PRACTICAL MINING AND ASSAYING

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PREFACE.

This work is the result of fifteen years of practical experience in the mountains, the mines, the mills and the assay office, and is published for the benefit of the prospector, the miner and those who may desire to obtain a general knowledge of practical mining and assaying.

I have endeavored to make it as brief and plain as possible for those who have not had the opportunity to acquire the desired information on this subject, and this alone has prompted the publication of this pocket edition of PRACTICAL MINING AND ASSAYING.

FREDERIC MILTON JOHNSON.

ERRATA

PAGE 29:— Fourth line, use Sulphuric acid instead of Muriatic acid.

PAGE 50:— Third line, after the word "with" add the word "water".

CONTENTS.

INTRODUCTION.

Carbon is the base of the vegetable and organized world, and quartz or silica is the chief or principal of the mineral world. A particle of any one substance is a unit or simple. There are 64 simple substances known. Those that are unknown are termed elements, which have a tendency to combine with know substances or other elements, forming compounds with the different substances under various conditions of temperature, pressure, electricity, etc. All may assume either a liquid, solid or gaseous state. These elements may be mixed in any proportion, but they combine only in fixed proportions. Chemistry gives us the knowledge of the proportions in which the different substances combine. A general idea only of such knowledge necessary for this work is given. The mixture of all metals by fusion forms alloys, hydrogen, oxygen, chlorine, bromine, sulphur, arsenic, phosphorus, silicon, etc., with the different metals enter into the various compositions of ores and fluxes, which to a certain extent the assayer must understand.

A test of ore is made with acids or heat, usually with a blow pipe, with an indefinite amount