Inorganic solids. By D. M. ADAMS. Pp. xvi + 336, Figs. 220, Tables 43. Chichester: John Wiley, 1974. Price (cloth) £7·50, (paper) £3·50.

The plan of this book is 'to study some of the results of X-ray (and other) diffraction methods in order to lay a foundation for our further work in chemistry or physics, and to try to understand the factors which influence adoption of particular structures'. The material is compiled largely from three books, but the author states that his approach differs from the 'equally commendable' ones of Krebs, Náray-Szabó and Wells in being mainly deductive and having 'the merit of causing one to think about the operative principles'. The book claims to deal with the structures of inorganic solids in a rigorous, yet informal and non-mathematical way. It is certainly non-mathematical, and the colloquial style will not suit everyone's taste; for example, the NaCl structure 'which we all heard about at mother's knee', and phrases such as 'before we delve into these murky waters', and 'or pile on the facts at this stage'. The treatment can hardly be described as rigorous, and the book exudes a youthful spirit of self-confidence which leads to pontifical statements such as: 'Ionic theory has had a good run ...; so far as detailed considerations of crystal structure are considered (concerned?) it is time it was interred'. We then find Krebs's molecular-orbital treatment of the bonding in the antifluorite structure of Be_2C applied to the structure of CaF_2, followed by the statement that in CaF_2 itself 'the covalent contribution is small'. Some of us might feel that the first question to ask about the fluorite structure is why it is one of 8:4 rather than 6:3 or 12:6 coordination, and then why the coordination of Ca^{2+} is cubic rather than, for example, antiprismatic.

The treatment of the closest packing of equal spheres is unsatisfactory. Not only is it not self-evident that c.p. layers [Fig. 3.1(*b*)] necessarily give the most closely packed 3D structures, but the converse also is not true; the less closely packed layer of Fig. 3.1(*a*) in fact stacks to cubic closest packing.

We would not have commented on the misprints (few of which are important) had we not been told in the Preface that a 'manuscript of notable accuracy' had been prepared from 'my ghastly scribblings'. (A book free from all errors and misprints is surely the dream of every author.) It is unfortunate that the (very appropriate) quotation from Tom Lehrer on plagiarism is misquoted. A few factual errors are due to the failure to update information derived from secondary sources (for example, the structures of hexagonal diamond, p. 79, and of the high-temperature form of NaOH, p. 141). It is probable that some of the shortcomings of this book arise from the desire to condense material from three larger books into one smaller one, for condensation can easily lead to a lack of clarity. Others, however, seem to arise from an incomplete understanding of all the factors involved in the choice of certain crystal structures.

The reviewer agrees with the author that in general the present teaching of inorganic chemistry is deficient in that the solid state is virtually ignored, and he is aware of the need for suitable, moderate-sized texts. This book contains a good deal of useful information, albeit information that is readily available elsewhere. However, the carefree style in which it is written and certain defects of the kinds noted above give the unfortunate impression that the author has not taken his task as seriously as he claims to have done. The book could undoubtedly be improved after a little more cogitation, but it does not seem suitable in its present form as a text for undergraduates.

A. F. WELLS

Department of Chemistry
The University of Connecticut
Storrs
Connecticut 06268
U.S.A.