SPACE BIOLOGI EXITING KNOWLEDGE
AND PROBLEMS x)
by. R. C von SORSTEL xx)

Space research can always be justified simply on the basis of the knowladge we expert to gain on the nature of the universe. The knowladge gained will be Principally in the fields of astrophysies, meteorology, geology, and biology. The field of biology in space research can be separated into three categories: interaction of living material with the space enviroment the search for extraterestrial life, and interstellar communication

Whem the living organism interacts with the space enviroment, several space-flight factors are encountered. These are principally weightlessness, cosmic radiations, and the vibrations and accelerations associated with launching and re-entry into the terrestrial atmosphore. weightlessness excerts certain effects on the cardiovascular system and bones. The heart does not have to work as hard and it become "deconditioned" the bones become deminecralized. At the cellular level, weightlessness appears to disrupt some of the cell division processes The vibrations assiciated with launching and re-entry appear to induce chromosome breakage and possibly other genetic defects. Evidence has been pressented that space-flight factors acts synergetically and antagonistically with.

radiation to enchance chronosome breakage and reduce gene ratation frequencies.

The search for extraterrestrial life is bound closely to the problems of origins of life and of detection of signs of life,There is still a controversy over whether signs of life can be detected in carbonaceous meteorites. Mars is regarded as the best candidate besides earth for being a life - supporting planet in our solar system. Programs are already being organized to search for life there between 1969and 1973. Two considerations are that we neither Wish to contaminate Mars with life from earth, nor wish to start a plague with living material imported from Mars.

Interstellar communication with intelligent beings in other solar system is now technically feasible. The uncertainty remains whether advanced civilization exist elsewhere in the galaxy . One cannot oven guess at probabilities now since there is no knowledge of a general biology that extends beyond the earth itself.

---

x) Lecture presented at the N.B.I Sept.30,1967 1967

xx) Oak Ridge National Laboratory, Oak Ridge, Tennessce, U. S. A.