

*The New Natural History: Being the Twenty-Fifth Robert Boyle Lecture delivered before the Junior Scientific Club of the University of Oxford on 6th June, 1923.* By Prof. J. Arthur Thomson. Pp. 19. (London: Oxford University Press, 1923.) 1s. net.

IN this refreshing and stimulating address Prof. J. Arthur Thomson pleads for the retention of the term natural history as a designation for the study of the habits and surroundings of animals and their inter-relations with one another—the new natural history—and for its more honourable recognition as a well-defined and integral department of biological science.

Out of the ashes of the old all-embracing science of natural history, the author traces the growth of the new science under the influence of various factors which have moulded its development. Chief among these is the recognition and appreciation of the great fact of the inter-relations of living organisms in the web of life and the external linkages between animals or animals and plants—the central Darwinian idea of the correlation of organisms. This has given direction and stimulus to the study of natural history and forms one of the guiding principles of the new science. No less important is the new and more precise scientific outlook on the question of animal behaviour, due to the work of Lord Avebury, Romanes, and especially Lloyd Morgan, who laid the firm foundations of an experimental comparative psychology, and to Loeb, who has done so much to develop the question on the physiological side. From the somewhat chaotic mixture of anthropomorphism and automatism there has emerged a precise science that distinguishes instinctive from intelligent behaviour and both from tropisms and forced movements.

A third factor which has given precision to the observations of the field naturalist and a new significance to his facts is the idea of evolution. With this as a working hypothesis the student of natural history has been stimulated to discover how a particular structure or function is fitted to a particular situation, and the study of adaptations has developed into an important and exact science.

The vision of the new natural history as a study of “animal personalities at various levels, as creatures with mental aspects, as agents that seek after well-being and share in their own further evolution, as threads in a quivering web of life” is indeed an inspiring one. Prof. Thomson justifies his plea, and the recognition which he asks for cannot be long withheld.

*Alternating Current Electrical Engineering.* By W. T. Maccall. Pp. viii+493. (London: University Tutorial Press, Ltd., 1923.) 15s.

A FAIRLY complete résumé of practical alternating current theory is given in this work. In order to keep the subject matter within the limits of one volume the explanations have to be made very concise. It is therefore more suitable as a class book than for reading by the private student. It covers a very wide field. The theory is now beginning to crystallise, and so numerical examples have been introduced which will enable the student to test the thoroughness of his knowledge.

The book is on the whole well written. The author

sometimes gives results as if they obviously followed from the given premisses; for example, in describing how two induction motors are connected in cascade, he says that the supply mains are connected to the stator of one motor and its rotor is used to supply power to the second stator. “The result is that the synchronous speed of the combination is that of a motor whose number of poles is equal to the sum of the number of poles of the two motors.” This is a hard saying, and we hope few readers will accept it without trying to make up some proof for themselves. If the author made the distinction between “average power” and “instantaneous power” clearer the proofs of the two and three wattmeter methods would be greatly improved. At the foot of page 61 a reference is made to the instantaneous value of the average power. A vector proof is given of the three-voltmeter method of measuring power, and it is stated that it should not be used unless the wave forms are nearly sine shaped. The ordinary algebraical proof shows at once that it is true, however distorted the wave forms may be. The Behrend definition of the leakage factor of an induction motor is given, and one of the methods described of determining its value is by Behn-Eschenburg’s formula, which applies to a totally different definition of leakage factor.

*Popular Fallacies Explained and Corrected (with Copious References to Authorities).* By A. S. E. Ackermann. Third edition. Pp. xvi+984. (London: The Old Westminster Press, 1923.) 12s. 6d. net.

To every one who has made a special study of any particular branch of human knowledge there must, at some time or another, have come a feeling of surprise at the large number of errors which exist in the popular mind regarding his own, and therefore presumably every other, subject. The previous editions of this book have proved of immense value in helping to correct the many errors which still persist in spite of the progress of popular education and the many devices now used for the dissemination of accurate information. A very real welcome is, therefore, assured for this, the third edition, which has been so extended in scope that it has become almost a new work. The number of fallacies dealt with has been increased from 460 to 1350, and these cover practically every branch of human activity. Indeed, so wide is the field covered, that a reviewer may be pardoned for paying particular attention to those sections by which he may expect to be best able to judge of the value of the whole. Engineering, general science, and astronomy receive their full share of attention at the author’s hands—as might, indeed, be expected from one whose qualifications lie particularly in the first-named subject—and a close perusal of these sections has abundantly demonstrated the painstaking accuracy of the author’s work. As Sir Richard Gregory points out in an appreciative introduction, a valuable feature of the book is the constructive work which it does in giving the truth of any matter concerning which an error is exposed. In conclusion it should be mentioned that the book is written in an eminently readable style, not unenlivened with touches of genuine humour. It is, moreover, well printed and may be cordially recommended as a useful addition to the library of general knowledge.