But, what about transportation? How are we going to get from Earth to Mars, and how long would it take?

Is there life on Mars or is this all a colossal mistake? For the next year or so, scientists all over the world will intensely scrutinize NASA's research — all because of a 4.2 pound potato-shaped rock. If it's all correct, a new era of exploration will begin — the active search for other life in the universe.