to have undergone, during a long series of generations, between the present period and the remotest geological era.

"If you examine the brain of the mammalia," says M. Serres, "at an early stage of uterine life, you perceive the cerebral hemispheres consolidated, as in fish, in two vesicles, isolated one from the other; at a later period, you see them affect the configuration of the cerebral hemispheres of reptiles; still later again, they present you with the forms of those of birds; finally, they acquire, at the era of birth, and sometimes later, the permanent forms which the adult mammalia present.

"The cerebral hemispheres, then, arrive at the state which we observe in the higher animals only by a series of successive metamorphoses. If we reduce the whole of these evolutions to four periods, we shall see, that in the first are born the cerebral lobes of fishes; and this takes place homogeneously in all classes. The second period will give us the organization of reptiles; the third, the brain of birds; and the fourth, the complex hemispheres of mammalia.

"If we could develop the different parts of the brain of the inferior classes, we should make, in succession, a reptile out of a fish, a bird out of a reptile, and a mammiferous quadruped out of a bird. If, on the contrary, we could starve this organ in the mammalia, we might reduce it successively to the condition of the brain of the three inferior classes.

"Nature often presents us with this last phenomenon in monsters, but never exhibits the first. Among the various deformities which organized beings may experience, they never pass the limits of their own classes to put on the forms of the class above them. Never does a fish elevate itself so as to assume the form of the brain of a reptile; nor does the latter ever attain that of birds; nor the bird that of the mammifer. It may happen that a monster may have two heads; but the conformation of the brain always remains circumscribed narrowly within the limits of its class." *

Dr. Clark of Cambridge in a memoir on "Fœtal Development," (1845,) has shown that the concurrent labours of Valentin, Rathké, and Bischoff disprove the reality of the supposed anatomical analogy between the embryo condition of certain organs in the higher orders, and the perfect structure of the same organs in animals of an inferior class. The hearts and brains, for example, of birds and mammals do not pass through forms which are permanent in fishes and reptiles; there is only just so much resemblance as may point to a unity of plan running through the organization of the whole series of vertebrated animals; but which lends no support whatever to the notion of a gradual transmutation of one species into another; least of all of the passage, in the course of many generations, from an animal of a more simple to one of a more complex structure.

Recapitulation. — For the reasons, therefore, detailed in this and

* E. R. A. Serres, Anatomie comparée du Cerveau, illustrated by numerous plates, tome i. 1824.