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CONTENTS:

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THE MUTATION THEORY OF ORGANIC EVOLUTION.*

The Mutation Theory of Organic Evolution, from the Standpoint of Animal Breeding: W. E. CASTLE, Assistant Professor of Zoology, Harvard University.

The mutation theory, as I understand it, is not designed to replace Darwin's theory of natural selection, nor is it capable of replacing that theory. Natural selection must still be invoked to choose between different organic forms, preserving the more efficient, destroying the less efficient. The question raised by this new theory is, What sort of forms are subjected to the action of natural selection? Is there a complete gradation of forms between two extreme conditions and is natural selection called upon to choose from this whole series the one which is organically most efficient, or is the task simpler and is the choice made merely between two widely separated conditions of the ideal series? Thus, we find within a species two varieties, one larger than the other. Have they diverged by gradual cumulation of minute differences in size, or by a single step? These alternative views are known, respectively, as the selection theory and the mutation theory. Both views were recognized by Darwin as possibilities, though he seems to have attached more importance to the process of gradual modification. Most of his followers have given attention exclusively to this process, but a few, like Bateson and de Vries, have regarded modification by

* Six addresses given before the American Society of Naturalists at Philadelphia, December 28, 1905.