GLOBALIZING POLAR SCIENCE
PALGRAVE STUDIES IN THE HISTORY OF
SCIENCE AND TECHNOLOGY

James Rodger Fleming (Colby College) and Roger D. Launius (National Air and Space Museum), Series Editors

This series presents original, high-quality, and accessible works at the cutting edge of scholarship within the history of science and technology. Books in the series aim to disseminate new knowledge and new perspectives about the history of science and technology, enhance and extend education, foster public understanding, and enrich cultural life. Collectively, these books will break down conventional lines of demarcation by incorporating historical perspectives into issues of current and ongoing concern, offering international and global perspectives on a variety of issues, and bridging the gap between historians and practicing scientists. In this way they advance scholarly conversation within and across traditional disciplines but also to help define new areas of intellectual endeavor.

Published by Palgrave Macmillan:

Continental Defense in the Eisenhower Era: Nuclear Antiaircraft Arms and the Cold War
By Christopher J. Bright

Confronting the Climate: British Airs and the Making of Environmental Medicine
By Vladimir Jankovic

Globalizing Polar Science: Reconsidering the International Polar and Geophysical Years
Edited by Roger D. Launius, James Rodger Fleming, and David H. DeVorkin
Globalizing Polar Science

Reconsidering the International Polar and Geophysical Years

Edited by
Roger D. Launius,
James Rodger Fleming,
and
David H. DeVorkin
# Contents

*List of Illustrations*  ix  
*List of Contributors*  xi  
*Permission*  xiii

Introduction
Rise of Global Scientific Inquiry in the
International Polar and Geophysical Years  1  
*Roger D. Launius, James Rodger Fleming, and David H. DeVorkin*

## Part One Meanings, Interpretations, and Historiography

Chapter 1
A Polar Perspective 13  
*Michael Aaron Dennis*

Chapter 2
*Marc Rothenberg*

Chapter 3
Publishing Arctic Science in the Nineteenth Century:
The Case of the First International Polar Year 37  
*Philip N. Cronenwett*

Chapter 4
Toward the Poles: A Historiography of Scientific Exploration during the International Polar Years and the International Geophysical Year 47  
*Roger D. Launius*
Part Two  National Case Studies

Chapter 5
Going Global in Polar Exploration: Nineteenth-century American and British Nationalism and Peacetime Science 85
*Christopher Carter*

Chapter 6
Swedish Polar Policies from the First International Polar Year to the Present 107
*Lisbeth Lewander*

Chapter 7
The Polar Years and Japan 123
*William R. Stevenson III*

Chapter 8
China and the International Geophysical Year 143
*Zuoyue Wang and Jiuchen Zhang*

Part Three  Networked Personalities and Programs

Chapter 9
Approaching the Southern Hemisphere: The German Pathway in the Nineteenth Century 159
*Cornelia Lüdecke*

Chapter 10
Sydney Chapman: Dynamo behind the International Geophysical Year 177
*Gregory A. Good*

Chapter 11
Lloyd Berkner and the International Geophysical Year Proposal in Context: With Some Comments on the Implications for the Comité Spécial de l’Année Géophysique Internationale, CSAGI, Request for Launching Earth Orbiting Satellites 205
*Allan A. Needell*

Chapter 12
Polar and Global Meteorology in the Career of Harry Wexler, 1933–62 225
*James Rodger Fleming*

Part Four  National Roles for International Science: Quests and Questions in the International Geophysical Year

Chapter 13
Science, Environment, and Sovereignty: The International Geophysical Year in the Antarctic Peninsula Region 245
*Adrian Howkins*
Chapter 14
The International Geophysical Year in Antarctica: A Triumph of “Apolitical” Science, Politics, and Peace 265
_Dian Olson Belanger_

Chapter 15
Tracking Diplomacy: The International Geophysical Year and American Scientific and Technical Exchange with East Asia 279
_Teasel Muir-Harmony_

Chapter 16
Geodesy, Time, and the Markowitz Moon Camera Program: An Interwoven International Geophysical Year Story 307
_Steven J. Dick_

Part Five  Legacies of Global Science: Space Science, Anthropology, and Earth Science

Chapter 17
The International Geophysical Year and Planetary Science 331
_Erik M. Conway_

Chapter 18
Polar Politics, Historical Narratives, and Saami Prehistory 343
_Noel D. Broadbent_

Chapter 19
Stratospheric Ozone Depletion and Greenhouse Gases since the International Geophysical Year: F. Sherwood Rowland and the Evolution of Earth Science 355
_Dasan M. Thamattoor_

_Index_ 373
Illustrations

1.1 Image of the Nike-Ajax on display at the National Air and Space Museum’s Udvar Hazy Center, Chantilly, Virginia 14
1.2 The logo of the International Geophysical Year, 1957–58 15
1.3 The logo of the International Polar Year, 2007–08 18
2.1 The 1842 voyage of the French vessels Astrolabe and Zélee toward Antarctica is depicted from *Voyage au pole sud et dans l’Océanie* (1842) as they encounter an ice field 25
2.2 The scientific stations established during the first International Polar Year 27
4.1 Image from *The South Pole* (1913) by Roald Amundsen 48
4.2 A trail through the ice serving as the gangway to the research vessel *Gauss* 54
4.3 Portrait of Ernest H. Shackleton in *The Heart of the Antarctic*, Volume I (1909), by E.H. Shackleton 60
5.1 Moonlight in the Arctic regions; published in *The Voyage of the Fox: A Narrative of the Discovery of the Fate of Sir John Franklin* (1860), by Captain F.L. McClintock 97
6.1 Satellite image from Terra of portions of Spitsbergen was taken on July 12, 2003 110
6.2 Norwegian explorer Fridtjof Nansen who undertook several expeditions into the Arctic, including a 1893 expedition to drift to the North Pole in the ship, *Fram* 113
6.3 Sir Edmund Hillary after accompanying the first plane to land at the American station at Marble Point during the International Geophysical Year 117
7.1 The crew of the Mt. Fuji observatory during the second International Polar Year, August 28, 1932 124
7.2 Members of the Japanese Syowa Station Wintering Party aboard *Sōya* in 1958 after the ship rescued Nishibori and the others from Syowa Base 129
7.3 Raising of the Japanese flag on June 3, 1958, along with the pets of the men at the Syowa Station 136
9.1 The Antarctic map of Georg Balthasar von Neumayer in 1872
9.2 First German balloon ascent on March 29, 1902, in front of the research vessel Gauss, trapped in sea ice at Kaiser Wilhelm II Land
9.3 Dr. Georg Neumayer (winter 1872), later director of the Deutsche Seewarte (German Maritime Observatory)
9.4 Erich von Drygalski, leader of the first German South Polar Expedition (1901–03)
10.1 British scientist Sidney Chapman
10.2 Sydney Chapman explaining a key point in science.
10.3 Sydney Chapman doing what he did best, sharing his vision of science in an inviting, humorous manner.
12.1 Harry Wexler, 1911–1962
12.2 Visitors and some participants in the 1950 ENIAC computations
12.3 Harry Wexler in Antarctica, 1957
13.1 The territorial claims of Antarctica as defined in 2002
13.2 Map of the continent of Antarctica
14.1 Aerial view of the first permanent station built at the South Pole, taken on December 4, 1956
14.2 Wilkes Station was built by the United States for the International Geophysical Year
14.3 The South Pole Station in 1957
14.4 Overhead aerial view of the Amundsen-Scott South Pole Station, Antarctica, taken in 1983
16.1 Schematic view of the dual-rate camera built by William Markowitz
16.2 William Markowitz and his Moon Camera
16.3 Locations of the Markowitz Moon Camera during the International Geophysical Year
17.1 Montage of the planets and four large moons of Jupiter in our solar system is set against a view of the Rosette Nebula
18.1 A Saami family in Norway
19.1 The broad, white expanse of East Antarctica has a sameness that can make it hard to distinguish the permanent coastline of the continent
19.2 Notes made by Sherwood Rowland in January 1972 regarding James Lovelock’s data
19.3 A NASA instrument that detected an Antarctic ozone “hole” three times larger than the entire land mass of the United States—the largest such area ever observed
Contributors

Dian Olson Belanger, independent scholar, is the author of *Deep Freeze: The United States, the International Geophysical Year, and the Origins of Antarctica’s Age of Science* (University Press of Colorado, 2006).

Noel D. Broadbent is an archaeologist and anthropologist at the National Museum of Natural History, Smithsonian Institution.

Christopher Carter is an independent scholar who studies geophysical sciences in the early modern period.

Erik M. Conway is a historian at the Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California.

Philip N. Cronenwett is a special collections librarian *emeritus* at Dartmouth College.

Michael Aaron Dennis is an independent scholar who is involved in the study of cold war science and technology.

David H. DeVorkin is a senior curator at the National Air and Space Museum, Smithsonian Institution.

Steven J. Dick is the former chief historian for the National Aeronautics and Space Administration.

James Rodger Fleming is Professor of Science, Technology and Society at Colby College, Maine.

Gregory A. Good is Director, Center for History of Physics, at the American Institute of Physics.

Adrian Howkins is Assistant Professor of History, Colorado State University.

Roger D. Launius is a senior curator at the National Air and Space Museum, Smithsonian Institution.

Cornelia Lüdecke is Professor of Geography at the University of Munich, Germany.
Lisbeth Lewander is Associate Professor of political science at Gothenburg University, Sweden.

Teasel Muir-Harmony is a Ph.D. candidate in science and technology studies at the Massachusetts Institute of Technology.

Allan A. Needell is a curator at the National Air and Space Museum, Smithsonian Institution.

Marc Rothenberg is agency historian for the National Science Foundation.

William R. Stevenson III is a Ph.D. candidate in modern Japanese history at the University of Hawaii at Manoa.

Dasan M. Thamattoor is associate professor of chemistry at Colby College, Maine.

Zuoïue Wang is associate professor of history, California State Polytechnic University.

Jiuchen Zhang is associate professor, Institute for the History of Natural Science, Chinese Academy of Sciences.
Permission

This material is based upon work supported by the National Science Foundation under Grant No. 0646619.