
Nineteenth-Century Spectroscopy: Development of the understanding of spectra (1802-1897).

William McGucken. Johns Hopkins Press, Baltimore, Md. 1969. xiv+233 p. \$11.00.

Writing in the beginning of this century, John Theodore Merz established quite clearly that science in the nineteenth century was marked by certain "national" themes. McGucken, in this survey of nineteenth-century spectroscopy, has provided, in one sense, a brilliant case study which serves to bolster Merz's thesis. The struggle to understand spectra became, at one point, a battle where the arguments fell along national lines. However, there is far more than this in the book, and the substance of this history is much broader than a casual reading of the title alone might suggest.

Interpretation of and theorization about the meaning of Fraunhofer lines has to be intimately related to what one thinks about the nature of atoms and molecules. The nineteenth century (contrary to the myth about the immediate acceptance of Dalton's atomic theory) was a period of uncertainty and doubt about matters atomic, and the final understanding of spectra is intimately bound, as McGucken shows, to atomic theories.

McGucken's narrative begins in 1802, with the observations by William Hyde Wollaston of dark lines in solar spectra, and concludes in 1897, with the discovery of the electron by J. J. Thomson. Between those years lie the intellectual adventures of Robert Bunsen and Gustav Kirchhoff, of Norman Lockyer, of Ångström, of J. J. Balmer, of the team of Runge and Kayser, of Maxwell, and of Boltzmann, to name just a few. Lest this list create a wrong impression, this book is in no sense a pastiche of "potted" biographies, but, instead, a real attempt to enter into the development of spectroscopy. McGucken says in his introduction that he endeavored "to go to the root or roots of each development," and he has succeeded admirably. The book should be required reading for spectroscopists, for physicists, and for anyone with an interest in nineteenth-century physical science.

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Enrico Fermi, Physicist. *Emilio Segrè.* University of Chicago Press, Chicago. 1970. xi+276 p. \$6.95.

When Fermi died in 1954, at the early age of 53, regret at his passing was widespread. For one thing, on his death the world lost an incomparable physicist with a sense of style, and with a verve and grace that are seldom encountered. Segrè, himself a Nobellist in physics, first a pupil and then a friend and colleague of Fermi, in 1962 edited Fermi's collected papers. This biography rounds out the notes in that edition. Segrè is a sensitive biographer, responsive to all problems that can plague the creative scientist; he shows, above all, Fermi's dedication, zeal, and extraordinary talents.

Segrè has provided more than sympathy. Much that is new about Fermi's youth in Italy appears here; appended are letters written by Fermi to Enrico Persico, Fermi's Nobel address (available elsewhere, as well), and a reprinting from *Physics Today* of Fermi's last address to the American Physical Society. There follows a bibliography of Fermi's publications, and an index to the biography. This index is the least satisfactory part of an otherwise very rewarding book. No doubt being able to browse in it might produce a remarkable galaxy of names from the glorious days of physics, unfortunately the type face is so minuscule that all that emerges from the gray pages is that there is, indeed, an index. Publishers who insist on such a type size should be required by law to provide a pocket magnifier with each book for those readers whose eyes have grown dim in the service of science.

Every physicist will want to read this biography, along with every reader who has an interest in intellectual developments during the 1920-1960 era.

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