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PROCESSES OF ORGANIC EVOLUTION¹

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OMITTING the Greek philosophers and the adumbrations of the early naturalists, the first thorough-going theory of evolution may be said to be that of Lamarck. In his time, however, even the elements of physical and chemical science were in a rudimentary state, so that the nature of organic structure and functioning was but little understood. His theory of the direct impress of adaptive modifications on the organism and their transmission by inheritance to future generations failed to convince the world at large of the fact of evolution and has since failed of acceptance by critical students of evolutionary processes. Darwin partly accepted this principle of the inheritance of acquired characters, which was only natural, considering the very sketchy and inadequate knowledge of the

nature of reproductive processes in plants and animals in the middle of the nineteenth century, when the "Origin of Species" was written. It may even yet find support in some subtler serological form.

Darwin, however, stressed his principle of natural selection as the main force causing evolutionary adaptation. This theory was derived in turn from an extension of Malthus's law of human populations, and still stands as an almost universally accepted process in the modification and replacement of species. But evolutionists still differ widely in the emphasis they would lay on natural selection in comparison with other evolutionary processes. Darwin relied upon the selection of variations of all kinds occurring in large numbers in the species, but in his time very little was known either of the nature of these variations or the manner of their inheritance. Had Mendel's paper on

¹ Substance of a lecture at the University of California, Berkeley, November 27, 1940.

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