

# SCIENCE

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## ON THE THEORY OF ORGANIC VARIATION.\*

As the evolution question becomes more and more deeply examined the particular phenomena described under the terms variation and heredity are concentrating much closer observation and thought. The whole philosophy of the matter seems to turn upon the interpretation of these phenomena.

\* An address delivered before the Philosophical Club of Yale College, April 1, 1897.

In this discussion biologists and those who are engaged in adjusting biological theories to the systems of human thought appear to be resting on the assumption that the great result of the speculations of the last fifty years has been the furnishing of a rational explanation of the so-called natural causes of variation of organisms in their morphological and physiological aspects. This assumption appears to be associated with another, which in some sense is its antithesis, *i. e.*, that those organic phenomena which recur in relatively uniform cycles in successive generations of organisms are fundamental, are the expressions of the intrinsic nature of organic matter, and thus lie beyond the immediate investigation of science. According to this view, heredity (*a*) is not caused, but is a primary law of all organisms; variation (*b*) is a departure from the strict operation of the law of recurrence in generation; and thus external environment (*c*), or the general conditions of being in which organisms exist, is effective in its interaction with the intrinsic energies of the organism in diverting or modifying the natural expression of those energies, to the causing of that diversity and heterogeneity of form and operation which we see about us. This is, as I understand it, a fair expression of the general attitude of thinking men toward the problem in question. This position has received little consideration because it has

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