

AUTHOR'S PREFACE

IT is not without significance that a geneticist should be asked to make a contribution to a series of monographs on Comparative Physiology. It seems reasonable to interpret this as a recognition on the part of the physiologist of the desirability of including genetics in any comprehensive survey of general physiology.

The science of genetics has hitherto been mainly concerned with the significance of ratios between classes of related individuals which appear in successive generations of an experiment starting with two types that differ from one another in respect of one or more heritable characters. It has defined the germplasm, "mapped" the chromosomes, and has demonstrated the intimate relation between somatic character and some definite antecedent determiner in the gamete. But so busy has the geneticist been collecting and interpreting his ratios, and so inefficient are the present day techniques of developmental physiology, that as yet very little effort has been made to demonstrate the nature of this relationship. However, the geneticist has always recognised that the facts which he has disclosed demand a physiological interpretation, that genetic phenomena must be accepted as evidence of the action of a long chain of physiological processes during development and differentiation.

It is reasonable to hold that in all probability the present methods of genetics, so ably used, have already made their great and lasting contributions to biological science. There are still many gaps to be filled and many extensions and applications to be made, but the great general principles that could emerge from the purely genetical mode of investigation have already been disclosed. Formal genetics as a tool wherewith to explore the great problem of evolution is becoming blunted. At least, so it seems to me.

I am very conscious of the shortcomings of my treatment of the subject. Since the number of pages was strictly limited and the subject is extensive and ever enlarging, I have been forced to omit or to treat inadequately much that is of importance. I dread lest in my presentation I may chill the interest in my subject that

I would awaken in the reader. I hope that may not be so. I was encouraged to write this book by the hope that in the reading of it someone may be sufficiently stirred as to decide to devote himself to a subject which has always fascinated me. To him I would say that there is no more fruitful field of work, and none more wonderful, and that the experimental biologist who wishes to serve his science would be well advised to consider specialising in developmental physiology and devoting himself to the problem as to how the gene in its action produces its end result, the character.

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