

evidence of change, or physical or organic action, whether sudden or gradual, as a geological course, provided it could be shown to be or to have been a natural fact. Farther, no one was more fully impressed with the continual change and progress in nature, and with the necessity of taking into account the different conditions of different geological times, in applying any modern cause to account for ancient phenomena.

A second and still more mischievous misapprehension is that of regarding his method as similar to that style of analogical reasoning which Spencer and Darwin have made so current in our time. When Lyell strove to illustrate the conditions of the Coal period by those of the great Dismal Swamp, for example, his argument was one of analogy, but an analogy in which the main conditions could be proved to be identical. In both cases they were swamp conditions, though separated by a great lapse of time. He never would have reasoned, like Spencer, that the evolution of an egg explains the evolution of animals in geological time; because in this case the similarity of conditions which can alone give value to a natural analogy is wholly absent. Nor does the Lyellian philosophy properly admit the assumption, as a *vera causa* of past geological change, of processes supposed to be going on, but so slowly that human experience fails to obtain any measure of them, or even any certainty as to their reality. It is true that, in the later editions of the Principles, Sir Charles admits the force of Darwin's arguments for the transmutation of species, and devotes large space to their exposition; and he states, as his general conclusion, that Darwin "without absolutely proving this, has made it appear in the highest degree probable;" but I do not find that he ever regarded these brilliant speculations as occupying the same stable ground with his own grand general conclusions as to the persistency of existing causes in geological time. Lyell, in short, while a uniformitarian rather than a cataclysmist, held to uniformity not of effects, but of the general laws of causation; and the analogies by which he sought to connect modern changes with those which had left their monuments on the earth's crust, had nothing in common with those on which theories of transmutation of species have been based.

It is always an interesting inquiry in the case of a great student of nature, to ask what position he took in regard to those higher problems which directly affect man in his mental, moral