

and unsystematic distribution cannot, in the cases we now have to consider, answer the purposes of exact and general knowledge. Our classification of objects must be made consistent and systematic, in order to be scientific; we must discover marks and characters, properties and conditions, which are constant in their occurrence and relations; we must form our classes, we must impose our names, according to such marks. We can thus, and thus alone, arrive at that precise, certain, and systematic knowledge, which we seek; that is, at science. The object, then, of the classificatory sciences is to obtain **FIXED CHARACTERS** of the kinds of things; and the criterion of the fitness of names is, that **THEY MAKE GENERAL PROPOSITIONS POSSIBLE**.

I proceed to review the progress of certain sciences on these principles, and first, though briefly, the science of Mineralogy.

*Sect. 2.—Of Mineralogy as the Analytico-classificatory Science.*

**MINERALOGY**, as it has hitherto been cultivated, is, as I have already said, an imperfect representative of the department of human knowledge to which it belongs. The attempts at the science have generally been made by collecting various kinds of information respecting mineral bodies; but the science which we require is a complete and consistent classified system of all inorganic bodies. For chemistry proceeds upon the principle that the constitution of a body invariably determines its properties; and, consequently, its kind: but we cannot apply this principle, except we can speak with precision of the *kind* of a body, as well as of its composition. We cannot attach any sense to the assertion, that "soda or baryta has a metal for its base," except we know what *a metal* is, or at least what properties it implies. It may not be, indeed it is not, possible, to define the kinds of bodies by words only; but the classification must proceed by some constant and generally applicable process; and the knowledge which has reference to the classification will be precise as far as this process is precise, and vague as far as this is vague.

There must be, then, as a necessary supplement to Chemistry, a Science of those properties of bodies by which we divide them into *kinds*. Mineralogy is the branch of knowledge which has discharged the office of such a science, so far as it has been discharged; and, indeed, Mineralogy has been gradually approaching to a clear consciousness of her real place, and of her whole task; I shall give the history of some of the advances which have thus been made. They are, principally,