

masses which lie around and beneath us ; and by a comparison of the results of ancient phenomena, with the forces and agencies still at work in modifying the surface of the globe. As geology is thus essentially based on the study of rocks and their contents, and as rocks are made up of a certain number of simple minerals, it is necessary, or at least advisable, to obtain a knowledge of these latter (so as to be able to recognize them when met with), before proceeding to the discussion of the rocks into which they enter. With these minerals, also, it is convenient to consider a few others of economic application and common occurrence, including the more important metallic ores. In this consideration, the characters or properties by which minerals are distinguished from one another will first be explained, introductory to a Tabular Distribution of Canadian minerals. The latter will be so arranged as to enable the reader to make out the name of any one of the included species, with great facility.

I. HOW MINERALS ARE DISTINGUISHED FROM ONE ANOTHER.

Minerals are distinguished from one another by certain characters or properties which they possess : such as form, degree of hardness, fusibility, &c. Hence, it is to these characters that our attention must be first directed.

Mineral characters are of two kinds : *physical* or *external* characters, and *chemical* characters. The former are exhibited by the mineral under ordinary conditions ; the latter, only when the mineral is exposed to the action of heat or mineral acids, by which, in general, a certain degree of chemical decomposition is effected. Hence the term “chemical” as applied to these latter characters.

The physical properties of minerals are somewhat numerous ; but many, although of the highest interest in indicating the existence of natural laws, and in their relations to physical science generally, are not readily available as a means of mineral discrimination. These, consequently, will be omitted from consideration in the following pages ; and the other characters will be discussed only in so far as they admit of direct application to the end in view—namely, the practical discrimination of minerals one from another.*

* In the explanation of these various characters, it is occasionally necessary to refer, as examples, to a few substances of foreign occurrence. The reader will therefore understand, that the present Part of this Essay makes no special mention of the minerals of Canada, but is simply an Introduction to Part II, in which these minerals will be found arranged together.