compounds are discussed. Mercury(II), thallium(III) and lead(IV) trifluoroacetates receive special attention in view of their applications in synthesis.

The second chapter on "Homopolyatomic Cations of the Elements", by R.J. Gillespie (whose research has contributed so significantly to the development of this area) and J. Passmore will be fascinating reading, irrespective of the reader's area of specialization. It provides fine support to those who maintain that interesting and original research in main group inorganic chemistry is still possible.

The review on "Use of Radio-Frequency Plasma in Chemical Synthesis" by S.M.L. Hamblyn and B.G. Reuben which follows is interesting, but as the authors point out, the economics of such plasma applications still are unfavorable, and any real understanding of chemical processes in plasmas still is lacking.

F.H. Jardin's chapter on "Copper(I) Complexes" is mostly inorganic but also covers briefly copper(I) alkyls and aryls, their complexes and their reactions. There are, however, excellent reviews elsewhere which are devoted exclusively to the organometallic aspects of copper chemistry, so the main value of the present review lies in its inorganic content.

"Complexes of Open-Chain Tetradentate Ligands Containing Heavy Donor Atoms" by C.A. McAuliffe is a review so narrow in scope that it will have very limited appeal to the general reader. For the purpose of this review "heavy" is a relative term, since the "heavy atoms" covered include sulfur and phosphorus.

U. Mayer and V. Gutmann discuss "The Functional Approach to Ionization Phenomena in Solutions". In this chapter the authors outline their "electron pair donor/electron pair acceptor approach" to solute—solvent interactions, a functional approach which, it is claimed, "provides a qualitative interpretation of all ionization phenomena".

The final chapter, the longest one, by A.H. Norbury, is devoted to the "Coordination Chemistry of the Cyananate, Thiocyanate and Selenocyanate Ions". It appears to be an exhaustive treatment of the complexes of these ions whose chemistry is livened up by the fact that they are ambident ligands which can bond either via the nitrogen or the chalcogen atom. Structural aspects are stressed.

A subject index and tables of contents of the previous volumes of this series are provided.

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Advances in Catalysis, Vol. 24, edited by D.D. Eley, H. Pines, and P.B. Weisz, Academic Press, New York/San Francisco/London, 1975, xvi + 427 pages, $38.50, £18.50.

This latest volume in the *Advances in Catalysis* series, in keeping with an editorial preface about catalysis and relevance, includes chapters on "The Economics of Catalytic Processes" (J. Dewing and D.S. Davies) and "Catalysis for Motor Vehicle Emissions" (J. Wei) (the former is very worthwhile reading

for all industrial chemists). These are balanced, however, by two chapters of a more "basic" nature on the "Kinetics of Coupled Heterogeneous Catalytic Reactions" (L. Beránek) and "Analysis of Thermal Desorption Data for Adsorption Studies" (M. Smutek, S. Černý, and F. Buzek).

Of most direct interest to organometallic chemists are the chapters on "The Metathesis of Unsaturated Hydrocarbons Catalyzed by Transition Metal Compounds" (J.C. Mol and J.A. Moulijn) and "One-Component Catalysts for Polymerization of Olefins" (Yu. Yermakov and V. Zakharov). The former provides rather thorough coverage of the literature through early 1973. While the treatment of reactants and catalysts systems is more representative than comprehensive the discussion of the mechanistic and kinetic/thermodynamic aspects of the reaction is thorough and well-organized. The latter chapter presents recent (some 1974 references) results on one-component polymerization catalysts i.e., those which do not require an organometallic activator such as supported metal oxides, CrO_3, discrete transition metal organometallic derivatives, including those formed by interaction with an oxide support, and transition metal subhalides, $TiCl_2$.

Of cursory interest to organometallic chemists is a chapter on "Catalytic Reactivity of Hydrogen on Palladium and Nickel Hydride Phases" (W. Palczewska). The emphasis here is, however, on the solid state and surface chemistry of these species.

Finally, a chapter on "Laser Raman Spectroscopy and its Application to the Study of Adsorbed Species" (R.P. Cooney, G. Curthoys and N.T. Tam) while oriented toward the surface chemist contains a useful discussion of the theoretical basis and instrumentation of this increasingly widespread technique.

Taken as a whole, this volume is of marginal interest to the organometallic chemist. Because of its diversity of topics it will probably be read by many but purchased by few.

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