punch-card programme for the critical data and describe its application to a Tertiary turbidite sequence in the Maritime Alps.

Two of the remaining papers deal with recent turbidites in the Adriatic (Van Straaten) and the western Mediterranean (Bourcart), while Kuenen furnishes an extended argument for the turbidite origin of modern deep-sea sands and of many ancient sediments. In addition there is a very full bibliography of turbidity currents and turbidites, compiled by Kuenen and Humbert, listing more than 650 references.

Apart from the bibliographical and review content the chief value of this book lies in the diversity of techniques and environments represented in the studies reported. It should prove a valuable reference tool for those whose interests already lie within this field of sedimentology. Moreover the tyro should find it a stimulating but by no means a comprehensive introduction to this intriguing group of sediments. G. K.

EVANS (R. C.). *An introduction to crystal chemistry.* 2nd edn. Cambridge University Press, 1964. 410 pp. Price: 52*s.* 6*d.*

The first edition of this book appeared in 1939 (M.A. 7–311) and for many years it has been a widely used university textbook on crystal chemistry. Its popularity is due largely to a very lucid style of writing, which brings to students everywhere the advantages students at Cambridge have been privileged to sample first-hand at Dr. Evans's lectures. The book is divided into two parts, one on principles and the other illustrating these principles by examples. No subsequent textbooks by other authors have covered so wide a range of examples, including mineralogy, metallurgy, inorganic, and organic chemistry. As the years have passed, however, newer books have been more up to date in their discussion of principles and in their presentation and use of more recent data. It is therefore a pleasure to see a completely new, considerably enlarged edition of this book in which more modern ideas are explained and which takes account of new data.

The revision has been extremely thorough. It is clear that every topic discussed has been considered afresh and improvements have been made wherever possible. Part I has chapters on interatomic binding forces and atomic structures, and on the ionic, covalent, metallic, and van der Waal's bonds. Part II deals mainly with: the elements, simple compounds, complex ionic compounds, compounds containing hydrogen, alloy systems, and organic structures.

Among the completely new features in the second edition are: a section on wave-mechanics and the electron structure of the elements;

discussion of dislocations and of impurity semi-conductors in the section on defects and structural faults; and discussion of short-range as well as long-range order in the section on order–disorder transformations (but surprisingly no mention of feldspars as examples or of order–disorder in the section on feldspars). There is a fuller discussion than in the first edition on many topics, for example, the transition metals, polymorphism, and transformations.

The chapter title 'Crystal structure and morphology' has been retained although it seems inaptly named since the 'morphology' turns out to be entirely of the 'internal structure' kind. Dropping of the terms iso-, meso- and aniso-desmic is to be welcomed, but it is difficult to see why the treatment of the ideas of polarization and polarizability has been quite so drastically curtailed.

Additional structures are described to illustrate the various structure types, for example, on metal alloys, the Laves phases and the WAl_{12} structures, and among the mineral structures not mentioned in the first edition are: garnet, melilite, cordierite, chlorites, clay minerals, and feldspathoids. Minor errors appear to be very few, but two occur in diagrams: in forsterite where Fe instead of Mg atoms are referred to, and in talc where two out of three octahedral sites are shown occupied instead of all three. This latter error led me to notice also that there was surprisingly no specific mention of the terms *di-* and *tri-octahedral* as applied to layered silicates.

There are rather few topics to which the second edition devotes less space than did the first. It seems a pity, however, that the sections on the optical and magnetic properties of crystals in relation to structure have disappeared. The dust-jacket blurb leads one to expect a greater treatment of physical properties in general than is found inside.

Good features of the first edition were that it was well up to date when written so that it was not in need of revision for a long time, and that it was somewhat ahead of the average undergraduate. Although the second edition largely maintains these characteristics it is a pity that there is no mention of the modern Ligand Field theory in the text, nor even in the bibliography. An elementary generalization about this topic might have been made and perhaps linked with a qualitative discussion of the colour of transition metal compounds. As it is, only F-centre effects are discussed.

The above criticisms are all relatively minor and do not affect the reviewer's opinion that the high standing of Evans's 'Crystal Chemistry' will be further enhanced by this new edition. The production is vastly

improved, type and diagrams are pleasing, and the section numbering is useful. The price too is very reasonable both *per se* and also in relation to what one can expect a university student to afford. J. ZUSSMAN

FYFE (W. S.). *Geochemistry of Solids.* London (McGraw-Hill), 1964. vi+199 pp. Price: 66*s*.

The book presents a lucid account of the chemical and atomic structure of solids with particular reference to minerals and is addressed to students of mineralogy, petrology, geochemistry, and inorganic chemistry.

Chapter 1 presents a brief introduction to elementary thermodynamics and Chapter 2 deals with the basis of atomic structure and quantum theory. Chapters 3–9 consider the arrangement of ions in solids and develop the concepts of ionic radii, ionization potentials, and types of bond. Isomorphism, solid-solution, and polymorphism are discussed in Chapters 10 and 11, and the remaining Chapters 12–14 are concerned with growth and defects in crystals. The book is well illustrated and the style of presentation reads like a carefully prepared series of lectures, punctuated in places with just the sort of questions and answers that might occur to one during the development of a particular topic. T. W. BLOXAM

JUDD (W. R.), editor. *State of Stress in the Earth's Crust.* New York (Elsevier), 1964. xiii+732 pp. Price: 115*s*.

The book covers the proceedings of the International Conference on the State of Stress in the Earth's Crust, held in California in June 1963. It provides a comprehensive account of the state of the new science of Rock Mechanics, in terms both of fundamental principles and practical applications.

Contributions cover an extremely wide range of topics, but are systematically arranged under a convenient series of main heads. In the first half of the book the scope of the subject is outlined and the complex theory of rock response to stress systems is developed. Important laboratory and field studies dealing with such matters as brittle fracture, creep, and loading tests are described. The latter part of the book is concerned with *in situ* measurement of stress and rock properties, and the application of the subject to specific engineering and mining projects. It may surprise some to discover how far theorizing and experimentation have proceeded, but the book is also valuable in showing the vast scope for further inquiry.

In format the book leaves something to be desired. It is extremely