

individuals belonging to different species. Nor is there any foundation in observation for the opinion that a new species may be formed by the union of individuals of different families. But it is contended, that, although the species of animals have not changed in the last 5000 years, we do not know what might have been the effect of the revolution before that time, that is, previous to the present condition of the world. But, on subjects of this nature, we must argue from what we know, and from what we see.

We do perceive surprising changes in the conformation of animals; some of them are very familiar to us; but all show a foreknowledge and a prospective plan, an alteration gradually taking place in preparation for the condition, never consequent upon it. It will be sufficient for our purpose, if we take the highest and the lowest examples. Man has two conditions of existence in the body. Hardly two creatures can be less alike than an infant and a man. The whole foetal state is a preparation for birth. My readers would not thank me, were I to show how necessary all the proportions and forms of the infant are to his being born alive,—and yet nothing is so easy to demonstrate. Every one may see that from the moment of birth there is a new impulse given to the growth, so as finally to adapt the proportions of the body to the state of perfect manhood. Few, however, are aware that the fœtus has a *life* adapted to its condition, and that if the confinement of the womb were protracted beyond the appointed time, it must die!—from no defect of nourishment, but simply, because the time is come for a change in its whole economy!

Now, during all the long period of gestation, the organs are forming; the lungs are perfected before the admission of air—new tubes are constructed before the flood-gates, which are to admit the blood, are opened. But there are finer, and more curious, provisions than these. If we take any of the grand organs, as the heart, or the brain, and examine it through all its gradations of change in the embryo state, we shall recognize it simple, at first, and gradually developing, and assuming the peculiarities which finally distinguish it. So that it is affirmed, and not without the support of a most curious series of observations, that the human brain, in its earlier stage, resembles that of a fish: as it is developed, it resembles more the cerebral mass of the reptile; in its increase, it is like that of a bird, and slowly, and only after birth, does it assume the proper form and consistence of the human cephalon. But in all these changes to which man is subject, we nowhere see the influence of the elements, or any other cause than that it has been so predestined. And if, passing over the thousand instances which might be gathered from the intermediate parts of the chain of animal existence, we take the lowest link, and look to the metamorphosis of insects, the conclusion will be the same.

For example, if we examine the larva of a winged insect, we shall see the provisions for its motion over the ground, in that condition, all admirably supplied in the arrangement of its muscles, and the distribution of its nervous system. But if, anticipating its metamorphosis, we dissect the same larva immediately before the change, we shall find a new apparatus in progress towards perfection; the muscles of its many feet are seen decaying; the nerves to each muscle are wasting; a new arrangement of muscles with new points of attachment, directed to the wings instead of the feet, is now visible; and a new distribution of nerves is distinctly to be traced, accommodated to the parts which are now to be put in motion. Here is no budding and stretching forth under the influence of the surrounding elements; but a change operated on all

the economy, and prospective, that is, in reference to a condition which the creature has not yet attained.

These facts countenance the conclusion drawn from the comparative anatomy of the hand and arm—that with each new instrument, visible externally, there are a thousand internal relations established: a mechanical contrivance in the bones and joints, which alters every part of the skeleton: an arrangement of muscles, in just correspondence: a texture of nervous filaments, which is laid intermediate between the instrument and the very centre of life and motion; and, finally as we shall discover from what follows, new sources of activity must be created in relation to the new organ, otherwise the part will hang a useless appendage.

It must now be apparent that nothing less than the Power, which originally created, is equal to the effecting of those changes on animals, which are to adapt them to their conditions: that their organization is predetermined, and not consequent on the condition of the earth or the surrounding elements. Neither can a property in the animal itself account for the changes which take place in the individual, any more than for the varieties which take place in the species. Every thing declares the species to have its origin in a distinct creation, not in a gradual variation from some original type; and any other hypothesis than that of a new creation of animals suited to the successive changes in the inorganic matter of the globe—the condition of the water, atmosphere, and temperature—brings with it only an accumulation of difficulties.—*Bell*.

Caloric.—The necessity of one body being endowed with a greater power to conduct caloric than another, is apparent in many instances: but perhaps the nature of snow in this respect renders us a more important service than any other substance. Owing to the distance of this globe from the sun, and to the vast mountains of ice at the poles, the atmosphere over a large portion of the earth is at times reduced to so low a temperature, that, were it not for a wise provision of nature, all vegetable life must be destroyed. Caloric has always a tendency to equilibrium; there, if the temperature of the air be lowered, the earth cools in proportion: but when the atmosphere is reduced to 32° , the water which it held in solution becomes frozen, and precipitates in the form of snow upon the earth, covering it as with a carpet, and thereby preventing the escape of that caloric which is necessary for the preservation of those families of vegetables that depend upon it for their support and maturity. Be the air ever so cold, (and in the northernmost parts of the Russian empire it is sometimes 70 degrees below the freezing point,) the ground, thus covered, is seldom reduced below 32° , but is maintained equally at that temperature for the purpose above mentioned. How multiplied are the means which Nature has adopted for the preservation of all her productions! —*Parley's Chemical Catechism*.