

Darwin himself, though it was reserved for later investigators to discover how powerfully it reinforced the distinctively Darwinian doctrine against Lamarckian attack.

Throughout Prof. Baldwin's work we find that his vivid realisation of the dominant fact of adaptation keeps him faithful to Darwinian standards.

"It is well," he says, "to cast about for other principles—to work out Vitalism, Mendelism, Mutationism, &c.—in those sciences which do not have to deal with the problem of adaptation, or of the accommodation of the organism through its external characters. But wherever the question arises of the relation of organisms *inter se*, and to the environing conditions of their life, the foregoing [*i.e.* variation, accommodation, selection] are not only the fruitful principles, they are the only principles we are able to consider at all."

F. A. D.

### OUR BOOK SHELF.

*The Manuring of Market-Garden Crops.* By Dr. B. Dyer and F. W. E. Shrivell. New edition. Pp. 144. (London: Vinton and Co., Ltd., 1910.) Price 1s.

MARKET-GARDEN crops play a considerable part in the agriculture of districts near to towns, especially on light soils in not too high or exposed a situation. Formerly the scheme of management was fairly straightforward: the grower sent in his vegetables in carts to the early markets, sold them, and reloaded his carts with dung from the town stables with which to fertilise the next crop. But with the introduction of the motor omnibus, the motor lorry and car, and the electric tram, the supply of town dung has fallen off, so that the grower has less available and has also to pay more for it. Increasing competition from abroad has forced down the price of his produce, and has placed him in the unpleasant position of seeing his income fall while his expenses have increased. In order to meet the position he has turned his attention to artificial manures, and there is every indication that they will cheapen the cost of production.

Although a large number of experiments have been made to show the effect of artificial manures on farm crops, few, if any, had been made with market-garden crops until recently. Dr. Dyer and Mr. Shrivell have for the past sixteen years been making trials at Hadlow, the cost of which is borne by the Permanent Nitrate Committee, and have summarised their results in the little volume before us. Practically all the crops in ordinary cultivation are grown here, and as each is the subject of at least half a dozen trials, the number of plots is very considerable. At no other place in the country, so far as the writer is aware, are so many trials of market-garden crops attempted, and this furnishes the most extensive demonstration we have of what artificial manures will do in this particular direction.

The plots are intended solely as demonstrations; they do not appear to be duplicated, and no determination seems to have been made of the magnitude of the experimental error. Hence the results have no precise quantitative significance, nor perhaps was it meant they should. Their chief value is to show the grower that he is not entirely dependent on town dung, but can use a mixture of artificial manures with smaller quantities of dung than hitherto, and can get as good a crop at less cost.

NO. 2155, VOL. 85]

*Guide to the Crustacea, Arachnida, Onychophora and Myriopoda exhibited in the Department of Zoology, British Museum (Natural History).* Pp. 133+90 illustrations. (London: Printed by order of the Trustees of the British Museum, 1910.) Price 1s.

THIS guide admirably fulfils its functions; it is written in a clear style, and indicates tersely the main points of interest associated with the chief families and genera. The principal characters of each subdivision—class, order, tribe, family—are concisely stated, and those of its members are singled out for mention which most aptly illustrate points in morphology or distribution, or show some striking habit. The section on the Crustacea opens with a short account of the lobster—its external features and appendages, some of its internal organs, its development, moulting, and the asymmetry of its chelæ, following which are short notes on modifications caused by parasites and on adaptation to environment.

The systematic account of the Crustacea contains a large number of interesting references to morphological and distributional points, which make it valuable apart from the special purpose for which it was prepared. To give two instances—(1) the formation of a respiratory siphon by apposition of the antennules in the Albuneidæ and of the antennæ in Crystes, and (2) the appearance of *Apus* in Scotland in 1907, which is ascribed to the introduction of the eggs, perhaps on the feet of birds, from the continent. The Arachnida (including *Limulus* and the Eurypterines) and Myriopoda are dealt with in a similarly interesting manner, and short notes are added on the Trilobita, Pycnogonida, Pentastomida, and Onychophora. A little more space might well have been devoted to the Ixodidæ in view of their great importance in connection with the spread of disease in man and animals. The figures, many of which are new, are excellent and well support the text.

*Life and Habit.* By Samuel Butler. New edition, with author's addenda. Pp. x+310. (London: A. C. Fifield, 1910.) Price 5s. net.

PUBLISHED in 1878, this was the first—and the most important—of Butler's writings on evolution. The present volume is practically a re-issue of the original edition, though a few hitherto unpublished appendices have been added.

The central point of Butler's system—that heredity is memory—has been alluded to in our recent notice of the reprint of his later work, "Unconscious Memory"; and we may pass it over with the reminding remark that automatic action proves former practice in a pianist or knitter, therefore the apparently unpractised but perfect pecking of a newly-hatched chick proves that the chick has done it before (when it existed in the bodies of its parents) and now remembers how to do it again. This, then, is the point at which Butler continually hammers, and it brings up difficult and humorous questions, *e.g.* the question of personal identity. If a person at eighty is legitimately regarded as the same person as he was when he was an embryo, we cannot tell where to stop chasing him back, so to speak, for he is as much the impregnate ovum as he is the foetus, and he is as much his parents, or part of them, as he is the ovum. The upshot is that all animal and vegetable life must be regarded as "nothing but one single creature, of which the component members are but, as it were, blood corpuscles or individual cells; life being a sort of leaven, which, if once introduced into the world, will leaven it altogether."

Butler was somewhat of a dilettante, and he admits, with his usual whimsicality, that he did not at first believe in his own theory!—that he only believed in