Publisher’s description: This book explores the rise of theoretical physics in 19th century Germany. The authors show how the junior second physicist in German universities over time became the theoretical physicist, of equal standing to the experimental physicist. Gustav Kirchhoff, Hermann von Helmholtz, and Max Planck are among the great German theoretical physicists whose work and career are examined in this book.

Physics was then the only natural science in which theoretical work developed into a major teaching and research specialty in its own right. Readers will discover how German physicists arrived at a well-defined field of theoretical physics with well understood and generally accepted goals and needs. The authors explain the nature of the work of theoretical physics with many examples, taking care always to locate the research within the workplace.

The book is a revised and shortened version of [Intellectual mastery of nature. Theoretical physics from Ohm to Einstein. Chicago, IL: University of Chicago Press (1986; Zbl 1181.01032; 1990; Zbl 1181.01033)], a two-volume work by the same authors. This new edition represents a reformulation of the larger work. It retains what is most important in the original work, while including new material, sharpening discussions, and making the research more accessible to readers. It presents a thorough examination of a seminal era in physics.

MSC:
01-02  Research exposition (monographs, survey articles) pertaining to history and biography
00A79  Physics
01A55  History of mathematics in the 19th century
01A70  Biographies, obituaries, personalia, bibliographies
70-03  History of mechanics of particles and systems
81-03  History of quantum theory
81P10  Logical foundations of quantum mechanics; quantum logic (quantum-theoretic aspects)

Keywords:
scientific specialization; German universities; history of physics; Woldemar Voigt; Franz Neumann; Ludwig Boltzmann; Hermann von Helmholtz; Georg Simon Ohm; Max Planck; history of theoretical physics; Albert Einstein; Carl Friedrich Gauss; Gustav Kirchhoff; nineteenth century physics; mathematical physics; Rudolf Clausius; theoretical physics; Wilhelm Weber; classical physics; methods of theoretical physics

Biographic references:
Kirchhoff, Gustav; von Helmholtz, Hermann; Planck, Max

Full Text: DOI