

# ELEMENTS OF MINERALOGY

# RUTLEY'S ELEMENTS OF MINERALOGY

*Twenty-Sixth Edition*

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## PREFACE

The last thorough revision of *Rutley's Elements of Mineralogy* appeared as the 23rd Edition in 1936. In subsequent editions, an effort to keep abreast with the great progress in the science was made by small (and often awkward) modifications and, especially, by the addition of an independent chapter on the atomic structure of minerals. For this present edition, the complete re-setting of the book has made possible not only the integration of the added chapter on atomic structure into its proper place in the accounts of the chemical and physical properties of minerals, but also extensive rewriting and rearrangement of the material in the first part of the book. To this part, also, has been added a short chapter on the classification of minerals. In the second part, the Description of Minerals, numerous, if not so extensive, modifications and modernisations have been introduced. A couple of dozen new figures have been added, mostly in the early part of the book.

More specifically, the major changes in this new edition are the following. The electronic structure of atoms supplies the guidelines for the whole account of mineral-chemistry; additional items concern the electrochemical series, of interest in the occurrence and metallurgical treatment of ores, and chemical analysis. On the physical side, the dependence of physical properties of minerals on their atomic structure is emphasized and, in addition, a brief account of radioactivity and isotopic age-determination is given. Crystal-structure, of course, enters largely into the formal presentation of the morphology of crystals; here, too, the crystallographic nomenclature is modernized and an elementary introduction to stereographic projection and its use in the description of crystal-symmetry is inserted. The chapter on the occurrence of minerals has been partly rewritten to include extended accounts of the sedimentary and metamorphic rocks and the different types of economic mineral deposits; a summary of earth-history is given, together with some age-data. The new chapter on the classification of minerals defends that used in this book; in this, minerals are assembled into economic groups according to elements, and the elements are associated according to the Periodic Classification – this classi-

fication has stood the test of time as suitable for the wide public for whom the book is intended.

In Part II, Description of Minerals, the uses and occurrences of minerals are brought up to date, crystal structures of the rock-forming minerals are introduced and modern methods of extraction of the metals from their ores mentioned. Some metals of importance in nuclear energy and space-research are briefly noted.

My first revision of 'Rutley' was undertaken more than half a century ago – I trust that this present effort will be as useful in its limited objectives as its predecessors. During this long span I have received invaluable help from a great number of friends as recorded in previous prefaces, and to these I re-offer my grateful thanks. In this present revision I am specially indebted to Dr. F. G. H. Blyth for his critical reading of some of the manuscript and for providing certain of the figure-drawings. Dr. Janet Watson has read the whole text and contributed greatly to its clarity and, besides, has drawn many of the new figures. Finally, she has helped to see the book through the press. For such willing assistance in making it possible for me to complete this work, I offer her my sincere gratitude. My thanks are also due to Mr. J. A. Gee and Mr. R. Curtis, both of the Geology Department, Imperial College, for kindly supplying photographs for Figures 2, 13 and 14 and for Figure 17 respectively; and to James Swift & Son Ltd for the photograph for Figure 99.

H. H. READ

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