

series. The number of orders has more than doubled since the earliest times, so that more than half do not reach through all the strata.

In the Palæozoic formations there were	31
In the Triassic Period	21
In the Jurassic	41
In the Cretaceous	41
In the Tertiary	71

Much fewer is the number of genera that have survived all the changes which the globe has undergone. The following statement by D'Orbigny shows strikingly how great have been the changes of the organic world. It is confined to animals:

Number of living genera of animals,	1324
Number of fossil genera,	1457
Of these there yet live,	539
Have become extinct	933
Have survived all changes, only	16

All of these surviving *venerable* genera belong to the different families of Molluscs, while of all the other animals not a genus has been extended through all past periods.

Sixth Law.—Complexity and perfection of organization as well as intelligence increase as we ascend in the rocks.

This is true as a general fact; but in particular tribes we find the reverse, viz., retrogradation from a lower to higher condition. "All our most ancient fossil fishes," says Professor Sedgwick, "belong to a high organic type; and the very oldest species that are well determined, fall naturally into an order of fishes which Owen and Miller place, not at the bottom, but at the top of the whole class." Says Hugh Miller, "in the imposing programme of creation, it was arranged as a general rule, that in each of the great divisions of the procession, the magnates should walk first. We recognize yet further the fact of degradation specially exemplified in the fish and the reptile." "The Cephalopods, the most perfect of the molluscs, which lived in the early period of the world," says D'Orbigny, "show a progress of degradation in their generic forms. The molluscs as to their classes have certainly retrograded from the compound to the simple, or from the more to the less simple."

Such statements are not inconsistent with the law we have stated above; for there may be upward progress by the introduction of higher and higher forms of life, while some of the groups may suffer deterioration, as seems to have been the case. A simple inspection of the tabular view we have given of organic remains will show how strong is the evidence of progress. The only way to escape the inference is to say that higher forms may yet be discovered in the lower rocks. But this is a point of so much importance in its bearings upon certain hypotheses that we shall recur to it again in the next Section.

More impressively to exhibit these facts and to show to the eye the periods when the most important races came upon the globe, we copy Fig. 409 from Professor Owen. We shall have occasion to refer to it again in another connection.

Seventh Law. Particular classes, orders, and genera, as well as whole faunas and floras, have had their periods of expansion, culmination, diminution, and sometimes extinction.

Fig. 410, prepared by Prof. Owen, shows these facts in respect to the orders of Reptiles. The shaded lenses and triangles indicate the periods of their