

receive them as temporary substitutes for such truths, until the latter shall become known. If they suffice to explain all the phenomena known, it becomes highly improbable that they will not explain more; and if all their conclusions we have tried have proved correct, it is probable that others yet untried will be found so too; so that in rejecting them altogether, we should reject all the discoveries to which they may lead.

(221.) In all theories which profess to give a true account of the process of nature in the production of any class of phenomena, by referring them to general laws, or to the action of general causes, through a train of modifying circumstances; before we can apply those laws, or trace the action of those causes in any assigned case, we require to know the circumstances: we must have data whereon to ground their application. Now, these can be learned only from observation; and it may seem to be arguing in a vicious circle to have recourse to observation for any part of those theoretical conclusions, by whose comparison with fact the theory itself is to be tried. The consideration of an example will enable us to remove this difficulty. The most general law which has yet been discovered in chemistry is this, that all the elementary substances in nature are susceptible of entering into combination with each other only in fixed or *definite proportions* by weight, and not arbitrarily; so that when any two substances are put together with a view to unite them, if their weights are not in some certain determinate proportion, a complete combination will not take place, but some part of one or the other ingredient will remain over and above, and uncombined. Suppose, now, we have found a substance having all the outward characters of a homogeneous or unmixed body, but which, on analysis, we discover to consist of sulphur and lead in the proportion of 20 parts of the former to 130 of the latter ingredient; and we would know whether this is to be regarded as a verification of the law of definite proportions or an exception to it. The question is reduced to this, whether the proportion 20 to 130 be or be not *that* fixed and definite