

**Hermann von
Helmholtz and
the Foundations
of Nineteenth-
Century Science**

CALIFORNIA STUDIES IN THE HISTORY OF SCIENCE

J.L. HEILBRON, Editor

The Galileo Affair: A Documentary History, edited and translated by Maurice A. Finocchiaro

The New World, 1939–1946 (A History of the United States Atomic Energy Commission, volume 1), by Richard G. Hewlett and Oscar E. Anderson, Jr.

Atomic Shield, 1947–1952 (A History of the United States Atomic Energy Commission, volume 2), by Richard G. Hewlett and Francis Duncan

Atoms for Peace and War, 1953–1961: Eisenhower and the Atomic Energy Commission (A History of the United States Atomic Energy Commission, volume 3), by Richard G. Hewlett and Jack M. Holl

Lawrence and His Laboratory: A History of the Lawrence Berkeley Laboratory, Volume 1, by J.L. Heilbron and Robert W. Seidel

Scientific Growth: Essays on the Social Organization and Ethos of Science, by Joseph Ben-David, edited by Gad Freudenthal.

Physics and Politics in Revolutionary Russia, by Paul R. Josephson

From c-Numbers to q-Numbers: The Classical Analogy in the History of Quantum Theory, by Olivier Darrigol

The Quiet Revolution: Hermann Kolbe and the Science of Organic Chemistry, by Alan J. Rocke

Hermann von Helmholtz and the Foundations of Nineteenth-Century Science, edited by David Cahan

**Hermann von
Helmholtz and
the Foundations
of Nineteenth-
Century Science**

**Edited by
David Cahan**

University of California Press
Berkeley / Los Angeles / London

University of California Press
Berkeley and Los Angeles, California

University of California Press
London, England

Copyright ©1993 by The Regents of the
University of California

Library of Congress Cataloging-in-Publication
Data

Hermann von Helmholtz and the foundations of
nineteenth-century science / edited by David
Cahan.

p. cm. — (California studies in the
history of science ; 12) Includes
bibliographical references and index.

ISBN 978-0-520-08334-9 (alk. paper)

1. Helmholtz, Hermann von, 1821-1894.
2. Science—History—19th century.
3. Scientists—Germany—Biography.
4. Physiologists—Germany—Biography.

I. Cahan, David. II. Series.

Q143.H5H47 1994

509.2—dc20

[B]

92-16285

CIP

Printed in the United States of America

11 10 09 08 07

9 8 7 6 5 4 3

The paper used in this publication meets the
minimum requirements of ANSI/NISO Z39.48-1992
(R 1997) (*Permanence of Paper*). ☺

“Ich bewundere den originellen,
freien Kopf Helmholtz].
immer mehr.”

Albert Einstein, August 1899

This page intentionally left blank