particular phenomenon — for example, the collapse of the orbit of an excited electron, or the Z-dependence of energy separations. Perhaps this is no bad thing, for applications abound in the readily available literature, and their exposition in this book would have simply added to its size.

Theorists will therefore find this book to be of much greater direct use than will experimentalists, though the latter scientists will gain much insight from the author's clear presentation. It is a valuable reference text for the many matrix element expressions which are not otherwise brought together in a single source. The layout of the book is clear and attractive. Most of the chapters are of the order of 10 – 15 pages so that the material, which is often regarded as heavy-going, is in fact very digestible.

We have waited many years for the circumstances to be right for this book's production. It is a very welcome addition to the literature.

A HIBBERT
(Queen's University, Belfast, UK)

Nuclear Magnetic Resonance and Relaxation
By BRIAN COWAN

1997, £60.00, US$95.00 (hbk) pp. xxiii+ 434. Cambridge University Press, ISBN 0 521 30393 1. Scope: monograph. Level: postgraduate.

My first impression of this book was that it had been written twenty years ago, and more detailed study seemed to confirm this. Despite the title this is not a general description of NMR, or even of NMR relaxation; instead it concentrates on a small number of topics, mostly involving dipolar interactions between pairs of spin-$\frac{1}{2}$ nuclei. Other spin interactions, such as chemical shifts, scalar couplings and quadrupolar couplings, which play a central role in modern NMR, are almost completely ignored, while only the very simplest pulse sequences are discussed. Few topics treated are of much contemporary interest, and there are many more references to research from the fifties than to research from the nineties.

Within this extremely limited range Cowan's treatment is reasonably good. The experienced reader will find many of the explanations to be long and over laboured, but most students will find this preferable to the lightning fast treatments in many competing texts. The narrow range of topics addressed permits Cowan to discuss each one in great detail, often approaching a problem from several different directions. Unusually for a text at this level he includes an extensive discussion of experimental methods for observing NMR signals. While this is an excellent idea in principle, the value of this section would be greatly increased if the details described were not twenty years out of date.

The final chapter of the book is an elementary treatment of NMR imaging techniques, perhaps because imaging is the only 'modern' NMR application which can be adequately treated at the level of the rest of the book. This chapter is significantly more up to date than the rest of the book, although the emphasis remains on the fundamentals of the topic rather than on modern practice.

To summarise, this book will be of some value to postgraduate physics students seeking a detailed explanation of some of the fundamentals of NMR. It would, however, be essential to read other texts to gain some idea of the scope and excitement of modern NMR research.

J.A. JONES
(University of Oxford, UK)

Nuclear Condensed Matter Physics
By G. SCHATZ and A. WEIDINGER

1996, £50.00 (hbk), pp. x+ 280. John Wiley & Sons, ISBN 0 471 95479 9. Scope: monograph. Level: postgraduate and specialist.

The title '*Nuclear Condensed Matter Physics*' is intriguing because nuclear physics and condensed matter physics are generally regarded as two distinct fields of study. Nuclear physics is concerned with the structure and properties of atomic nuclei while in condensed matter physics the nucleus is usually treated as a simple charged particle. However, a variety of experimental methods, developed in nuclear physics and using nuclear physics probes, are increasingly being used in the study of purely condensed matter properties. This is the definition of Nuclear Condensed Matter Physics and what a rich field it has become! This book of nearly 300 pages provides the first comprehensive description of the wide array of such methods and their applications to condensed matter physics. Originally written in German, this is an English translation of the enlarged second German edition, published in 1992.

The different methods are discussed in separate chapters and they include the Mossbauer Effect of recoilless emission and absorption of gamma-rays, the Perturbation of gamma-gamma Angular Correlations (PAC), Nuclear Magnetic Resonance (NMR), Nuclear Orientation (OR), Neutron Scattering and Ion Beam Analysis. In most cases, the methods measure the shifts of nuclear energy levels due to hyperfine interactions with the electromagnetic fields in the condensed matter and hence provide information about the condensed matter. The use of exotic elementary-particle probes is also included in chapters on Muon (mu meson) Spin Rotation and Positron (anti-electron) annihilation.

Each chapter carefully describes the principles of the method, the experimental apparatus and then the applica-