

**Q. 1. Write an essay on Lamarckism.**

**Ans.** Jean Baptisted Lamarck (1744-1829) was the first person to propose a theory of organic evolution in 1807 and 1809. He recognised a fundamental continuity underlying the diverse animals and believed that there had been a progressive development of forms. His theory states that evolution of new types takes place by the effects of environment which causes changes in the shape and organisation of animals and that these changes are passed on to the offspring. Secondly he stated that during the life time of an individual the effect of use of disuse of organs enlarge or reduce them respectively, continuous use develops, enlarges and strengthen an organ while permanent disuse reduces and weakens it. The changes which take place in the body of an individual during its life time due to environment or to use and disuse are known as acquired characters which according to Lamarck, are preserved by reproduction or they are inherited by the progeny, thus producing new types. He also thought that an animal in some way exerted its will to live and determined the course of its evolution. Many examples were given to support his contention. A giraffe found in Africa has to feed on foliage of trees and required an effort to reach the leaves, thus by continuous effort of stretching the neck and forelimbs increased in each generation, cumulative effect has resulted in the present giraffe with long neck and forelimbs.

Lamarck's theory is a simple one but is largely rejected because the effects of environment or, of use and disuse called acquired characters produce variations which are never inherited. The powerful arm muscles acquired by a blacksmith are not inherited by his offspring. Countless experiments have been made to test the possibility of inheritance of acquired characters but all have resulted in failure. Weismann propounded his theory of germinal continuity in 1892 which states that a zygote divides into cells having the same hereditary qualities as the parent cell. Some daughter cells become differentiated into body or somatic cells but the undifferentiated cells become germ cells. The germ cells produce the next generation and there is an unbroken linkage from generation to generation. Any variation must be present in the germ cells if they are to be inherited. Weismann proved that acquired characters affect the body and are somatic, they cannot be inherited since they do not affect the germ cells.