The Prospects for Life Elsewhere in the Solar System

Mark “Aaron” Miller

Writ 109ST – 12:30pm section

August 2, 2013

In the later years of the 20th century, it became common in the scientific community to assume that life does not exist in the Solar System; therefore, the exploration of the Solar System by humans or unmanned devices must have other objectives than the discovery of life. This pessimism is largely the result of the initial discoveries of the US and Soviet space programs, which revealed hostile environments such as Venus and Mars. ###

**Mars**

Mars is currently a very cold place with an extremely thin atmosphere; at first glance, it would appear to be an inhospitable environment for life. It has been compared to Antarctica, though this is an interesting comparison, because Antarctica has many forms of microbial life within its ice and rocks, even in its most inhospitable regions. ###

**Viking biology experiments**

The Viking Mars landers were active on Mars from 1976-1980. They were equipped with biology experiments for analyzing Martian soil that, it was assumed, would definitively answer the question of life on Mars. An astonishing positive result was obtained with the Labeled Release (LR) experiment, but the GCMS experiment failed to detect any organic compounds in the Martian soil (Levin and Straat, 1988). A non-biological explanation was accepted for the positive result of the LR experiment; however, Levin notes that this was a change in attitudes among the scientists: “It was understood [before the Viking mission], then, that only one of the three experiments might return a positive response, were there truly life on Mars, and that such independent data would most probably be strong enough on its own merit to substantiate the detection of life” (Levin and Straat, 1988).

The LR experiment was designed ###

Works Cited

artemis (2012, July 24). *MSL Picture of the Day: T-12 Days: Feet on Mars: Vikings*. Retrieved from http://www.exploremars.org/msl-picture-of-the-day-t-12-days-feet-on-mars-vikings.

Formisano, V., Atreya, S., Encrenaz, T., Ignatiev, N., & Giuranna, M. (2004). Detection of methane in the atmosphere of Mars. *Science*, *306*(5702), 1758-1761.

Klein, H. P. (1978). The Viking biological experiments on Mars. *Icarus*, *34*(3), 666-674.

Levin, G. V., & Straat, P. A. (1988). A reappraisal of life on Mars. In *The NASA Mars Conference* (Vol. 1, pp. 187-208).

Levin, G. V. (2010). Extant life on Mars: Resolving the issues. *Journal of Cosmology*, *5*, 920-929.

McKay, C. P., & Smith, H. D. (2005). Possibilities for methanogenic life in liquid methane on the surface of Titan. *Icarus*, *178*(1), 274-276.

McKay, D. S., Gibson, E. K., Thomas-Keprta, K. L., Vali, H., Romanek, C. S., Clemett, S. J., Chillier, X. D. F., Maechling, C.R., & Zare, R. N. (1996). Search for past life on Mars: Possible relic biogenic activity in Martian meteorite ALH84001. *Science*, *273*(5277), 924-930.

Wallis, J., Wickramasinghe, C., Wallis, D., Miyake, N., Wallis, M., Di Gregorio, B., & Al Mufti, S. (2012). Discovery of Biological Structures in the Tissint Mars Meteorite. *J. Cosmology*, *18*, 8500-8505.