strain to mean what other authors would call recoverable strain, so that it is in general only a part of the deformation of a body. By attaching somewhat more importance than is usual to the particular mathematical measure of a physical concept (deformation, or rate of strain) the author is able to isolate, for separate treatment, linearity, parametric non-linearity, deformational non-linearity and tensorial non-linearity in equations of state.

The deformation and flow situations discussed in any detail are simple ones, for example those in which an element is subjected to an elongational or simple shearing flow. The reader is left to think out for himself what will happen in more complex situations, and perhaps the main value of this textbook will be to stimulate others, new to theoretical rheology, to take it up as a serious study. An index, a bibliography, notes on some of the more mathematical points at the ends of chapters, and many diagrams, make this an easy book to read and to use for reference. J. G. OLDROYD

Chemical Bonds

Coordination Chemistry. Edited by Arthur E. Martell. Vol. 1. Pp. xxii+577. (Van Nostrand Reinhold: New York and London, February 1972.) £16.25.

FROM a study of a group of transition metal compounds that did not seem to obey the inadequate theories of chemical bonding at the turn of the century, coordination chemistry has become an approach to inorganic chemistry that focuses attention upon bonding, stereochemistry, equilibrium and mechanism. This new series of three volumes seems to exhibit a desire to present the subject as it was in the glorious days of the late fifties and the early sixties and therefore suffers from all the consequences of trying to turn the clock back.

Volume 1 has apparently suffered an extremely long gestation period (one contribution was submitted in April 1967) and has been beset by unmet deadlines resulting in the need for some rearrangement in the series. It consists of two sections dealing with bonding and spectra and equilibrium and thermodynamics respectively. On the whole, the individual contributions are by distinguished and respected experts in their fields and are of a very high standard throughout. The first two chapters on electronic structures and electronic spectra are by Ballhausen and Gray and by McClure and Stephens respectively. Unfortunately, they overlap significantly at the edges because it should have been obvious that the two subjects do not separate readily. Nakamoto writes on infrared spectra and shows that 50 pages are quite inadequate to cover the topic. He chooses to ignore the work of Hirashi that reassigns the C=C stretching frequency in olefin complexes. The treatment of electron spin resonance by Kuska and Rogers is excellent and Good and Clausen show that, at the moment, if one is interested in the chemistry of iron and tin, it is possible to gain considerable information from Mössbauer spectroscopy whereas devotees of other elements may have to wait patiently for a little longer. Holm and Abbott write on the application of nuclear magnetic resonance to the investigation of structure and bonding and have also included discussion on dynamic ligand exchange processes.

The second part of the book is opened by Hindman and Sullivan on principles and methods: they provide a useful treatment of solvation and solvation number. The examples of complex formation that follow are highly selective and serve to show that the simplified approach that once served to make the study of stability constants highly fashionable is of little value in its own right. Anderegg writes on complexation by multidentate ligands but throws no new light on the chelate effect; and Lars Gunnar Sillen, whose tragic death has robbed this area of chemistry of its leading proponent, contributes a posthumous article on polynuclear complexes in solution. M. L. TOBE

Mouse Neuroanatomy

Atlas of the Mouse Brain and Spinal Cord. Edited by Richard L. Sidman, Jay B. Angevine jun. and Elizabeth Taber Pierce. Pp. xi+261. (Harvard University: Cambridge, Massachusetts; Oxford University: London, January 1972.) £12.

THIS is in fact an atlas of the central nervous system of the mouse strain C57BL/6J, chosen by the authors because of its interest to those concerned with the genetics of abnormalities in the central nervous system. It presents a large and comprehensive series of low power photomicrographs of the brain sectioned in all three planes, together with a series of cross sections of the spinal cord at all segmental levels. Additional diagrams of the gross external structure of the brain are provided with keys to enable the approximate position of each section to be determined relative to external features. There is little doubt that the nomenclature used in some regions will cause much blenching among specialists—as much by omission as supposed "error"—but the system chosen can be defended at very least on the grounds that so little work has been carried out on the mouse brain that it is better to err on the side of neutrality than over-confident committal. Taken as a whole the book provides an excellent base-line for those who have no special interest in neuroanatomy *per se*, and as such it can be thoroughly recommended. K. E. WEBSTER

Senescence

Principles of Mammalian Aging. By Robert R. Kohn. Pp. xiii+171. (Prentice Hall: Englewood Cliffs, New Jersey, October 1971.) $7.95 cloth; $4.95 paper.

MANY people in the field of gerontology will admit to having got there more or less accidentally. The reasons why biologists of any description should become interested in ageing are too numerous and mostly too obvious to mention. In this book the author sets out to map the main feaures of the field and thus make easier the tiro's first explorations. He succeeds well, providing a lucid factual account of the phenomena of ageing and outlining numerous areas of doubt and contention. Although the book is especially concerned with mammalian systems, the first two-thirds of it deal with the generalities of ageing at molecular and cellular levels, the relevance of which is by no means confined to the mammals.

Much is known about the ageing processes, but little is yet understood. Several groups of factors seem to contribute to ageing in mammals. Of these Kohn seems inclined to favour for the principal role those which are associated with changes in collagen, and he does perhaps a little less than full justice to possible cellular mechanisms. This may be partly because the literature since 1968 is not covered, and hence no account is taken of recent data which confirm the relationship between the limited life-span of human fibroblast strains *in vitro* and the ageing of cells *in vivo*. Similarly, neither Orgel's "error catastrophe" hypothesis nor the recent experimental work related to it is mentioned.

The dust-jacket states that "non-biologically oriented readers will find the answers to the questions about aging that plague everyone". They will not, and it seems most unlikely that the author himself would make any such claim. But the book will be a valuable introduction to the subject for many students of biology and medicine. H. S. MICKLEM