

## Wolf Vladimir Vishniac: An Obituary

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On 10 December 1973 the eminent American microbiologist Wolf Vishniac fell to his death from a 500-foot high sheer cliff in Antarctica. He had apparently been exploring off marked trails, alone, at night in the Antarctic summer, when he lost his footing. Vishniac was in Antarctica to collect soil samples from Antarctic dry valleys, in a continuing program to examine the microbiota of the most Mars-like regions of the planet Earth. } He thus is the first person since Giordano Bruno to lose his life in the pursuit of extraterrestrial life. }

Wolf Vishniac was born in Berlin, ~~Germany~~, on May 20, 1922. His father is Roman Vishniac, a Russian immigrant, later to be well-known for his photography of the Warsaw Ghetto and of a wide range of natural history subjects. Wolf Vishniac's dedicated internationalism derived in part from his early years in Europe. He was proud of the many racial and national strains that had gone into his own <sup>heritage</sup> genetics and was fluent in English, French, German, Russian, Swedish, and many other languages. His fluency in Russian seems to have been (extraordinary <sup>for example</sup> and was much commented on by his Soviet colleagues.

Vishniac came to the United States in 1940 and received his doctorate in biochemistry and microbiology from Stanford University in 1949. From 1952 to 1961 he was on the faculty of Yale University where his research was mainly on electron transport in photosynthesis and the metabolism of autotrophic hydrogen

bacteria and sulfur bacteria.

In the late 1950's the Space Science Board of the National Academy of Sciences organized two discussion groups on the East and West Coasts which respectively became known as EASTEX and WESTEX, devoted to the possibility of space vehicle investigations of extraterrestrial biology. At one of the earliest Eastex meetings, T. Gold expressed his astonishment at finding that there was no generally available and reliable instrumentation for the remote detection of terrestrial micro-

biota, and challenged the biologists to develop such instrumentation as precursors of instruments to be dropped on the planets to search for indigenous microbiology. Vishniac was the first ~~biologist to carry this~~ <sup>to fruition as a working prototype:</sup> ~~scientist to take up~~ <sup>developing over the years</sup> ~~this challenge~~ <sup>and carry it</sup> ~~his~~ instrument -- dubbed "Wolf Trap" by his friends and admirers -- ~~which~~ recorded the time variation in turbidity of a nutrient medium inoculated with microbial samples.

The success of Wolf Trap encouraged the development of other microbiological instrumentation, on a clear evolutionary line to the biology instruments on the ~~present~~ <sup>1976</sup> Viking <sup>^</sup> payload. (See Icarus 16, 139-195, 1972). Ironically, in a squeeze on cost, weight and volume for Viking, Wolf Trap was removed from the payload in 1971, but with Vishniac retained as an experimenter on the biology team.

In 1961 Vishniac accepted an appointment as Professor of Biology at the University of Rochester, later becoming chairman of the Department and Associate Director of the

*a Carl - "Multivator" here at Stanford was contemporaneous but the rewording is probably correct*

Space Science Center at the University. Vishniac played critical roles in the development of the quarantine protocols and sample and crew handling facilities for returned Apollo missions at Houston, and in the work of the planetary biology and planetary quarantine panels of the international space organization, COSPAR. He was for many years the leading advocate of exobiology on the Lunar and Planetary Missions Board of the National Aeronautics and Space Administration.

Vishniac was the editor of many volumes of "Life Sciences and Space Research" the proceedings of the COSPAR space biology deliberations, and was American editor of a joint compendium on space medicine and biology, sponsored by the U.S. National Academy of Sciences and the Soviet Academy of Sciences, which is yet to be published. One of his most important contributions to exobiology was his co-editing of the seminal volume "Biology and the Exploration of Mars", published in 1966 by the U.S. National Academy of Sciences. This book laid out for the first time a coherent rationale and program for biological exploration of the red planet, and contained a remarkable discussion of the possible ecology of Martian microorganisms, due largely to Vishniac himself.

Vishniac married Helen Simpson in 1951 and in the 1960's had many vigorous discussions on the significance of exobiology with his father-in-law, George Gaylord Simpson, formerly Professor of Vertebrate Paleontology at Harvard. Wolf was

an accomplished mountaineer and delighted in backpacking through the Rockies and other mountain ranges with his sons Ethan and Ephraim.

While our institutions were relatively near in New York State, I seemed to see Wolf Vishniac mostly in places like Tokyo, Barcelona, Leningrad, Konstanz, and Seattle -- where he was always fluent in the local language, geography, social customs and scientists. He was a remarkably honest, kind, tactful and thoughtful human being. Interdisciplinary and international differences always seemed to wither when Wolf was doing his phenomenal simultaneous translations. He had a deep sense of the fundamental problems of biology and, more than almost all of the other scientists of his time, realized the revolutionary significance for science of the search for extraterrestrial life. He many times stressed that the absence of life on a planet like Mars was almost as interesting as its presence; because we would then be faced with the classic scenario of the experiment and the control.

He was on the organizing committee of the International Colloquium on Mars, some of the results of which are presented in this issue of ICARUS. He was unable to attend the meeting however because of his passionate interest in investigating the microbiota of Antarctica and using such studies to calibrate the detectivity of possible Martian microorganisms.

There is on Mars a large unnamed crater at latitude  $76.5^{\circ}\text{S}$ , longitude  $276^{\circ}\text{W}$ , almost exactly at the latitude that Wolf fell to his death on the planet Earth. I have proposed to the Martian Nomenclature Subcommittee of the International

Astronomical Union that this crater be named Vishniac, and I hope this small memorial can be implemented.

Wolf's entire scientific life from about 1960 was oriented towards what is now the Viking landing mission on Mars in the summer of 1976. He was a leading member of the Lander biology team, and it is difficult to believe that he will not be with us then. But I think his spirit will stalk the halls of JPL, and his scientific example will be before us all, in July of 1976.