

POLICY RESOLUTION CONCERNING QUARANTINE OF MATERIALS OF
PLANETARY ORIGIN

WHEREAS

- A. The technological capability for roundtrip space missions may be achieved by this and several other nations within the next ten to twenty years.
- B. Such return missions from other planets may allow for the implantation on the earth of organisms whose biological capacities are at present unknown.
- C. Such organisms may include many types unable to survive on earth, or having a neutral ecological value, or even of important benefit to industry, agriculture or medicine; however, they may also include types that might be seriously deleterious to the health of economy of man. (Footnote)
- D. The protection of public health and the maintenance of agricultural quarantines are presently within the jurisdiction of several national agencies which have had considerable experience and expert knowledge in dealing with related problems; however, they have not evidently actively concerned themselves with the impending problems of planetary quarantine.
- E. Policy on space missions, as it concerns the activities of other sovereignties and the welfare of all people, must involve our international relations. In due course, the World Health Organization will inevitably take an interest in interplanetary quarantine, and other organs of the United Nations may also be expected to do so. The United States should take statesmanlike leadership in such an area, rather than be made to seem to comply reluctantly with the pressure of external opinion.
- F. The development of sound policy on interplanetary quarantine has important implications for the planning of future space missions. On the other hand, present scientific knowledge limits the reliability of any conclusions, and must be exploited to the fullest possible extent.
- G. The National Aeronautics and Space Administration has primary operational responsibility for space science and exploration; however, it cannot be expected to take responsibility for policy questions primarily concerned with public health.

- H. Although one or more decades may elapse before return vehicles actually can function, considerable time is needed for the assessment of policy, for planning space missions, and for intercurrent research.

THEREFORE BE IT RESOLVED by the Space Science Board of the National Academy of Sciences that the following recommendations be transmitted to the Administrator of the National Aeronautics and Space Administration.

1. That he join with the Surgeon-General of the United States Public Health Service in establishing an inter-agency committee on interplanetary quarantine, with representation from such agencies as National Aeronautics and Space Administration, the Public Health Service, Department of Agriculture, Department of Defense (Biological Warfare Defense), Department of State, and others; that this committee be charged with the formulation and timely review of a national policy on interplanetary quarantine; and the committee be advised by experts in the various relevant sciences from within the agencies and from civil life.
2. That the requisite organization be established within the National Aeronautics and Space Administration to represent it in the formulation and administration of policy in space biology, and to develop the research programs that are therefore urgently needed.

Footnote

While many scientists have already concluded that back-contamination is a serious and tangible threat, or should be regarded as such until we can be sure otherwise, others feel that the risks are very small and should be disregarded. Except to report that the magnitude of the risk is at least controversial, we need not anticipate the further findings of the committee whose establishment is being recommended herewith. The main arguments take the following form:

1. Are other planets in fact inhabited by micro-organisms?

The evidence at least for Mars is sufficiently encouraging to warrant substantial effort in constructing experiments to detect life there despite great technical difficulties, however, at least a landing will be required to be sure.

2. Could such organisms grow on earth?

This cannot be predicted in advance. However, many species of terrestrial bacteria would grow on Mars, as far as we can judge by our knowledge of their requirements and of the environment.

3. Could such organisms be harmful to man?

This question elicits the sharpest division of opinion.

Pathogenicity for man on the part of most organisms seems to require the evolution of very elaborate adaptations to allow for transmissions from one infected individual to a new host, and to invade the host tissues despite natural defenses. Microbial pathogenicity would have evolved only in company with quasi-human hosts, and even so ~~would be poorly adapted to attack terrestrial organisms which would be biologically novel for~~ ^{them.} (these pathogens.)

The counterarguments would be that our natural defenses against infection represent our own evolved adaptations against terrestrial bacteria and viruses; they may require the presence of familiar proteins and carbohydrates to recognize the invading organisms as foreign. Planetary organisms with a ~~modified~~ ^{distinctive} chemistry might not be recognized as foreign, and therefore not elicit an adequate response. Furthermore, new organisms might cause serious economic harm even if they are not pathogens for man.