

**FIELD BOOK OF PRACTICAL
MINERALOGY; HOW TO EXAMINE AND
REPORT ON MINES. DESIGNED FOR THE
USE OF PROSPECTORS, MINING MEN,
ENGINEERS, AND OTHERS**

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Field book of Practical Mineralogy; how to examine and report on mines. Designed for the use of prospectors, mining men, engineers, and others by G. W. Miller

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G. W. MILLER

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FIELD BOOK
of
Practical Mineralogy

*How to Examine
and Report on Mines*

*Designed for the Use of
Prospectors, Mining Men, Engineers,
and Others*

BY
G. W. MILLER, E. M., C. E.

SECOND EDITION

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Preface

The publication of this little volume is the result of a long cherished plan; although not as complete in its discussion of the subject of ore deposits, the examination of mines, assaying, etc., as were the author's original intention, these omissions are thought to have been compensated for in part by giving more space to the subjects of determinative mineralogy and blow-pipe analysis. In the composition and compilation of the subject matter herein contained, all due precautions have been observed in order to render the information perfectly reliable and trustworthy, and to this end all descriptions of minerals appearing in the tables were carefully compared with those given in the following named standard works on the subject of mineralogy: *System of Mineralogy*, by E. S. Dana; *Determinative Mineralogy and Blowpipe Analysis*, by Brush & Penfield. Other valuable authorities consulted are: *Ore Deposits*, by J. A. Phillips; *Ore Deposits of the United States and Canada*, by J. F. Kemp, and *A Manual of Practical Assaying*, by H. V. F. Furman. The names of all authorities consulted are mentioned in the foot notes.

Where inadvertently omissions have occurred and due credit has not been given, the author would esteem it a favor to have his attention called to the neglect. He would also be pleased to receive criticisms on the work so that he may be able to take advantage of them should a future edition be called for. It will be observed that in order to render the information of this little book

more compendious and comprehensive for the benefit of the general reader, the usual plan of the more elaborated scientific text books could not be followed, and it would seem that with this and the aim of the little work fully understood, no other apology for its appearance in the present simple form is necessary. It will be further observed that (the design and object of) this little work is intended for the benefit of practical mining engineers, mineralogists, prospectors, mining men, etc., who feel the want of a ready reference field *compendium* of mining and mineralogical information, and who have not the time to grapple with theories or complicated formulæ. The work is divided into four parts:

Part I treats briefly of the subject of Ore Deposits. These are illustrated by nine wood cuts, showing the more typical classes of mineral veins, and other classes of ore deposits, and they are intended to aid the young miner in making the proper classification of all forms of ore deposits coming under his observation.

The several Theories, claiming to account for the filling of metalliferous veins are briefly given; then four graphic illustrations of Faults, with rules for finding the faulted portion of veins, are fully discussed; or at least it is believed that enough has been said to give the *novice* the correct idea of how to proceed in finding the vein should he meet with similar problems in practice.

Under the title "The Examination of Mines," after briefly defining the object of mining examination, the method of sampling and estimating the ore in sight is illustrated by drawings, and it is believed that this with other hints and instructions given on this subject will render the undertaking of making a mining examination quite easy, even in the hands of the young miner.

"The Form of a Mining Report" next following is one universal in its application. It is a form extensively used by mining engineers, and may be modified so as to suit any particular case.

Part II gives the method and formulæ for assaying Gold, Silver, Lead and Copper ores. Methods for making *Laboratory Tests of gold and silver ores*, by the Cyanide, Chlorination and Amalgamation Processes are described. Then follows the subject of Blowpipe Analysis with a full descriptive list of blowpipe tests of the more common metallic substances and minerals met with.

Part III is devoted wholly to the subject of "Determinative Mineralogy." After discussing the physical properties of minerals and giving all necessary rules for their determination, the Analytical Tables of minerals are given.

The system of grouping minerals according to the most prominent metal or element entering into their composition has been adapted. Upwards of 345 of the more common and useful minerals are described, and in such a way as to admit of identification wherever met with in nature. The design of these tables is (in part) original with the author, and the plates from which they were made were prepared at a considerable cost by the skilled engraver, Mr. Selig Olcovich of Denver, Colo. One peculiar feature of these tables is that the plate containing the names of the minerals and their analytical description is made to fit the single page of the book and both sides of all pages are utilized. In the columns of each page is given, first, the names of the minerals; in the second column, their chemical composition (not in formulæ; but the names of all metals and elements are written out with the percentage of each ele-

ment when known); in the third, lustre; fourth, color; fifth, hardness; sixth, streak; seventh, fracture and cleavage; eighth, tenacity; ninth, crystalline system; tenth, fusibility, and eleventh, specific gravity. It will be seen at once that with these properties known, the identification of any mineral described is made quite certain.

Part IV treats on the subject of "Naming Rocks." The more common rocks only are described and in such a way as in most cases to admit of at least approximate identification when met with. A Glossary of Mining Terms forms the next subject, then follows an arrangement of mineral collections, models, assay and blowpipe outfits. This concludes the work.

G. W. MILLER, Butte, Mont., May 1st, 1901.

PUBLISHERS' NOTE ON SECOND EDITION

In placing before the public the second edition of Mr. Miller's work, we desire to state that the demand for the Field Book of Practical Mineralogy has far exceeded our expectations. Though we realized from the start that the work filled a recognized gap in mining literature, we were not prepared for the widespread interest with which it was greeted, not only in America but throughout the entire world where the mining industry thrives. One book sent to a locality has almost invariably been followed by a shower of orders, so immediate is the appreciation of the value of Mr. Miller's labors among practical miners and prospectors everywhere. As a time saver, presenting in concrete and convenient form the facts of mineralogy from the miner's standpoint, this little volume appears to occupy a field peculiarly its own.

THE PUBLISHERS' PRESS ROOM CO.

Denver, Colorado, May 1, 1902.

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