drugs, to contribute to the critical assessment of existing knowledge in the topic, to identify the directions for future research and to promote close working relationships between the different countries and professional experiences.

The first paper deals generally with the role of metal complexes in cancer therapy. After some discussion of the development of cisplatin and its direct derivatives, the paper goes on to review other metal complexes, especially those involving ruthenium, gallium, germanium and titanium. A structure–activity relationship of tumour-inhibiting bis(β-diketonato) metal complexes is reviewed.

The second paper deals with tin compounds and their potential as pharmaceutical agents. It starts with a short introduction to the present use of tin compounds and goes on to discuss the use of tin protoporphyrin for the successful treatment of neonatal jaundice. Then follows a discussion of the antitumour properties of tin compounds, their mode of action and their use in photodynamic therapy of cancer. The paper ends with references to other pharmaceutical uses including antiviral agents.

The third paper offers a hypothesis on the role of natural tin hormones in senescence. It attempts to integrate the role of tin compounds as potential therapeutic agents for malignant disease with the ancillary role of endogenous tin in mammalian development and ageing. In the fourth paper a report is made of speciation studies on tin and the bioavailability of tin in biofluids, whilst a fifth paper discusses cellular interaction of organotin compounds in relation to their antitumour activity. The book is completed by three short papers entitled (i) Selectivity of Antiproliferative Effects of Dialkyltin Compounds *in vitro* and *in vivo*, (ii) Computer Assisted Structure–Activity Correlations of Organotin Compounds as Potential Anticancer and Anti-HIV Agents, (iii) Route of Administration as a Determinant of the Tissue Disposition and Effects of TBTO on Cytochrome *P*-450-Dependent Drug Metabolism.

The topics included in this book are wide-ranging and should supply interesting reading to all those engaged in research in the field of tin-based antitumour drugs. The book offers a critical assessment of existing knowledge in this new and important subject.

J S GRAY
Luton College of Higher Education

Transition Metals in Total Synthesis
P J Harrington
Wiley–Interscience, New York, 1990
xvi + 484 pages, £47.50
ISBN 0 471 61300 2

Although the use of transition-metal complexes as reagents for the synthesis of complex organic molecules has provided many important organic transformations of profound synthetic potential, the practising synthetic organic chemist is only now beginning to think about using transition-metal organometallics in synthesis. However, this book should help to further this approach.

The text opens with a brief introduction of the layout of the book which is followed by 14 chapters on syntheses organized according to the metal. Thus Chapters 2 and 3 describe relatively simple organopalladium chemistry (σ-aryls and η^3-allyls), Chapter 4 η^4-diene iron tricarbonyl complexes, Chapter 5 η^3-allyliron tricarbonyl complexes, Chapter 6 iron-stabilized oxallyl cationic complexes, Chapter 7 alkyne cyclotrimerization, Chapter 8 dicobalt octacarbonyl alkyne complexes, Chapter 9 the Khand–Pauson cyclopentenone synthesis, Chapter 10 phthaloyl– and maleoyl–cobalt complexes, Chapter 11 η^6-arenechromium tricarbonyl complexes, and Chapter 12 and 13 pentacarbonylchromium carbene complexes and titanium carbene complexes respectively, providing a nice comparison of the differing reactivity of these two classes of carbene complexes. Finally, Chapters 14 and 15 describe some advances in transmetallation reactions, increasingly important in carbon–carbon bond formation. Target molecules covered include (±)aurantioclavine, (±)ibogamine, (±)limaspermine, (+)thienamycin, tropane alkaloids, (±)estrone, (±)cyclocolorenone, (±)hirsutic acid C, (±)quadrone, (±)coriolin, (±)acorenone, (±)daunomycinone, (±)-$\Delta^{9(12)}$-capnellane, and prostaglandins.

Each chapter contains a brief introduction to the biological activity and previous synthesis of target molecules, background organometallic chemistry necessary for synthesis, and complete total synthesis of target molecules from commercially available materials.

This text developed from a lecture series on advanced organic synthetic methods will make interesting and informative reading, both for students and research chemists, in an area which is going to become increasingly important. I like the book and can recommend it.

R D W KEMMITT
Chemistry Department,
University of Leicester, UK

The elements their origin, abundance and distribution
P A Cox
Oxford Scientific Publications, Oxford
ISBN 0 19 855298-X

This is an excellent and extremely readable book, for university undergraduate level and above, on how elements are formed in the stars and distributed on Earth.

The first two chapters introduce the subject matter on which the main portion of the book rests. In the first chapter the arrangement of the Periodic Table is explained. The second chapter is devoted to nuclear stability; it is based on a clear explanation of the simple shell model of the nucleus.

The novel information comes in Chapter 3, which describes the composition of the early universe, the formation of hydrogen and the subsequent evolution of the stars, giving a fascinating and explicit account of how the heavier elements are formed from the lighter ones. Other phenomena, such as the formation of supernovae and their effect on the abundance of the elements, are also discussed. Chapter 4 is concerned with how the elements condensed into planets from interstellar dust particles and addresses the question of why the atmosphere of the outer planets is very different from those of the inner planets of our solar system. The distribution of the elements between the core, mantle, crust and ocean of the Earth is the subject matter of Chapter 5. Lastly the importance of the isotopic distribution of the elements is stressed. This arises because firstly the stars produce different proportions of the isotopes and secondly, on Earth, because different isotopes have different half-lives. There is also a useful section on isotopic dating using different elements.

Each chapter contains a useful summary and further reading section, and the Appendix has two helpful tables. The first compares the relative abundance of the elements in the Earth, meteorites, Sun, crust, ocean and human body whilst the second table gives the isotopic composition of each element. The text contains some useful diagrams, particularly those describing the variation in elemental properties with atomic number or group number.

The origin of the elements from the stars is, generally, little incorporated into the syllabus of chemistry degrees, with the result that the Periodic Table of the elements is presented to the students in rather the same way that 'babies are found under the gooseberry bush'. I consider it a matter of some urgency that chemistry students know how the elements are 'born'.

The only serious disappointments are the title and cover, neither of which convey the exciting content of the book, which as discussed is about the elements being formed in the stars.

K HUDDERSMAN
Department of Chemsitry,
Leicester Polytechnic UK