The Chemistry of the Actinide Elements, 2nd edition; edited by J.J. Katz, G.T. Seaborg and L.R. Morss, Chapman and Hall, London, New York, 1986. Volume 1, xii + 886 pages + author and subject index; ISBN 0-412-10550-0. Volume 2, xii + 788 pages + author and subject index; ISBN 0-412-27370-5. £220.00 (for two-volume set).

These two volumes are the second edition of the classic book by Katz and Seaborg, originally published in 1957. However, this is a most singular use of the term 'second edition' – the original book was written entirely by Katz and Seaborg, these volumes are edited by them, and written by thirty-three contributors. This, of course, is a reflection of the burgeoning literature in this area, and the editors and authors (unfortunately too numerous to mention individually here) have performed a Herculean task in producing these invaluable volumes, and there is little doubt that the spirit of the original has been encapsulated.

After a short introduction, Volume 1 contains chapters dedicated to actinium (27 pages; 190 refs.), thorium (61 pages; 549 refs.), protactinium (67 pages; 484 rfs.), uranium (274 pages; 799 refs.), neptunium (56 pages; 248 refs.), and plutonium (388 pages; 1416 refs.). Volume 2 continues the element-by-element treatment with chapters devoted to americium (75 pages; 370 refs.), curium (27 pages; 177 refs.), berkelium (36 pages; 236 refs.), californium (46 pages; 241 refs.), einsteinium (14 pages, 67 refs.) and the transeinsteinium elements (33 pages; 106 refs.). The contents of both volumes, to this point, are referred to by the editors as Part 1. Part 2 forms the basis of the final eleven chapters of Volume 2, which discuss comparative aspects of the actinide elements, spectra and electronic structures of free actinide atoms and ions, spectra and electronic structure of actinide ions in compounds and in solution, thermodynamic properties, magnetic properties, the metallic state, structural chemistry, solution chemistry and kinetics of ionic reactions, organoactinide chemistry (in two separate chapters, dealing with π-bonded and σ-bonded complexes, respectively), and finally "future" elements (including the superheavy elements). The appendices are devoted to the nuclear spins and moments of the actinides, and the nuclear properties of the actinide nuclides.

This is an expensive and weighty text, and its strengths and weaknesses deserve more than a passing consideration. One of the first thoughts which occurred to me upon examining these volumes was concerning their relationship with Gmelin. Given the intensive publishing program which the Gmelin Institute has devoted to the actinides in the past ten years, is there room or justification for a work of this sort? The answer to this is undoubtedly yes. These volumes complement the Gmelin coverage, the emphasis, even in Part 1, being more on comparative chemistry (either between compounds within a class, or between classes of compounds) — the Gmelin style is to concentrate more on exhaustive coverage of individual compounds. Indeed, the perfect modus operandi for consulting the literature would be firstly to approach Gmelin for specific details of a particular compound, and then to consult these volumes for the correct perspective upon this information. In addition, the splendid reviews to be found in Part 2 have no real counterpart in the Gmelin coverage. Each chapter really is perfectly pitched, and the overall standard of these volumes is amazingly high. Indeed, with the possible exception of 'Comprehensive Organometallic Chemistry', I cannot recall such a well balanced, well written and well constructed multi-author compilation. Although it is invidious to highlight

individual chapters when all achieve such a high standard, the chapter on thermodynamics by Lester Morss reveals remarkable insight, and the chapters by Tobin Marks will obviously hold especial interest for the organometallic chemist. So, what are the weaknesses of these volumes? To my mind, there are two — one minor, one major. The minor point refers to nomenclature. In the introductory chapter (despite Silva's clear statement of the problem in Chapter 13), the editors refer to unnilquadium as rutherfordium and unnilpentium as hahnium — they are fully aware that the nomenclature is sub judice, and it is uncomfortable to see their prejudice appearing in an otherwise superlative text. A more important criticism, however, is the quality of the subject index, upon which much of the value of a work such as this rests. It is both unreliable and cumbersome. To take an example, phthalocyaninato complexes of uranium might be looked up under phthalocyaninato complexes or uranium. Under uranium, we are referred to p. 383–384, under phthalocyaninato complexes to p. 1425, 1427 and 1457, with advice to see also under the names of individual elements. Given that both the subject and author indices occur at end of *each* volume, surely this space could have been more usefully employed in constructing a longer and more detailed subject index, and placing it only at end of Volume 2?

In conclusion, despite the flaws mentioned above, these volumes should be, de rigueur, in all libraries, whether academic, industrial or government controlled, and will become the standard reference work until the end of this century. The production, both of text and illustration, is first class, and the books are a pleasure to handle. Indeed, despite the inevitable high price of such prestigious volumes, I hope that at least a few copies will appear on private bookshelves.

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Landolt–Börnstein Group II Volume 12b. Magnetic Properties of Coordination and Organometallic Transition Metal Compounds, by E. König and G. König. Springer-Verlag, Berlin, 1984, xxxvii + 352 pages, DM 710, ISBN 3-540-13018-7.

This subvolume represents the fourth supplement to the original compilation (volume 2 in this series, published in 1966), and covers mainly the literature of 1973 and 1974. There are about 500 references, covering about 2500 compounds, tabulated in the clear, well-produced manner characteristic of this series. A short introduction covers the basic theory, with additional references to standard texts and theory of electron paramagnetic resonance of transition metal compounds (1973 and 1974).

All workers in this field will wish to have access to this volume and its predecessors. However, it is a pity that more recent data are not already available in this format, as has been achieved in the volume reviewed below.

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