

FOREWORD

The symposium-workshop, "Biologistics for Space Systems," was held in Dayton, Ohio, on 1-3 May 1962, and was sponsored by the 6570th Aerospace Medical Research Laboratories, Aerospace Medical Division, Air Force Systems Command. Colonel Andres I. Karstens, Commander, 6570th Aerospace Medical Research Laboratories, served as Chairman; and Colonel Jos. M. Quashnock, Chief, Biomedical Laboratory, served as Deputy Chairman. The symposium-workshop directors were Dr. Fred W. Berner, Technical Director, Biomedical Laboratory; and Mr. Wayne H. McCandless, Chief, Life Support Systems Laboratory.

Acknowledgment is made on behalf of the 6570th Aerospace Medical Research Laboratories to Brigadier General Benjamin A. Strickland, Jr., Assistant for Bioastronautics, Air Force Systems Command, for presenting the welcoming address; to Brigadier General T.C. Bedwell, Commander, Aerospace Medical Division, for his support, to the speakers and their respective organizations for their response. Their excellent presentations and their fine papers contributed to this report, which is a first effort to organize the information on biologistics for space systems. Special thanks are due the committees and personnel listed below for their efforts toward the successful completion of the presentations and publication of the report.

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ABSTRACT

This report is a compilation of papers presented at the symposium-workshop on Biologistics for Space Systems sponsored by the 6570th Aerospace Medical Research Laboratories, in May 1962. The foundations concerning biologistics for long-term manned space missions are established in the introduction, and the five technical sessions were concerned with selected basic and applied research phases in developing a complete bioregenerating system. The state of the art of algal gas exchange systems was fully covered, followed by the most recent concepts on photosynthetic mechanisms that may be applied to closed ecological systems. The potential use of higher plants in bioregenerating systems, especially as gas exchange mechanisms, their broader use as food supplements, and other possible uses were presented. The regeneration, by aerobic and anaerobic means, of solid and liquid wastes with many potential approaches, such as incineration or storage as applied specifically to closed bioregenerating systems, was presented. The final technical session included six papers on nutritional support from bioregenerating systems. The potential use of selected algae and fungi as nutrient sources was considered, the bioecology of the digestive process was presented, and the specific nutritional value of algae and selected fungi was given.