

Die Fortschritte Der Physik Volume 45 Issue 3

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Die Fortschritte Der Physik, Volume 45

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Fortschritte der Physik / Progress of Physics. Volume 32, Number 3

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*, 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.

Fortschritte der Physik / Progress of Physics. Volume 32, Number 1

Johann Bode developed a so-called law of planetary distances best known as Bode's Law. The story of the discovery of Juno in 1804 by Karl Harding tells how Juno fit into that scheme and is examined as it relates to the philosopher Georg Hegel's 1801 thesis that there could be no planets between Mars and Jupiter. By 1804 that gap was not only filled but had three residents: Ceres, Pallas and Juno! When Juno was discovered no one could have imagined its study would call into question Newton's law of gravity, or be the impetus for developing the mathematics of the fast Fourier transform by Carl Gauss. Clifford Cunningham, a dedicated scholar, opens to scrutiny this critical moment of astronomical discovery, continuing the story of asteroid begun in earlier volumes of this series. The fascinating issues raised by the discovery of Juno take us on an extraordinary journey. The revelation of the existence of this new class of celestial bodies transformed our understanding of the Solar System, the implications of which are thoroughly discussed in terms of Romantic Era science, philosophy, poetry, mathematics and astronomy. The account given here is based on both English and foreign correspondence and scientific papers, most of which are translated for the first time.

The Second Physicist

This book offers an in-depth technical presentation of photography and details about the inner workings of the digital camera, while keeping the artistic principles in mind. Departing from the current stream, the book treats photography as a highly scientific and technical subject, and serves as a reference to those who seek for an understanding of the technical aspects relating to the photographic camera, the beating heart of photography. It offers insight on why the photographs are created the way they are, highlighting also the limitations. As the author of this book is an image technology scientist and a photography enthusiast who has been teaching photography for a long time, this treatise reflects his own constant search and study for an in-depth understanding.

Fortschritte der Physik / Progress of Physics. Volume 32, Number 12

Christina Jungnickel and Russell McCormmach have created in these two volumes a panoramic history of German theoretical physics. Bridging social, institutional, and intellectual history, they chronicle the work of the researchers who, from the first years of the nineteenth century, strove for an intellectual mastery of nature. Volume 1 opens with an account of physics in Germany at the beginning of the nineteenth century and of German physicists' reception of foreign mathematical and experimental work. Jungnickel and McCormmach follow G. S. Ohm, Wilhelm Weber, Franz Neumann, and others as these scientists work out the new possibilities for physics, introduce student laboratories and instruction in mathematical physics, organize societies and journals, and establish and advance major theories of classical physics. Before the end of the nineteenth century, German physics and its offspring, theoretical physics, had acquired nearly their present organizational forms. The foundations of the classical picture of the physical world had been securely laid, preparing the way for the developments that are the subject of volume 2.

Fortschritte der Physik / Progress of Physics. Volume 34, Number 6

Consists of papers contributed to various astronomical journals and societies, annual reports of the Director, and special circulars and announcements issued by the Observatory

Fortschritte der Physik / Progress of Physics. Volume 32, Number 6

An examination of the sources Helmholtz drew upon for his formulation of the conservation of energy and the impact of his work on nineteenth-century physics. In 1847, Herman Helmholtz, arguably the most important German physicist of the nineteenth century, published his formulation of what became known as the conservation of energy--unarguably the most important single development in physics of that century, transforming what had been a conglomeration of separate topics into a coherent field unified by the concept of energy. In *Helmholtz and the Conservation of Energy*, Kenneth Caneva offers a detailed account of Helmholtz's work on the subject, the sources that he drew upon, the varying responses to his work from scientists of the era, and the impact on physics as a discipline. Caneva describes the set of abiding concerns that prompted Helmholtz's work, including his rejection of the idea of a work-performing vital force, and investigates Helmholtz's relationship to both an older generation of physicists and an emerging community of reformist physiologists. He analyzes Helmholtz's indebtedness to Johannes Müller and Justus Liebig and discusses Helmholtz's tense and ambivalent relationship to the work of Robert Mayer, who had earlier proposed the uncreatability, indestructibility, and transformability of "force." Caneva examines Helmholtz's continued engagement with the subject, his role in the acceptance of the conservation of energy as the central principle of physics, and the eventual incorporation of the principle in textbooks as established science.

Bode's Law and the Discovery of Juno

"A masterly assessment of the way the idea of quanta of radiation became part of 20th-century physics. . . . The book not only deals with a topic of importance and interest to all scientists, but is also a polished literary work, described (accurately) by one of its original reviewers as a scientific detective story."—John Gribbin, *New Scientist* "Every scientist should have this book."—Paul Davies, *New Scientist*

Fortschritte Der Physik / Progress of Physics. Volume 31, Number 6

The *New Yearbook for Phenomenology and Phenomenological Philosophy* provides an annual international forum for phenomenological research in the spirit of Husserl's groundbreaking work and the extension of this work by such figures as Scheler, Heidegger, Sartre, Levinas, Merleau-Ponty and Gadamer.

Foundations of Photography

Intellectual Mastery of Nature. Theoretical Physics from Ohm to Einstein, Volume 1