

regions and subregions of the world as defined by Wallace, Sclater, and others, with some reference to the views of other zoologists and botanists on the subject. After this, the various regions and districts of the world are discussed, first with regard to their climatic conditions, and secondly with reference to the species of Lepidoptera known to inhabit them, of which, in many instances, very full lists are given. This portion of the work contains an enormous amount of valuable detail, and much scattered information is brought together which it would be very difficult to utilise in its original form. This portion of the work is the most extensive, but cannot here be discussed in detail.

The concluding section deals with the geographical distribution of Lepidoptera under their families and genera, and this also is very completely set forth. The book is illustrated by two outline maps, one (facing p. 62) indicating the regions and subregions of the world, as mapped out by Wallace and Sclater, and the other (facing p. 217) representing the Malay Archipelago from the Nicobars and Malacca to the Philippines, New Guinea, and North Australia.

Dr. Pagenstecher has not indulged in much theorising, but his book forms a great quarry from which philosophical speculators will be able to extract a vast amount of material. It is not a book that either systematic lepidopterists or philosophical naturalists can afford to ignore, and they will have reason to be very grateful to the author for the conscientious care that he has devoted to this most laborious and useful book.

W. F. K.

AGRICULTURAL FERTILISERS.

Fertilisers and Manures. By A. D. Hall, F.R.S.
Pp. xvi+384. (London: John Murray, 1909.) Price 5s. net.

MR. HALL has again succeeded in producing a work which will appeal with equal force to the practical and to the scientific agriculturist, and will do much to overcome that innate prejudice of the ordinary practical farmer against science by showing him the enormous influence science has had in determining a rational system of manuring, and in giving him the knowledge of a variety of substances of use to him in his business of food production, as well as in securing for him a safeguard against adulteration by unscrupulous traders. In the history and evolution of the practice of keeping up the crop-producing power of the soil Mr. Hall examines critically the various theories of manuring adduced from time to time, and the experiments upon which they are based, and the study of merely this part of the work will be of supreme importance to the practical man and to the student in showing how experiments may be misconstrued and conclusions of the most erroneous description drawn.

The recommendations as to the manuring of farm crops are tempered with sound advice, and the impossibility of prescribing more than a generally suitable method of manuring without a careful study of soil and climatic conditions extending over some years

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is well demonstrated. Mr. Hall gives some timely warnings as to deductions from field experiments, of which there has been such a plethora in recent years, with their unscientific methods both of carrying out and of deduction. The importance of taking into account the experimental error, which is estimated at ± 10 per cent., and of neglecting results within these limits should be taken to heart by all who carry on these so-called "experiments."

The chapter on farmyard manure is eminently practical and useful, and recent work on such subjects as root excretions, effect of fertilisers on tilth, and on residual values of manures, brings the book well up to date. It is sought to distinguish between manures and fertilisers, the former designating more or less complete plant foods, the latter those materials which supply one element in the plant food, nitrogen, potash, or phosphoric acid. The perversion of the meaning of the word manure from its original significance, hand work, is no less curious than the use of the word tillage to mean artificial manures, which use still persists in the eastern Midlands. The part of the work relating to lime is worthy of serious attention from all agriculturists, as it is probable that the lack of carbonate of lime in a soil is more often than any other cause an explanation of the comparative infertility or absence of satisfactory results from manuring. A chapter on the valuation and purchase of fertilisers puts this important method of calculation simply and accurately, and a concise statement of the Fertilisers and Feeding Stuffs Act will be useful to all users of manures.

Mr. Hall's remarks on the soil-inoculation question supplement and strengthen the advice he gave in his work on the soil, and the experiments on the new nitrogenous fertilisers, cyanamide and nitrate of lime, show the values of these fertilisers in terms of their competitors, nitrate of soda and sulphate of ammonia. The Rothamsted experiments are, of course, freely drawn upon to provide data, and in the hands of the present director of that station these results are being endowed with fresh life and excellently practical applications. The tables of results are concise and well arranged, so that the reader is not faced with an immense array of figures and tables, and bewildered without being enlightened. To sum up, this is a sound and scientific book which should be in the hands of every practical agriculturist as well as in those of the student, the teacher, and the manufacturer.

M: J. R. D.

THE NATURE OF ATTENTION.

Attention. By Prof. W. B. Pillsbury. Pp. x+346.
(London: Swan Sonnenschein and Co., Ltd., 1908.)
Price 10s. 6d. net.

IN 1906 Prof. Pillsbury published a book on attention in the "Bibliothèque internationale de Psychologie expérimentale." This work, with substantial additions, now appears in English as the latest volume of Prof. Muirhead's Library of Philosophy. It may be welcomed as a useful member of the series,