

MODERN GENETICS

Genetics

By Edgar Altenburg. Pp. xii+452. (New York: Henry Holt and Co.; London: Constable and Co., Ltd., 1946.) 16s. net.

THE teaching of all subjects is bound to be influenced by its object. That object ostensibly has always been to expand the mind of the pupil, accustoming it to new modes of thought and to their application in practice. For such a purpose the new development of the science of genetics is remarkably well suited. All types of scientific method have been used in this development and all aspects of human life and thought are affected by its practical application. The only difficulty is that teachers are lacking, and most of those who want to learn have to turn to books. That is why a new book on genetics is so important at the moment.

Dr. Edgar Altenburg, the author of the present work, comes from the famous *Drosophila* laboratory at Columbia. His book is intended for university students. It follows a plan now commonly adopted for such books in the United States. It omits references to original papers, devoting, on the other hand, as much as a third of its matter to summaries of each chapter and to statements of problems, or examination questions; both of these are accurately indexed—more so, indeed, than the text.

It might be objected that this method encourages the novice to acquire fixed and final ideas on each aspect of the subject before the matter is further developed. This objection does not, however, apply to the present case, for in fact matters are not further developed. In the general treatment ideas are not joined together. A work on anatomy or systematics would not perhaps be seriously impaired in its educational use by such incoherence. A work on genetics, however, is bound to suffer. That the author has never felt any difficulty of this kind is apparent from such a sentence as the following, from Chapter 1 (which he puts in italics as being of special moment), "We may then define heredity as the transmission of the germ plasm from parents to offspring"; and the germ plasm he has defined six lines earlier as "the hereditary material". Similarly, in the text of Chapter 2, he tells us that "The question 'Which is more important, heredity or environment?' raises a problem which really has no answer"; but in the summary of the same chapter the wisdom of this remark has been distilled into "Heredity and environment are equally important in the development of the individual". You pay your money and you take your choice. Again, in Chapter 11, the author devotes a great deal of trouble to explaining how crossing-over takes place between paired chromosomes at meiosis. But in Chapter 1 he has already described the two divisions of meiosis as reductional and equational, a terminology which has no meaning where crossing-over takes place. Genetics used to be like this thirty years ago. But need it be so to-day?

So much for modern aspects of the subject—and Altenburg claims to be really modern. Genetics, however, is less modern, as well as more modern, than he imagines. The theory of natural selection, an integral part of modern genetics, can be usefully connected with the work of Darwin. The chromosome theory of heredity can likewise be usefully connected with Weismann and the classical school of German cytologists. Yet the contributions of Weismann and Darwin are referred to only among "problems". There

is no argument in the text which requires their introduction: Darwin is mentioned only as the author of the pangenesis and the father of a large family.

In place of ancient history, Altenburg offers the most recent of his own ideas: "Some species seldom mutate, as judged by the fact that they have so few varieties. This, for example, is true of the goose. By contrast there are many varieties of chickens, due perhaps in part to a relatively higher (*sic*) mutation rate" (p. 347). Has a conclusion been reached? Probably not. But certainly it would be difficult to create more false impressions in three sentences. One wonders what the author would have made of Fisher and Haldane, Sewall Wright and Vavilov, if he had mentioned them.

Altenburg's book has one thing in common with genetics. It is founded on Morgan. It does not, however, integrate Morgan's ideas with the great achievements of those who came before him and of those who have come after him; on the contrary, it merely fills them out with such intellectual roughage as has been quoted. Such matter can be read, to be sure, without danger of expanding the mind of the student or the teacher, or of finding practical application. But it is not modern genetics.

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PRACTICAL VERTEBRATE ANATOMY

Atlas of Outline Drawings for Vertebrate Anatomy
By Prof. Samuel Eddy, Prof. Clarence P. Oliver and Asst. Prof. John P. Turner. Pp. vii + 80. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1947.) 12s. net.

THIS is one of those books of outline drawings which are so popular in the United States. There is neither text nor indication of how the dissections should be carried out; but for each animal unlabelled diagrams are given of the important external and internal features, including the system of skeletal muscles. The main types dealt with in detail are *Amphioxus*, the dogfish, *Necturus*, and the cat.

From almost every point of view the book is unsuitable for use in Britain. Of the four main types, only *Amphioxus* and the dogfish can easily be obtained here, but an even more serious criticism is that of the use for which the book is designed. Its aim, as set out in the preface, is to save the student the necessity of "laborious drawing", and to meet the needs of those "with little drawing ability". All that remains to be done is to add labels to the diagrams provided. Such a method of undergraduate training cannot be too strongly condemned. Whether or not the student happens to be naturally clever with his pencil matters little. What does matter is that he should be forced by the act of attempting to draw to make close observation of the specimen before him. In no other way can he easily be trained to pay attention to detail, and in no other way can his attention to detail be checked. It is also not unimportant in the training of any zoologist that he should be given abundant practice in the craft of making clear drawings of his work. Whatever part he may ultimately play as a zoologist, he will have constant need of this ability.

For these various reasons this new atlas cannot be recommended.
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