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## BOOK REVIEWS

*The Diamond Makers*. By Robert M. Hazen. Cambridge University Press, Cambridge, U.K., 1999, 244 + xiv pages. US\$15.95 (paper), (ISBN 0-521-65474-2).

*The Diamond Makers* is a delightful little book that traces an interesting and tortuous story: Man's quest to manufacture diamond artificially. That quest has been successful; annually General Electric along manufactures some 100 tonnes (!), five times the weight of diamond mined each year from nature. In fact, to date the company has manufactured more diamond than all diamond mined throughout history.

The book here under review, an edited and shortened version of Hazen's *The New Alchemists* published in 1993, is divided into 13 chapters. For brevity, I shall give only the essence or a highlight of each. 1) An overview of diamond: origin, properties, etc. 2) Early failures at manufacture, a bit of physics, and a P-T diagram. 3) Percy Bridgman, the pioneer in high-P research but who had little to do with man-made diamond. 4) The first artificial diamonds were produced in an outhouse in Stockholm (no, the event was not preceded by a sauerkraut and beer fest). 5) The remarkable story of Loring Coes and the use of then (1950s) high-tech materials. 6) "Pipestone", "Wonderstone", and secrecy. 7) December 16, 1954 and undisputed success followed by the acrimonious dispute of priority. 8) Tailor-made abrasives and diamond made from peanut butter. 9) Isotopic cleansing and its advantages. 10) The flamboyant life of George Kennedy. 11) Bombs, diamond, and "Mypolex." 12) Diamonds out of very very thin air and the threshold of new technology. 13) Diamond as the ultimate window and the "polywater" debacle.

*The Diamond Makers* offers insight into the psyche of high-P research, its pitfalls, dangers, rewards, and promises. It deals with a panoply of workers in the field, some brilliant, some stubborn, some eccentric (one declared the second law of thermodynamics to be invalid), all hugely motivated. It speaks of brilliant science, but also of rivalry, self-delusion, and outright fraud. The author's long experience on the frontiers of high-P research, including 20 years at the Geophysical Laboratory in Washington, D.C., and his eclectic interests are reflected in smooth writing with an encompassing view.

Minor piques are the ubiquitous use of imperial measurements (inches, miles, pounds, atmospheres...), references to "Russian" scientists who prior to 1991 were Soviet scientists, and the use of "idocrase" (p. 84),

a banished name. The only typo that I caught: the Swedish town is Västerås (not Västeräs, p. 65).

This is a fine and eminently readable book that deserves a place on the bedside table of mineralogists. Read it. You won't be disappointed and at the same time you won't stray far from your field. Should your interest in diamond become whetted, and you wish a concise overview of the other side of the coin, natural diamond, I heartily recommend a recent review article by Stephen E. Haggerty (1999) entitled "A diamond trilogy: superplumes, supercontinents, and supernovae" (*Science* **285**, 851-860).

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*Fleischer's Glossary of Mineral Species 1999* (eighth edition). Joseph A. Mandarino. Mineralogical Record Inc., P.O. Box 35565, Tucson, Arizona 85740, U.S.A., 226 pages. US\$18 + \$2 post (softcover). (No ISBN number).

The sixth edition (1991) was reviewed in *The Canadian Mineralogist* **29**, 599-600 (1991). From 1991, an increase of about 400 mineral species brings the total number described to 3,741. The book's price has increased from US\$15 to \$18; however, the number of pages has been reduced from vi + 256 to x + 226. The 30-page reduction, which helps to keep the book to a reasonable size and price, is caused by the deletion of the appendix of word expressions for the chemical compositions, chemical varieties, mineral synonyms, doubtful species, and names of common series like plagioclase, hornblende, and wolframite. This loss will be short-lived, since the *Mineralogical Record* intends to publish an extensive list of other mineral names in 2000.

The Glossary was a classic of the late twentieth century. Now what is required to bring the work into the twenty-first century?

a) The chemical elements and their abbreviations should follow the spelling of the International Union of Pure and Applied Chemistry (IUPAC). The use of Greek letters in front of the chemical formula of mineral names should be discontinued, as recommended by IUPAC.

b) All abbreviations used in the Glossary (*e.g.*, Zeit. Krist.) should be given. A reference should be given to each new mineral, even though it may be changed to a more accessible reference in a later edition.

c) Diacritical marks should be added to some mineral names.

d) The general formula of minerals should follow the systematic approach of Smith *et al.*, *American Mineralogist* **83**, 126-132 (1998). The use of the terms subgroup, group, supergroup, subfamily, family and superfamily as defined by Smith *et al.*, *Advances in X-ray Analysis*, 41 (1998) should be used to indicate the similarity of the mineral species.

e) Some chemical formula must be changed to indicate the correct and appropriate structural unit for the mineral. Both square brackets [ ] and parentheses ( ) should be used to indicate the type of structural unit. Ionic valences on the chemical formula of metallic or covalent structures should be removed. Chemical elements in a metallic structure should be written in alphabetical order. Ionic valences on ionic structures should balance. End-member formulas should be used, because this either simplifies the formula or indicates that the substitution of a chemical element in a structural site is required for chemical stability or charge balance.

f) About 50 minerals are doubtful and should not be given in bold face, whereas another 50 minerals, which are possible or probable or nearly certain, should be added in normal type.

g) The polytype symbols for the seven unit-cell types should be given. The polytype symbols of all the clay minerals should be given (about 50% complete). Some named polytypes, which are not mineral species but structural variants, should be deleted. The use of polytype symbols and crystal system in a single entry is unnecessary duplication.

h) Rather than give only a crystal system, it would be more useful to give either a space-group symbol or a space-group aspect or a crystal system. In this manner, the reader can tell the quality of the mineral data.

i) The volume could save about 10 pages in white space, if each new letter is started with a large capital letter in a 1.5 cm space rather than starting each letter on a new page.

j) *The Canadian Mineralogist* always quotes an ISBN number in a review where available, because librarians like this unique number. An ISBN number should be provided.

Considering the information given and the price, this book still represents good value for money.

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