ences up to and including 1983. In the retained chapters, new sections on multipulse sequences (INEPT, INADEQUATE and DEPT), spectral editing, and Fourier transformations in two dimensions bring the material more up to date. The content of most of the chapters remains generally similar to that in the first edition. Unfortunately the pages defining the symbols used are absent this time, but a new appendix of building blocks for 2D and multipulse N.M.R. is included which gives a good summary of the effects of the various pulses and time delays discussed in the main text. The discussion and the examples given are mostly concerned with proton and carbon spectra, but the general principles and techniques can be applied to other nuclei of interest in organometallic chemistry.

Most of the errors in the first edition have been corrected, but they have been replaced by a multitude of new ones ranging from simple typing errors to the duplication (on page 91) of the entire section (on page 90) dealing with difference spectroscopy.

The errors are of the kind which would have been noticed and corrected at the proof stage of a typeset publication, but this book was, unfortunately, produced by the less satisfactory direct reproduction of typescript. While many of the mistakes, particularly those in the running text, are very obvious and so not misleading (e.g. the molecules CFC_3, $PSbl_3$ and Pbl_5 in Fig. 1.1), there are also errors in some of the equations and in the tabulated data. For example, the table of N.M.R. properties of some common nuclei (Table 2.1) contains errors in the columns relating to natural abundance, electric quadrupole moment, nuclear spin and even in columns showing the isotope masses, in which ^{119}Hg and ^{51}Co nuclei (instead of ^{199}Hg and ^{59}Co) are listed, and the entry against ^{199}Hg actually gives data for the ^{195}Pt nucleus. The relative sensitivities derived from the data in the table are presumably also incorrect. The many factual errors in the book mean that the data and equations presented should be checked carefully before use.

In spite of the errors of detail mentioned above, the book gives a clear and readable account of modern techniques, and will be of value to anyone wanting to know more about how Fourier transform N.M.R. spectra are obtained.

School of Chemistry and Molecular Sciences,
University of Sussex, Brighton BN1 9QJ (Great Britain)

PAUL D. LICKISS

Chemistry of the Elements, by N.N. Greenwood and A. Earnshaw, Pergamon Press, Oxford, etc., 1984, xxii + 1542 pages. £19.50, U.S. $ 34.95 (Softback ("Flexicover")) version. ISBN 0-08-022057-6). (A hard cover version is also available: ISBN 0-08-022056-8.)

The appearance of this wholly excellent comprehensive textbook of the chemistry of the elements is greatly to be welcomed. Not the least of the reasons for this is that, in contrast to the textbooks of inorganic chemistry mainly in use today, the emphasis is on the properties and reactions of the elements and their compounds, rather than on current theories, though theory

is used effectively to provide cohesion and structure. Those of us who remember the depressing inorganic textbooks in use up to the 1950's must approach with some apprehension a new treatment which gives priority to the factual basis of the subject, but in my case even a glance through the pages rapidly dispelled my fears, and more careful reading induced enthusiasm and even excitement.

Appropriately for these days, the book deals not only with inorganic chemistry in its narrowest sense, but also with analytical, theoretical, industrial, organometallic and bio-inorganic aspects of its subject. Especially effective are the concise accounts of the industrial applications of inorganic and organometallic compounds, which the authors present after consulting over 500 chemically-based companies about chemicals which they make or use. But the book is much more than the sum of its component parts, good as they are: I find it impossible to define exactly why it is so successful, and I can only say there is an admirable rightness about it, arising from its balance, liveliness, up-to-dateness, and readability.

An appropriate amount of space is devoted to organometallic chemistry. The organic derivatives of the various elements or group of elements are rightly discussed in the sections devoted to those elements, rather than in a separate chapter or chapters, and there is also a clear account, under carbon chemistry, of the types of organic ligands. Since the field covered by the book is so wide, it will inevitably be possible for a reviewer, if he tries hard, to find minor inaccuracies to which he can draw attention. For example, it is stated that organogermanium compounds tend to be not only less thermally stable but also more chemically reactive than their silicon counterparts; in fact, in the important range of reactions involving nucleophilic attack at the metal atom the germanium species are commonly markedly less reactive than their silicon analogues. Again, the authors would have been wise to make a less categorical statement than "There is no tendency (for Ge) to form double bonds by p_π—p_π interaction to C, O, N or any other element."

It is pointless now to try to decide whether the inorganic texts available in my own student days simply reflected the sorry state of inorganic chemistry at the time or actually contributed to it. What is certain is that this new book will contribute importantly to the future development of inorganic and organometallic chemistry by the students who have it available to them. It will deservedly be adopted as the class textbook in many inorganic chemistry degree courses around the world, and where it is not the teachers should certainly have their own copies and ensure that their students have ready access to it. My one complaint is that this book was not published years ago; I should a better chemist if it had been.

School of Chemistry and Molecular Sciences,
University of Sussex, Brighton BN1 9QJ (Great Britain)

COLIN EABORN