

descent rather than that of transmutation as applied by Darwin and his followers. According to this theory it is possible for new forms to arise suddenly without passing through a transitional stage. The theory of DeVries has the support of certain evidence deduced from results gained from experiments with *Oenothera Lamarckiana*. At least 50,000 plants were cultivated by DeVries in his garden for a number of generations, and out of this number about 800 were found to possess characters distinct from those peculiar to the parent forms. These new forms, moreover, proved to be constant by breeding true in succeeding generations. The occurrence of these forms under domestication may account for the numerous "elementary species" that are found in nature.

The theory of DeVries is not new. We have noticed how the idea of the creating of new species by the sudden variation of organisms prevailed among some writers of a comparatively early period. In 1864 Von Kolliker, convinced of the weakness of the natural selection theory, promulgated the theory that new and distinct species are born suddenly by leaps. In 1899, Korschinsky, a Russian botanist, as the result of certain observations and study, formulated the mutation theory. The publication in 1901 by DeVries of his first book on "Die Mutations-theorie" was the first public recognition of importance which this theory received. DeVries' theory is alternative with that of Darwin's as regards the formation of new species, but as regards the general course of evolution and the great principles which govern it the mutation theory is not in contradiction to the descent theory through natural selection, but is rather supplementary to it.

After considering the main principles which are associated with the various theories we have outlined we are forced to make the following conclusions, viz.:—

- (1) That no two plants are exactly alike.
- (2) That while "like begets like" in the main yet there is a constant and continual variation going on within the species.
- (3) That some of these variations are fluctuating and unstable while others are discontinuous and determinate.
- (4) That artificial selection of desirable fluctuating variations may raise the standard above the average of the race at least, although the limitations of this method of selection are recognized.
- (5) That the artificial selection of discontinuous variations may result in the development of superior new strains.
- (6) That a combination of desirable characters through hybridization may result in the creation of hybrids possessed of special merit.