each society because of its isolation. If man is not to do irrepairable harm to the environment, he must develop a strong rapport with the physical and biological processes that will either influence or be influenced by any intensified development.

The coming years will see a great development in the polar areas, and the most habitable parts of those areas are primarily of the "desert type." The AAAS Committee on Arid Lands has, therefore, arranged a symposium on polar deserts to be held on 29 and 30 December 1971. Participants from Canada and the United States will examine various aspects of the natural environment of polar desert areas—the indigenous people who have inhabited these areas, the economic base for the development of resources, and several of the problems which will confront people moving to those areas.

TERAH L. SMILEY
JAMES H. ZUMBERGE
College of Earth Sciences, University of Arizona, Tucson 85721

Topics and Speakers

Arranged by Terah L. Smiley, Department of Geosciences, and James H. Zumberge, College of Earth Sciences, University of Arizona, Tucson.

29 December

Introduction, James H. Zumberge (Dean, College of Earth Sciences, University of Arizona, Tucson)

Energy and Precipitation Regimes of Ice-Free Areas in Polar Deserts, Mario B. Giovinetto (Associate Professor, Department of Geography, University of California, Berkeley)

Geologic and Geomorphic Processes of Polar Deserts, Troy L. Péwé (Chairman, Department of Geology, Arizona State University, Tempe)

Hydrology of Polar Deserts, Robert S. Sigafoos (Research Botanist, U.S. Geological Survey, Washington, D.C.)

Soils of the High Arctic Landscapes, J. C. F. Tedrow (Professor, Department of Soils and Crops, Rutgers University, New Brunswick, N.J.)

Application of Low Latitude Microbial Ecology to High Latitude Deserts, Roy E. Cameron (Technical Staff, Biosciences Section, Jet Propulsion Laboratory, California Institute of Technology, Pasadena)

Macrobiology and Ecology in Polar Deserts, William S. Benninghoff (Professor, Department of Botany, University of Michigan, Ann Arbor)

Indigenous Peoples of Polar Deserts, Graham W. Rowley (Scientific Adviser, Department of Indian Affairs and Northern Development, Ottawa)

30 December

Processes and Costs Imposed by Environmental Stress, Arlon Tussing (Professor, Institute of Social, Economic, and Governmental Research, University of Alaska, College)

Review of Development of Arctic Resources, John C. Reed (Institute Senior Scientist, Arctic Institute of North America, Washington, D.C.)

Current Aspects of Resource Development, George Jacobsen (Arctic Consultant, Montreal)

Prospects for Future Development, Fred G. Armstrong (Executive Director, New York Academy of Sciences, New York)

Communication and Transportation in the Arctic (the speaker to be announced)

Health and Sanitation Problems in the Arctic, J. W. Grainge, Regional Engineer, and John W. Shaw, Regional Engineer (Public Health Engineering Division, Department of National Health and Welfare, Edmonton)

Behavioral Design of Habitats for Man in Polar Deserts, William M. Smith (Regional Analysis, College of Community Sciences, University of Wisconsin, Green Bay)

27 December

Experimental Manipulations of Natural Systems

Considerable interest is developing in the analysis of natural ecosystems. Research of this scale is not undertaken lightly. Substantial expenditures of time, effort, and monies are required for this form of ecological research. The theoretical base required for the development of relevant and testable hypotheses and the technologies required to evaluate such constructs are receiving more and more attention in several laboratories. The role of experimental manipulations as a mechanism for hypothesis testing in natural ecosystems is increasing in importance.

This symposium is designed to enable a comparison of an array of research programs which have successfully utilized experimental manipulations of natural ecosystem components. Emphasis will be given to the development of the theoretical basis for the specific hypothesis to be tested, the formulation and implementation of the experimental design, the data analysis, and resulting inferences concerning the original hypothesis. The trade off between the specificity of the original hypothesis and the degree of constraint imposed on the behavior of the system is of great importance. The comparative feasibility of manipulations in various ecosystems will be indicated by the distribution of programs represented.

Ivan Valiela and John Teal will discuss their nutrient- and sewage-enrichment experiments in a salt marsh ecosystem at Woods Hole. Paul Dayton will present his experiments of marine benthos manipulations in the Antarctic. Ken Cummins and Robert Boling will present an integrated systems and experimental manipulation approach to the analysis of a temperate woodland stream ecosystem. Robin Vannote will present the experimental stream ecosystem program at the Philadelphia Academy of Science. Dave Schindler will present the experimental eutrophication of lakes with phosphate and nitrate. Herb Bormann will discuss the theoretical developments that have emerged from the Hubbard Brook program. Dan Simberloff will discuss experiments with islands and their insect communities. Dave Reichle and Robert Van Hook will present the design and analysis of a manipulated forest ecosystem at the Oak Ridge National Laboratories.

WILLIAM E. COOPER
Center for Environmental Quality, Michigan State University, East Lansing 48823