because only Ac precedes Ag, the entries under Ag cover all the silver compounds appearing in the relevant volumes, and by looking through the 100 pages of such entries one can see which silver compounds are included. But when one moves to arsenic, any compounds containing both As and Ag are missing. This means that for inorganic elements later on in the alphabet, the index is useful only to look up specific compounds which one thinks may have been made. It would, of course, involve considerable expense to issue indexes in which each inorganic element in turn appears first in the empirical formula, but the cost of the Gmelin series is so high anyway that the additional extra expenditure in making it more useful would seem justified.

Fortunate inorganic and organometallic chemists who have ready access to the Gmelin Handbook will certainly wish these indexes also to be available to them.

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*Structures versus Special Properties. Structure and Bonding 52*, Springer-Verlag, Berlin, Heidelberg, New York, 1982, vi + 202 pages, DM108. ISBN 3-540-11781-4.

This volume consists of four articles describing optical activity, high-spin cobalt(II) complexes, magnetic ordering in transition metal fluorides, and organic derivatives of antimony(V), respectively. The first article, entitled: Natural Optical Activity and the Molecular Hypothesis (R.G. Woolley), gives an account of the quantum theory of the molecular hypothesis for chemical substances, in which atoms and molecules are characterised as composite elementary excitations (quasi-particles) of the macroscopic quantum-mechanical system called matter, and the spontaneously broken space inversion symmetry (revealed by the existence of optical isomerism) is studied in this context: the need for the unification of the models involving interactions with a boson reservoir and the weak neutral current is emphasised.

The second article (by L. Banci, A. Bencini, C. Benelli, D. Gatteschi and C. Zanchini) correlates the spectroscopic and magnetic properties of a wide range of cobalt(II) complexes with their ground state structures. Although the article contains much useful discussion, the extensive compilations of EPR and electronic spectral data are perhaps its most useful feature. The third review (by A. Tressaud and J.-M. Dance) concerns the relationships between structure and low-dimensional magnetism in transition metal fluorides. Fluorides provide examples for most of the different theoretical models (Ising, Planar Heisenberg and Heisenberg) of low-dimensional magnetism in structures characterised by a three-dimensional crystallographic arrangement of $\{MF_6\}$ octahedra in layers, chains and rings, and this excellent article presents the facts and theories in a carefully considered and lucid manner.

The final review (by V.K. Jain, R. Bohra and R.C. Mehrotra) describes the structural chemistry of organoantimony(V) complexes, and is the only article

which is likely to be of specific interest to the organometallic chemist. Indeed, it is hard to imagine why the editors chose to include it in this volume: it is difficult to envisage that a reader who has mastered the intricacies of quantum electrodynamics and guage-invariant quantum theory to the required level for reading Woolley's article will have the slightest interest in the structure of the alkyl and aryl complexes of antimony(V). Similarly, the average synthetic chemist who enjoys reading the final article will flounder in the first paragraph of Woolley's review. Nevertheless, despite this anomaly, and despite the preposterous title of the volume, this book is well worth purchasing at its very reasonable price. As a general note on this series, it would be very useful if the editors included a cumulative subject index to complement the cumulative author index which appears in each volume.

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*Mechanisms of Inorganic and Organometallic Reactions, Volume 2.* Edited by M.V. Twigg, Plenum Press, New York, 1984, xvii + 453 pages, $59.50, ISBN 0-306-41404-X (v. 2).

The volume under review is the second in a series which seeks to provide a continuing survey of the literature concerned with mechanistic aspects of inorganic and organometallic reactions in solution, and deals with the period 1981—June 1982. The format is similar to that of the first volume, with material arranged according to reaction or compound type. In the present instance, extra space has been devoted to areas concerned with electron transfer processes and substitution reactions of inert complexes.

The various chapters are written with authority, and further details are provided below, by identifying the authors and chapter headings; also shown, in parentheses after each entry, are the number of pages and references. There is both an author and subject index, and the book is attractively produced; it is divided into 3 parts: electron transfer reactions (Chs. 1—3), substitution and related reactions (Chs. 4—9), and reactions of organometallic compounds (CHs. 10—14).

Chapter 1, Electron Transfer: General and Theoretical, by R.D. Cannon (20 pages, 116 references); Chapter 2, Redox Reactions between Metal Complexes, by A.G. Lappin (29 pages, 118 references); Chapter 3, Metal—Ligand Redox Reactions, by A.G. Lappin (23 pages, 151 references); Chapter 4, reactions of Compounds of the Nonmetallic Elements, by M.N. Hughes (25 pages, 205 references); Chapter 5, Substitution Reactions of Inert Metal Complexes — Coordination Numbers 4 and 5, by R.J. Cross (28 pages, 80 references); Chapter 6, Substitution Reactions of Inert Metal Complexes — Coordination Numbers 6 and Above: Chromium, by P. Moore (20 pages, 62 references); Chapter 7, Substitution Reactions of Inert Metal Complexes — Coordination Numbers 6 and Above: Cobalt, by R.W. Hay (33 pages, 122 references); Chapter 8, Substitution Reactions of Inert Metal Complexes — Coordination