

monotonically building up in almost all countries.

Davis's book throws no light on the social and political forces that were at work during these years, but the book can, perhaps, lead people to reflect on these forces and to wonder once again at the complex interactions between individuals and history.

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The reviewer, brother of the late J. Robert Oppenheimer, is on leave of absence from the University of Colorado where he is a professor of physics.

In the tradition of Enrico Fermi

ADVANCED QUANTUM MECHANICS,
By Jun J. Sakurai. 336 pp. Addison-Wesley, Reading, Mass., 1967. \$15.00

by Henry S. Valk

In the past few years there has been a multitude of books on quantum mechanics and field theory, and it might be thought that there is little need for yet another. However, as Jun J. Sakurai's recent work shows, there is always a place for good physical discussions of the subject. This text is an attempt to provide graduate students with an introduction to the recent (since 1927) advances in quantum physics and is an outgrowth of lectures that Sakurai gave in the third quarter of a required three-quarter quantum-mechanics course at the University of Chicago. If one is to judge by his text, the author has followed in the tradition of Enrico Fermi's lectures at the same institution: The basic theory is presented in a straightforward fashion with an emphasis not on the most elegant but on the most physical approach to each topic. The result is a book that can be read with profit by either second-year graduate students or professional physicists.

The subject matter, the quantum theory of radiation, Dirac theory and the covariant formulation of quantum electrodynamics, is divided into four chapters. The first chapter introduces the reader to basic aspects of classical field theory. This is followed by a chapter on the quantization of the radiation field. Here Sakurai pursues the traditional approach of Fermi and Heitler rather than the usual methods of Bleuler and Gupta. Most physicists find the Bleuler-Gupta formalism more intellectually satisfying because

it exposes the relativistic aspects of the problem in a simple manner. I must admit, however, that the author has a point when he remarks that the simplicity of the Bleuler-Gupta approach is offset for the beginner by the corresponding necessity of introducing concepts such as the indefinite metric and negative probabilities. The third chapter is an exposition of the relativistic quantum mechanics of spin-1/2 particles; the Dirac wave equation, *Zitterbewegung*, the inadequacy of the one-particle interpretation, and the quantization of the Dirac field are all here, but developed with especial emphasis on symmetry principles. The final chapter (comprising nearly half of the book) concerns the covariant description of the interaction of photons and electrons. Again the material is treated in the traditional manner.

The problems (47 of them) and examples spread throughout the text amply illustrate the physical principles and provide the reader with a continuing test of his understanding. The only real annoyance in the book is one common to many first editions, namely that of misprints and typographical errors. One of the most glaring of these mistakes is "communication" for "commutation," on pages 24 and 28.

Although the adherence to the conventional may disappoint some readers, I must confess that I found it refreshing to discover a book without a new "gimmick." In a time when so many authors feel the need for such devices to justify their efforts, Sakurai and his publishers deserve congratulations for having produced a direct and eminently readable account of what every young (and old) physicist should know.

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"Warfare for science"

THE GERMAN ATOMIC BOMB. By David Irving. 397 pp. Simon & Schuster, New York, 1967. \$16.95

by Joseph J. Ermenc

This book appeared in 1967 as a British importation entitled *The Virus House*. This title indicates the "cover"

name for the small wooden laboratory on the grounds of the Kaiser Wilhelm Institute of Biology and Virus Research at Berlin-Dahlem where some experiments were directed toward achieving a self-sustaining nuclear reactor. The code name of the laboratory was intended to mislead and keep away unwanted visitors, and its use as a title of a book evidently accomplished a similar objective for prospective readers in the US; hence its reappearance under a more interesting title, with minor changes in the text and photograph format. This title, however, will be considered misleading by many readers as there was no German Atomic Bomb Project.

In general, this is a very interesting and detailed account of the simulta-



WERNER HEISENBERG

neous development of nuclear science and nuclear technology in Nazi Germany between 1939 and 1945. It should be interesting to the nuclear expert as well as the layman conversationalist looking for new facts and controversial conclusions.

The research for the book has been exhaustive. Indeed, two of the leading characters in this absorbing narration, Werner Heisenberg and Paul Harteck, with whom I discussed parts of *The Virus House*, have said that it is factually correct; but they were not in agreement with the author's conclusions. My feeling is that many of the conclusions are premature. One finds that the conclusions do give the story a dramatic quality, which does a lot to