

of hostile criticism and alternative hypotheses furnished by anatomists and microscopists of great scientific repute. Prof. Osborn is, however, fully convinced of the ultimate triumph of the theory; and, indeed, goes so far as to state that, in his opinion, "the evidence in favour of it is so overwhelming that primitive trituberculy is no longer an hypothesis or a theory, but an established fact."

That a theory, although established on what appears to be a firm basis of fact, may require revision in certain details is a matter of everyday experience, and our author is fully prepared to admit such emendations in this particular case so soon as the necessity can be proved to be imperative. One of the points against which criticism has been concentrated is the author's view that the apex of the triangle in both the upper and the lower molars represents the single cone of the ancestral reptilian tooth. In the case of the lower teeth, embryological evidence coincides with Prof. Osborn's theoretical view; but as regards the upper molars the testimony of embryology points to the conclusion that, at least in many groups, the antero-external, in place of the internal, is the primitive element. The author meets this and other objections by the candid statement that the five great principles on which the theory was originally based "do not stand or fall together"; one or more may go, or have to be modified, without imperilling the hypothesis as a whole; and even if the cusps ultimately prove not to be strictly homologous with one another in different groups, "the homological nomenclature should be retained for convenience because it has found its way so largely into literature."

The homology and origin of the cusps are, however, by no means the sole object of attack on the part of critics. Among other objections, reference may be made to the multitubercular theory, according to which molars have tended to simplify rather than to grow more complex. This hypothesis is met by the author, and we think rightly, with a direct negative, and certain other objections receive equally summary treatment.

As regards the plan of the work, it is important to notice that the contents are in the main formed by separate papers on trituberculum, which have been arranged in chronological order, and, where necessary, brought up to date by intercalary notes. This plan has its advantages and disadvantages. Its advantages are that the history of the controversy is easy to follow, while the disadvantages are manifest in the shape of a considerable amount of repetition. We are also left in doubt at the end of the volume as to what the author's present views really are with regard to several points on which his theory has been challenged.

To do anything like justice to the work demands much more space than can be given to it in this notice. All that can be done is therefore to direct attention to its importance and interest, and at the same time to express the opinion that the author has succeeded in placing trituberculum on a much more secure and unassailable basis than it ever previously occupied.

R. L.

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OUR BOOK SHELF.

Nature and Development of Plants. By C. C. Curtis. Pp. v+471. (New York: Henry Holt and Co., 1907.)

THE author of this book has set himself a definite task, namely, to give an account of plant life, with special reference to that aspect which presents it as a working organism. Dr. Curtis is to be congratulated on the success with which he has achieved his object, for he has produced an excellent and readable book which may be confidently recommended for the use of junior classes in this country. Naturally, some of the actual examples may prove unfamiliar to the student, but the majority of the plants chosen for illustration are readily accessible to all.

The "nature of the plants" occupies the first part of the book, and it is this portion which strikes us as especially good. The second part is devoted to the development, meaning thereby the phylogenetic classification of the vegetable kingdom; and here again Dr. Curtis has, we think, contrived to sustain the interest in a branch of botany which, as treated in elementary works, is often intolerably dull. He has introduced a certain amount of advanced work in this part of the book, though with a judicious absence of unnecessary detail.

Perhaps a degree of emphasis, rather greater than is warranted by our knowledge, is laid on the relation between alternation of generations and chromosome reduction. The discussion also as to the meaning of unit characters and the method of their inheritance strikes us as too formal and dogmatic to be very useful. But these are small blemishes in a work where there is so much that merits praise.

The numerous and excellent illustrations form a distinct feature of the book, but we note two amongst them which might well be replaced. Fig. 43, and the text which accompanies it, represent a very diagrammatic and not very normal mode of secondary thickening, whilst Fig. 85 certainly ought to be redrawn. A seedling castor-oil plant is not the furry object there represented.

J. B. F.
The Diseases of Animals. By Nelson S. Mayo. Third edition. (New York: The Macmillan Company; London: Macmillan and Co., Ltd., 1907.) Price 6s. 6d. net.

THIS work, which purports to be one of popular advice on the care and common ailments of farm animals, is written entirely from the American point of view, and deals with American methods principally, in most distinctly American orthography. It cannot be doubted that its usefulness to the British rural public, not less than the pleasure of reading it, are considerably lessened thereby. It is decidedly irritating to readers on this side of the Atlantic to see such abominations as "sulfur," "esophagus," "sulfate," "mold," and others of a similar kind. There is, nevertheless, a good deal of useful and practical information on the care of animals and farm stock which the farmer would do well to know, no matter in what part of the world he carries on his occupation. In fact, that portion of the book which deals with feeding, watering, exercise, and the hygienic care of domestic animals, both stock and pets, is in our opinion by far the most useful to the general reader. In this section dogs, cats, rabbits, hares, guinea-pigs, and poultry are dealt with, in addition to the farm animals proper.

The photographic illustrations of the animals themselves are good, but some of those representing morbid conditions are of little value, for example, that of tuberculosis of the lung (p. 380), which could give no assistance to the non-expert.

In a work of this kind it is doubtless difficult to