

4. In a majority of cases, the periods of disturbance on the globe appear to have been short compared with the periods of repose that have intervened; as is obvious from the fact that particular formations have the same strike and dip throughout their whole extent; unless some portions have been acted upon by more than one elevatory force; and then we find a sudden change of strike and dip in the formations above and below. Whereas, had any of the causes of elevation now in operation lifted up these formations by a repetition of their present comparatively minute effects, there ought to be a gradual decrease in the dip from the bottom of the formation upwards, and no sudden change of dip between any two consecutive formations, unless some strata are wanting. At the periods of these elevatory movements, therefore, the force must have been greater than any that is now exerted, to produce analogous effects.

5. The sudden and remarkable changes in the organic contents of the strata, as we pass from one formation to another, even when none of the regular strata are wanting, coincides exactly with the supposition of long periods of repose, succeeded by destructive catastrophes. Nor is the supposition that species of animals and plants have become gradually extinct, and have been replaced by new species, by a law of nature during periods of repose, sustained by any facts that have occurred within the historic period: no example having been discovered of the creation of a new species by such a law; and only a few examples of the extinction of a species.

6. Upon the whole, were we to confine our attention to the tertiary and alluvial strata, it might be possible to explain their phenomena by existing causes, operating with their present intensity. But when we examine the secondary, palæozoic, and hypozoic rocks, we are forced to the conclusion that this hypothesis is inadequate; and that we must admit a far greater intensity in geological agencies in early times than at present.

8. But the question here arises, how long a period shall we assume as a measure of the intensity of existing agencies? The most strenuous advocates of the doctrine of uniformity will admit of some oscillation in the intensity of these agencies; because a single year shows it. How, then, shall we determine how wide that oscillation may be? In order to obtain the average intensity, how can we say but that all geological cycles must be included? To make any particular portion of time the measure of all the rest, must be an arbitrary assumption. And, therefore, we can not ascertain what is the standard or the average of intensity; and until this can be done, is the subject considered under this head any thing more than a controversy about words?