

THE UNITY OF NATURE

and botanists, but were not properly interpreted, and their great philosophic significance appreciated, until Darwin.

All the higher animals and plants, or, in general, all organisms which are not entirely simple in structure, but are made up of a number of organs in orderly cooperation, are found, on close examination, to possess a number of useless or inoperative members, sometimes, indeed, hurtful and dangerous. In the flowers of most plants we find, besides the actual sex-leaves that effect reproduction, a number of other leaf-organs which have no use or meaning (arrested or "miscarried" pistils, fruit, corona, and calix-leaves, etc.). In the two large and variegated classes of flying animals, birds and insects, there are, besides the forms which make constant use of their wings, a number of species which have undeveloped wings and cannot fly. In nearly every class of the higher animals which have eyes there are certain types that live in the dark; they have eyes, as a rule, but undeveloped and useless for vision. In our own human organism we have similar useless rudimentary structures in the muscles of the ear, in the eye-lid, in the nipple and milk-gland of the male, and in other parts of the body; indeed, the vermiform appendix of our cæcum is not only useless, but extremely dangerous, and inflammation of it is responsible for a number of deaths every year.

Neither the old mystic vitalism nor the new, equally irrational, neovitalism can give any explanation of these and many other purposeless contrivances in the structure of the plant and the animal; but they are very simple in the light of the theory of descent. It shows that these rudimentary organs are atrophied, owing to disuse. Just as our muscles, nerves, and organs