

MODES OF RESEARCH IN GENETICS

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Modes of research in genetics by Raymond Pearl

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RAYMOND PEARL

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MODES OF RESEARCH IN GENETICS

BY

RAYMOND PEARL

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STATION

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PREFACE

THIS book has been prepared in the hope that it may meet, in some small degree, what seems to be a rather definite need in biological literature. During the past fifteen years there has been a great movement of biological research towards the problems of organic evolution, and particularly towards that phase of those problems which constitutes the subject currently known as genetics. Experimental breeding has become the order of the day, not alone in the laboratories of zoölogy and botany, but in the agricultural experiment stations and colleges everywhere.

Research in a new field means the application of new methods. Nowhere has this been more true than in genetics. For a critical handling of many genetic problems, a thorough grounding in chemistry, physics, and mathematics as well as biology is really a necessity. In particular the widespread use of the biometric technique in biology and agriculture demands a clear understanding of certain fundamental mathematical principles. Unfortunately such a clear grasp of underlying principles is too often plainly lacking in the bio-

metric work which is being turned out in ever-increasing volume.

Demands which have come to the writer from teachers of genetics and biometry in various agricultural colleges and universities for separate copies of one of the papers reprinted in this volume, in order that they might put it in the hands of their students, have suggested that there is a rather widespread and genuine desire to examine carefully the underlying methodological bases of modern genetic science.

It is hoped that the present volume may serve as an introduction to this subject. Even though the reader may not agree with either the reasoning or the conclusions, if he is stirred up to further thought and reading about the matter, the purpose of the writer will have been served. In these days of extreme specialization and great activity in biological research far too little attention is paid to the fundamental philosophical background of science.

The writer wishes to acknowledge his indebtedness to Professor H. S. Jennings for very helpful suggestions and criticisms in regard to the problems discussed in Chapter III, and to Professor J. McKeen Cattell, for permission to reprint from *Science* and the *American Naturalist* such portions of the book as have already appeared in those journals.

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