

great steps of its advance, from the most unconnected facts and the most imperfect speculations, to the highest generalization at which chemical philosophers have yet arrived.

Yet it will appear to our purpose to say a few words on the connexion of this science with those of which we are next to treat; and that I now proceed to do.

---

## CHAPTER X.

### TRANSITION FROM THE CHEMICAL TO THE CLASSIFICATORY SCIENCES.

IT is the object and the boast of chemistry to acquire a knowledge of bodies which is more exact and constant than any knowledge borrowed from their sensible qualities can be; since it penetrates into their intimate constitution, and discloses to us the invariable laws of their composition. But yet it will be seen, on a little reflection, that such knowledge could not have any existence, if we were not also attentive to their sensible qualities.

The whole fabric of chemistry rests, even at the present day, upon the opposition of acids and bases: an acid was certainly at first known by its sensible qualities, and how otherwise, even now, do we perceive its quality? It was a great discovery of modern times that earths and alkalies have for their bases metals: but what are *metals*? or how, except from lustre, hardness, weight, and the like, do we recognize a body as a metal? And how, except by such characters, even before its analysis, was it known to be an earth or an alkali? We must suppose some classification established, before we can make any advance by experiment or observation.

It is easy to see that all attempts to avoid this difficulty by referring to processes and analogies, as well as to substances, bring us back to the same point in a circle of fallacies. If we say that an acid and alkali are known by combining with each other, we still must ask, What is the criterion that they have *combined*? If we say that the distinctive qualities of metals and earths are, that metals become earths by oxidation, we must still inquire how we recognize the process of *oxidation*? We have seen how important a part combustion plays in the history of chemical speculation; and we may usefully form such classes of