

fessed, that it is also accompanied with difficulties not easily to be removed.

If the earth be composed of a solid crust or shell surrounding a fluid mass, this internal fluid would be subjected to the attraction of the sun and moon, or, in other words, would have its regular tides. We are not acquainted with any counteracting influence, to prevent the impulse of these tides upon the solid shell. I am, however, fully persuaded, that the internal parts of the earth do not consist of an assemblage of chaotic elements, but that they are arranged with as much wisdom as the parts of the external universe, and that the earth itself is the vast laboratory, in which were prepared, according to definite laws, all the mineral substances found on its surface, and in which are now preparing the elements of future changes. There is one difficulty attending the theory of central heat, noticed by Professor Sedgwick, which it may be proper to state. "If," says he, "during any period the earth has undergone any considerable refrigeration, it must also have undergone a contraction of dimensions; and also, as a necessary consequence of a well-known mechanical law, an acceleration round its axis: but direct astronomical observations prove, that there has been no sensible diurnal acceleration during the last 2000 years; and, therefore, during that long period, there has been no sensible diminution in the mean temperature of the earth. This difficulty does not, however, entirely upset the previous hypothesis; it only proves, that the earth had reached an equilibrium of mean temperature, before the commencement of good astronomical observations."

If the terrestrial globe has ever been a fluid ignited mass, it is obvious that the atmosphere must have undergone great changes during the progress of refrigeration. In the original ignited state of the earth, all the aqueous particles that form the ocean, and all the more volatile mineral substances, would have existed in the form of vapour, and have constituted a nebulous medium of vast extent, resembling the atmosphere of a comet, or the nebulosity surrounding the newly-discovered planets, Juno, Ceres, and Pallas. By progressive refrigeration, the volatile mineral matter would be concentered, and the aqueous particles precipitated, until the constitution of the atmosphere became fitted for the support of animal life. It is not improbable, that the animals of the earliest creation, might have been constituted to breathe a denser atmosphere than the present one. Such an atmosphere would, in a considerable degree, equalize the mean temperature of the earth; and the excess of moisture and of carbonic acid gas, would also be favourable to the rapid development of vegetation.

In stating these hypotheses, my only object has been to suggest to the reader, the various causes which may have affected the former temperature of the globe, and I shall leave him to determine how far any of them appear to be supported by analogy and probability.