

salmon as are consumed by the whole human race. Other creatures known to science are almost independent of reproductive powers for multiplication. They may be cut up into a great many separate parts, and each part will then become a complete fish. Enough has been said to enable the reader to understand how it happened that what we will call the second generation of animal organisms felt the struggle for existence as keenly as did the first. The result also was similar—the elimination of the weakly and malformed, and the subsequent generations during the millions of years over which geology shows the earth to have existed. It is a case of perpetual struggle, and perpetual improvement.

If the surface of the globe were all over similar, or if, in other words, it presented only one set of conditions, there would in all probability be only one species of animal. Some one type would prove fitter than its competitors, and destroy them. But the surface of the globe is not uniform. On the contrary, it presents an almost infinite variety of conditions, and sets of conditions. Each set of conditions makes for the evolution of a distinct type. Very frequently the endowments which constitute fitness under one set of conditions would mean unfitness under another. One illustration will prove the truth of this statement. The heron is a bird well known in Britain. It is what we call a wader. Its long legs enable it to walk about with ease in shallow rivers and lakes, and its long neck and beak enable it to catch fish under stones and banks without diving. In short, its structure is such that the bird is admirably adapted to the life it leads. It would live where even a good swimmer and diver like the duck would starve. In a country abounding in shallow ponds every generation would see the type accentuated. Its peculiarities of structure give it an advantage in the struggle for existence. But let us suppose the conditions changed. Let the heron be transported to a country containing little water, where it would be compelled to get its living on dry land. Then it would be found that its long legs and long neck, instead of being an advantage, were an incumbrance, and the previous tendency of natural selection to accentuate those peculiarities would disappear. A different structure would now be found useful in the struggle for existence, and the evolution of a fresh type would begin. Herbert Spencer puts the case very neatly when he says—

"Any species, when placed under new conditions, immediately begins to undergo changes of structure fitting it for the new conditions."

Again—

"The degrees of difference thus produced are often, as in dogs, greater than those on which distinctions of species are in other cases founded."

Further, he says—

"This influence would produce in the millions of years, and under the great varieties of conditions which geological records imply, any amount of change."

Material conditions are, however, not the only causes which operate to