# APPLIED GEOLOGY. PART II

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Applied Geology. Part II by J. V. Elsden



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Trieste

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BY

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*PART II.*

WITH NUMEROUS ILLUSTRATIONS.

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1899.

# PREFACE.

THE difficulty of writing a book from the apparently opposite points of view of theory and practice is obvious; but when this apparent opposition is based upon mistaken views as to the relative importance of each, this difficulty is at least some excuse for the attempt to reconcile them.

The reader of these chapters may possibly ask himself the question, "For whom is this book written—for the geologist or the practical man?" The answer is, "For both"—not to teach the practical man his business, which he doubtless knows better than the writer of these pages, nor to teach the scientific student geology; but rather as a suggestive discussion of the intimate connection which undoubtedly exists between geological theory and its application to the industrial pursuits of daily life. The student is often at a loss to understand the real utility, in practical life, of a subject which is so essentially filled with speculative hypothesis as theoretical geology. One reason for this is to be found in the fact that hitherto it has not been the fashion in existing text-books to lay much stress upon the economic aspect of geology. The practical man, on the other hand, too often neglects, even if he does not despise, a mastery of the principles of geology, from a mistaken idea as to its real value. The result has been the comparative neglect of economic geology. The subject is vast, and, within the limits of so small a book, a selection only of

the available material could be utilised. Whether this selection is adequate for the double purpose in view must be left to the reader to decide. It is given to few authors to steer successfully between the two extremes, involving on the one hand an unwieldy volume, and on the other unpardonable omissions. But this difficulty has to be faced by all who attempt the task of compressing an encyclopædic subject into the limits of a few short chapters.

Interest and utility are the ultimate tests of the value of a book; and if these pages should prove of some interest to the student, and of some use, however small, to the practical man, the author's aim will have been more than achieved.

J. VINCENT ELSDEN.

Storrington, 1899.

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## CORRIGENDA.

Page 49, line 8, for *pacas* read *pacos*.

„ 52, „ 28, for *magnetic chlorite* read *magnetite, chlorite*.

# APPLIED GEOLOGY.

## PART II.

### CHAPTER VI.

*Unstratified Ore Deposits—Fissure Veins—Bedded Veins—Contact Veins—Gash Veins—Stockworks and Carbonas—Pockets in Limestone Rocks—Pockets and Disseminations in Igneous Rocks—General Remarks on Ores.*

*Unstratified Ore Deposits.*—In the previous chapter we considered all those metalliferous deposits which occur in well-defined beds, and which were formed more or less contemporaneously with the strata enclosing them. There is, however, an important class of ore deposits which have been introduced subsequently into the rocks containing them, and which are distinguished by the absence of any distinct bedded arrangement. Although usually obtained by mining, some of these deposits are worked in quarries or open works. They may be classified as follows :—

UNSTRATIFED ORE DEPOSITS.

| | | *Typical Examples.* |
|---|---|---|
| Veins or Lodes, *i.e.*, deposits in fissures in the country rock. | *a*. Fissure Veins. | Ordinary Mineral Lodes |
| | *b*. Bedded Veins. | Saddle Reefs. |
| | *c*. Contact Veins. | Comstock Lode, etc. |
| | *d*. Gash Veins. | Galena deposits in Limestone. |
| Masses, *i.e.*, irregular deposits filling chambers or pockets in the enclosing rock. | *e*. Stockworks and Carbonas. | Some Tin-stone deposits in Granite. |
| | *f*. Pockets in Limestone. | Cumberland Hæmatite. |
| | *g*. Pockets and disseminations in igneous rocks. | Some Magnetic and Chrome Iron Ores. |

*Fissure Veins.*—Many of the older rocks of the earth's crust are traversed by systems of cracks or fissures which have served as receptacles for the accumulation of various minerals. These fissures generally display a well-marked symmetry, often intersecting to form a network of cracks called a *field of fracture*. The number of fissures in each field of fracture is indefinite, as many as nine hundred being known in the proximity of Freiberg alone. In each field of fracture a certain parallel set of fissures alone are ore bearing. These

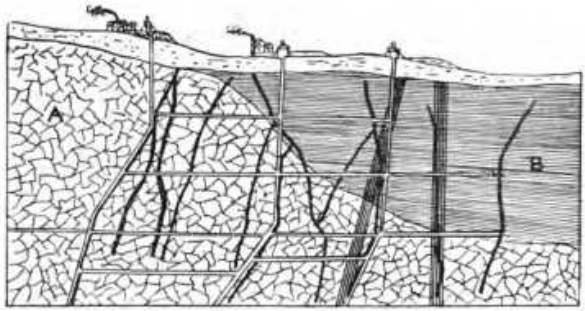


FIG. 58.—SECTION OF A MINING DISTRICT IN CORNWALL.
A, Granite; B, Clay-slate; Black lines, Mineral Veins.

are said to be *right running*, while those which intersect them are termed *counter veins* or *cross courses*. Such conjugate systems of cracks were produced artificially by Daubrée as the result of mechanical force acting upon thick glass plates.

In describing the position of these fissures the same terms are used as have already been described in connection with faults.

In Europe, typical fields of fracture occur in the Erzgebirge and Hartz Mountains, in Cornwall, Bohemia, Hungary and elsewhere. It is probable that such