

Book review

The Inorganic Heterocyclic Chemistry of Sulfur, Nitrogen and Phosphorus; by H.G. Heal, Academic Press, London, New York, Toronto, Sydney, San Francisco, 1980, xvi + 271 pages, \$86.00.

This little book provides a very useful and up-to-date summary of the present state of knowledge in a little-known area of chemistry. Strictly it falls outside the field of organometallic chemistry except for a few organo-phosphorus derivatives. Nevertheless the subject, in occupying the grey area between organic and inorganic chemistry, has many of its qualities. It provides inorganic ring and cage molecules which often defy the concepts of classical valency and both inorganic and organic nomenclature principles. The author recognises the close analogy with coordination and organometallic chemistry by using the word "ligand" rather than "substituent" in his statement of this book's scope "The book deals only with inorganic rings and cages, that is, containing no carbon atoms in the ring or cage skeleton. However inorganic rings and cages with organic ligands are covered."

Your reviewer found the book interesting and informative without being too detailed. He was amazed at the variety of anionic, neutral and cationic species formed by the elements in question and felt a distinct urge to try to introduce transition metals into them. The author has provided a useful classification of compounds in this difficult area to provide the plan for his book. It covers all aspects of their chemistry, the problems of nomenclature and discussion of that in use at present, the synthesis of the heterocycles and cage compounds formed by the elements in question, their structures and possible interpretation of their peculiarities in simple theoretical terms. The book considers in useful detail the chemistry of the numerous nitrogen—sulphur (165 pp.), phosphorus—sulphur (17 pp.) and nitrogen—phosphorus (74 pp.) compounds containing heterocyclic and cage skeletons with their various attached "ligands", mainly H, F, Cl, O, and simple organic groups. A very few minor errors have escaped the proof reader, e.g. the salt $[\text{S}_6\text{N}_4]\text{Cl}_2$ is formulated (on p. 140), $[\text{S}_6\text{N}_4]^{2+}\text{Cl}_2^-$, as if it contained a dichlorinide(1-) ion, and the top right "N" of formula (e) on p. 118 should be "S".

The book is well set out and printed. It is plentifully illustrated with structural formulae, tables and graphs, an important feature in discussion of an area where nomenclature is so confusing. It has a short appendix on recent nomenclature proposals, a general subject index and a ring index to locate individual types of compounds. Each chapter is accompanied by a list of recent key references to 1979 to serve, as the author claims, to lead the reader into the literature.

The book can be recommended to anyone who is interested in unusual structural and valence problems. It discusses an area of chemistry waiting for useful application and it is worth noting (p. 3) that a phosphorus elastometer has recently been marketed by the Firestone Tire and Rubber Company and that the metallic polymer (SN)_x has aroused intense technical interest.

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