

SMITH (G. F. HERBERT). *Gemstones*. Fourteenth edition (revised by F. C. Phillips). London (Chapman and Hall), 1972. xii + 580 pp., 138 figs., 29 pls. (6 in colour). Price £7.50.

This is the 14th edition of a standard work first published in 1912. The 13th edition, also revised by F. Coles Phillips, was published in 1958 by Methuen price 50s. The 14th edition has 20 extra text-pages, but the most obvious change is the inclusion of 12 very beautiful colour photographs of gemstones, and the deletion of 4 colour plates, produced from paintings, which appeared in the 9th edition of 1940 and in subsequent editions up to that of 1958.

Part I (121 pp.), which deals with the physical characters of gemstones in ten chapters, has few changes.

Part II (114 pp.), Technology and History, in 8 chapters, is extended by 8 pages. Chapter XIV (23 pp.) on synthetic stones has been improved; Section B (9 pp.) on synthetic corundum now includes information on growth from solution, both by flux fusion and hydrothermally; Section D (5 pp.) on synthetic emerald considers new techniques for emerald synthesis, and has a very useful table on the physical properties of emeralds, both natural and synthetic.

Part III (278 pp.), Description, has been extended by 17 pages. Chapter XXI (6 pp.) on the origin of diamond has been expanded by 2 pages and partly rewritten, taking into account recent work on geochemistry of mineral inclusions in diamond. Chapters XXXI (12 pp.) Quartz, XXXVI (6 pp.) Chalcedony, and XXXVII (13 pp.) Jade, Lapis-Lazuli, and Turquoise have been revised.

Part IV (16 pp.), Identification Tables, has been improved by rearranging minerals in alphabetical order to permit easier reference. The bibliography (12 pp.), which is admirable, is classified into 12 sections as in the 13th edition, and has been extended by the addition of 50 new entries to include works published up to 1972.

R. S. COLLINS

SHEPHERD (WALTER). *Flint: its origins, properties and uses*. London (Faber and Faber), 1972. 255 pp., 68 figs., 33 pls. Price £5.00.

A whole book on flint is something of a curiosity, and one wonders who is going to be sufficiently interested to pay £5.00 for it. At this sort of price the buyer is going to be a serious student, not someone looking for light entertainment. Therefore the publishers would have served the author better if they had done more editing, and given him more guidance. It is not the frequent chatty diversions and footnotes in the style of Ripley's 'Believe it or not!'; nor the whimsical comparison of flints with El Greco paintings or Henry Moore statues; nor even the promiscuous mixture of metric and English units. It is the lack of an abstract containing the author's conclusions on the mode of formation, the distinction between patination and cortication, and similar topics. There should have been a chapter on the chemistry of silica; as

it is, important work by such authors as Krauskopf and Iler is little more than mentioned, and then in an appendix. The most obvious weakness in presentation is the list of 160 references, which are not arranged alphabetically, chronologically, in order of use in the book, or, indeed, in any order at all.

All this is a pity because Mr. Shepherd has been working on flint since 1932, and he has assembled here a refreshing range of up-to-date information on the origin of flint, its weathering, and its uses by man. The section on origin is particularly comprehensive although he has limited himself to Chalk flints and does not discuss chert formation in general, but even amongst Chalk flints he recognizes that they have probably formed by several different processes. In this discussion he makes little reference to the fact that flints commonly follow the bedding, no mention of the absence of flints from penecontemporaneous conglomerates, both of which must be specially significant for any consideration of their formation.

The chapter on derived flints brings out the distinction between cortication (loss of water from the outer part of the flint leaving a white crust) and patination (refilling empty pores of the cortex with silica derived from soil water). These two quite opposite processes are still frequently confused.

About a third of the book is taken up with the uses of flint. The manufacture of flint implements is described in detail, and every known use of flint discussed in a most readable style.

Obvious errors in the book are few, although there are a number of minor ones in the chapter on the Chalk, of which the most serious is the repetition of the myth that the iron sulphide in the Chalk is marcasite, not pyrite: marcasite does occur, but is comparatively rare compared with pyrite. The total thickness of the Chalk is repeatedly overestimated. The absence of 'extensive deposits of terrigenous materials' happens to be a feature of north-west Europe, and is not universal.

This is a book that should be in every library of geology or archaeology, and any individual willing to pay the high price is certain to learn a surprising range of facts.

J. M. HANCOCK

FRONDEL (C.). *The minerals of Franklin and Sterling Hill. A check list.* New York and London (Wiley-Interscience), 1972. vi + 94 pp., 33 figs., 1 sketch-map. Price £4.60.

For over two hundred years the zinc mines at these famous neighbouring New Jersey sites have yielded a remarkable range of minerals often of outstanding quality. Altogether 230 minerals or mineral varieties have been identified from Franklin and Sterling Hill including 44 not previously known. Most museum, teaching, and private collections throughout the world have showpieces from these localities. In this book an account is given of the geology and geochemistry of the desposits and there is a brief discussion of the various origins ascribed to the orebodies. The Franklin orebody was estimated to have produced a total of 22 to 25 million tons of ore averaging