

he recognizes the 'over-wintering' of rubber and the enforced rest period in the northern areas of tea production.

The most satisfactory treatment is that of the social and economic aspects of plantation development. Siting of the first plantations was based on military security and ease of transport by water. Later sitings showed improved fit to agronomic criteria, but ease of communication remained important; plantations followed development of railways, not vice versa; and these social and economic factors, including those affecting supply of labour, still determine distribution to a large extent.

Dr. Courtenay rightly emphasizes the very large amounts of capital required to establish some types of plantation; the unit cost for a sugar factory, for example, is £2.25 million.

Diversification is considered to be a relatively recent policy, but in fact plantation owners were seeking diversification in the first half of the nineteenth century. To-day, plantation cropping is considered in terms of perennial crops; but this was not always so; formerly both tobacco and cotton were typical plantation crops. Dr. Courtenay's accounts of past economic difficulties help to put those of the present in their true perspective.

In considering the factors operating at the present time, Dr. Courtenay points out that price control, which has always been considered a prerequisite for the salvation of the smallholder, actually favours the plantation system. He also points out that in the total economy of a country, the cost of supporting services and social services must be added to small-holder production costs, whereas the plantation industry is self-supporting. In spite of these advantages he suggests that plantation agriculture may be on the decline.

As a whole, the book is of the right length for an introduction and is an appropriate short text-book for courses in tropical agriculture, agricultural geography and economics, and the specialists in the natural sciences.

W. R. STANTON

RAT GENETICS

Genetics of the Norway Rat

By Roy Robinson. (International Series of Monographs in Pure and Applied Biology. Division: Zoology, Vol. 24.) Pp. ix+804. (London and New York: Pergamon Press, Ltd., 1965.) 200s. net.

MOST people concerned with rodent genetics who, at some time or another, have had occasion to consult Grüneberg's excellent *Genetics of the Mouse* will probably have wished that a companion volume dealing with the rat also existed. This 800-page hand-book is a candidate for stopping that particular gap, and it would be a pleasure for me to be able to say that it succeeded in doing so in a manner worthy of its illustrious predecessor dealing with the companion species. Unfortunately, such is not the case, and this is for a variety of reasons.

Mr. Robinson has attempted an exhaustive treatment of the genetics of *Rattus norvegicus* in the form of an account of all the research bearing on such topics as colour variation, reproduction, endocrinology, resistance to disease and cytogenetics. There are seventeen such chapters in all, each of which is essentially self-contained. They can almost be regarded as separate monographs in themselves. This vast labour has been carried out in a most thorough but, it must be admitted, pedestrian fashion. The account of each investigation is usually given in the words of the original author, so that terminology frequently sounds old-fashioned. Moreover, the approach is essentially non-critical. Manifestly inadequate work is often given equal weight with more refined experimentation, even though minor criticisms are offered, albeit diffidently, from time to time.

But for anyone wishing for an introduction to one of the fields which Robinson has covered, the appropriate chapter will prove a veritable open sesame to the literature. Details of experimental procedures, often with diagrams of apparatus, are given, and the closest collation of different papers by the same authors attempted. Tables of results are often given in full, together with diagrams and graphs of the data. Coverage is essentially exhaustive. Thus the section on psychogenetics, which covers 167 pages, appears to lack only one reference which it might reasonably be expected to contain, and presents a wealth of new ones in every branch of this new and rapidly developing field. Indeed, since much of the significant work in psychogenetics has been done on the Norway rat, this chapter constitutes the most up-to-date review available of this modern specialization, and certainly the most comprehensive ever for the older work. Similar aspects of other chapters in this compendium could be singled out for praise, and Robinson's practice of repeating the details of experimentation relevant to the different topics he is dealing with, while it increases the length of the book, dispenses with the need for extensive cross-referencing and means that the chapters can be consulted separately with little fear of missing essential points.

Except in the case of a few diagrams where the word 'intercross' is shown as 'intercourse', an error which, while unfortunate, serves to reveal as much as to obscure, the book is relatively free from misprints. But it does suffer from numerous infelicities of style, which will grate on any reader with a sensitive ear for English, and from a determined confusion over the plural of the word 'datum'. Moreover, Robinson indulges a penchant for the rare word and the near neologism of which 'independency' and 'exercisation' are examples.

But these are relatively minor matters, which, while they detract from the overall impression of the book, must not be allowed to obscure its sterling worth, and can therefore be forgiven. What it is more difficult to forgive is the lack of a more adequate subject index than the present one, which occupies less than 1.3 per cent of the length of the book, and the price of £10 which the publishers have seen fit to attach to it.

For the manifest virtues of the compendium those concerned with any aspect of the genetics of this most important experimental organism will be grateful. The strictures I have felt it necessary to lay on the work as a whole are essentially blemishes, serious blemishes though they may be, but ones which can readily be cured in a later edition, the appearance of which will, no doubt, be eagerly anticipated by the many readers who will certainly find themselves indebted to Robinson before long.

P. L. BROADHURST

BRITISH GRASSHOPPERS AND CRICKETS

Grasshoppers, Crickets and Cockroaches of the British Isles

By Dr. David R. Ragge. (Wayside and Woodland Series.) Pp. xii+299+22 plates. (London and New York: Frederick Warne and Co., Ltd., 1965.) 42s. net.

THE group name Orthoptera, as Dr. Ragge admits in the introduction to *Grasshoppers, Crickets and Cockroaches of the British Isles*, applies to "a very diverse assemblage of insects", and its use, as well as a conservative classification, might be justified by a wish not to confuse a general reader. However, there are as yet very few British naturalists interested in these insects, and the new devotees who are certain to appear as a result of this book should have no difficulty in learning the system now adopted by specialists.