

but with what amounts to a research problem perhaps involving the re-examination of type material and the resolution of a knotty tangle of nomenclature as well. The specialist will find the work invaluable for much the same reason. Hey's *Index* is a boon to the professional mineralogist, and is highly recommended to anyone who wishes to find quickly the chemical composition and descriptive literature of the known minerals.

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Structural Inorganic Chemistry. By A. F. WELLS.

Pp. xx+727, with 237 figs. Oxford: Clarendon Press. 2nd ed. 1950. Price 35s.

Hardly any scientific tool has been of greater importance for the progress of inorganic chemistry than X-ray crystallography. Although this branch of science has now been practised for nearly forty years, many chemists still seem to be somewhat bewildered by its consequences. To a large extent this is due to the fact that X-ray crystallography has proved to be a key to a formerly practically unknown field of chemistry, the solid state, where the structures are often fundamentally different from those of the finite atom groups previously studied in liquids or gases. It is, therefore, extremely important that text-books should be written to present the results of X-ray crystallography, and this in a way understandable to the chemists. One of the causes of the slow adoption of new structural conceptions is undoubtedly the difficulty generally experienced by chemists in understanding the language of crystallography.

It was said of the first edition of Dr Wells's book that, although its title was *Structural Inorganic Chemistry*, it was more a study of the structure of the solid state. This criticism was not so serious where the descriptive, systematic part of the book was concerned, because such an enormous part of our present knowledge of inorganic structures is derived from the solid state. On the other hand, the general part of the book undoubtedly confined the treatment of the subject too much to purely structural aspects. This limitation has been removed to a great extent in the present second edition, where the basis of the general treatment has been widened considerably. But the difficulty of giving a condensed presentation of some parts of the basic material is rather obvious. This applies, for example, to the chapters dealing with the nature of the

chemical bond. The section on X-ray diffraction, which has such a direct bearing on crystal-structure determinations, is still treated very briefly. The author certainly does not underestimate the immense value of X-ray diffraction methods; rather he appears to think that their importance necessitates reference to special text-books.

A reviewer cannot help observing that the different parts of the text are still not sufficiently co-ordinated. This leads, among other things, to unnecessary repetitions, and sometimes obscures important general lines. Why, for example, does the author resume the discussion of many of the general characteristics of solid solutions when he comes to the last chapter of the book (metals and alloys)? Most of this discussion is included already in the general part, and some problems, e.g. order-disorder phenomena and superlattices, are of such general application that they should have been considered earlier.

The nature of the metallic bond is not treated in the general part of the book but is discussed in connexion with the systematic description of metals and alloys. This in itself is of little importance, but it is more serious that the depth of the treatment does not do justice to the modern advances in this field, nor to the importance of this type of chemical bond relative to other types.

It is quite natural that about 70% of the book (488 out of the 709 text pages in the second edition) is devoted to a systematic description of inorganic substances. This part is certainly suitable for giving a non-crystallographer a fairly complete knowledge of the structural work hitherto accomplished. Such a reader will certainly have no difficulty in following the text, which is also elucidated by figures which are generally very clear and well drawn. In spite of this, however, he will no doubt find the reading rather dry; but dryness is probably extremely difficult to avoid in a presentation of this kind.

The wide field covered by the book also makes it useful as a reference work for a person more closely interested in inorganic structures. This could hardly be said of the first edition, where all references to the literature were given in a short list at the end of the book, and without any connexion with the text. In the new edition the references are five times as numerous and have been inserted in the text. This means a marked increase in the usefulness of the book. In some instances, however, one still has the impression that the information concerning relevant literature is not quite adequate.

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Books Received

The undermentioned works have been received by the Editors. Mention here does not preclude review at a later date.

Gmelins Handbuch der anorganischen Chemie.
Antimon A3. Pp. 49, with 6 figs. Weinheim:
Verlag Chemie. 8th ed. 1950. Price DM. 16.50.

Gmelins Handbuch der anorganischen Chemie.
Platin A6. Pp. 35, with 138 figs. Weinheim: Verlag
Chemie. 8th ed. 1951. Price DM. 36.