

UNCLASSIFIED

trilled. As a second possibility, evolution may have developed a being who can withstand the rigors of the Martian climate. Or the race may have perished.

These possibilities have been sufficiently expounded in the pseudo-scientific literature to make further amplification superfluous. However, there may exist some interesting analogies to the anatomy and physiology of a Martian. Much of the atmosphere, for example, may require a completely altered respiratory system for warm-blooded creatures. If the atmospheric pressure is much below the vapor pressure of breaking with our temperature of the liquid, the process of breathing with our type of lungs becomes impossible. On Mars the critical pressure for a body temperature of 38 C° occurs when a column of the atmosphere contains one sixth the mass of a similar column on the Earth. For a body temperature of 77° F., the critical mass ratio is reduced to about one twelfth, and at 60° F., to about one twenty-fourth. These critical values are of the same order as the values estimated for the Martian atmosphere. Accordingly the anatomy and physiology of a Martian may be radically different from ours - but this is all conjecture.

"We do not know the origin of life, even on the Earth. We are unable to observe any signs of intelligent life on Mars. The reader may form his own opinion. If he believes that the life forces in universal and that intelligent beings may have once developed on Mars, he has only to imagine that they perished for conditions unfavorable in a rare atmosphere which is nearly devoid of oxygen and water, and on a planet where the nights are much colder than our Arctic winters. The existence of intelligent life on Mars is not impossible but it is completely unproven."

It is not too unreasonable to go a step further and consider Venus as a possible base for intelligent life. The atmosphere, to be sure, apparently consists mostly of carbon dioxide with deep clouds of formic acid droplets, and there seems to be little or no water. Yet living organisms might survive in chemical environments that are strange to us: the vegetable kingdom, for example, operates on a fundamentally different energy cycle from Sun. Bodies might be constructed and supported with different chemicals and other physical principles than any of the creatures we know. One thing is evident: fishes, insects, and mammals all manufacture within their own bodies complex chemical compounds that do not exist as minerals. To this extent, life is self-sufficient and might well adapt itself to any environment within certain limits of temperature (and size of structure).

Venus has two hundred times the mass of Mars. Her mass and gravity, are nearly as large as for the Earth (Mars is smaller) and her