

The Birds of the Liverpool Area

By Eric Hardy. (Merseyside Naturalists' Association Handbooks, No. 1.) Pp. 279+10 plates. (Arbroath: T. Buncle and Co., Ltd., 1941.) 8s. 6d. net.

FIELD ornithologists will appreciate this publication, first for bringing within the confines of a single volume a mass of records hitherto scattered among numerous publications, and secondly for its list of localities where the bird-lover, month by month, can view many of our common species. Part of the preface could, with advantage, have been omitted, as the author devotes it to criticisms of local societies, inappropriate to any scientific work. There is a brief list of local ornithological collections and a short account of Wild Bird by-laws.

The opening paragraphs of the chapter on "Bird Movement and Migration", while containing much that is useful and interesting, are likely to irritate the reader by obscurity of presentation. The chapter on "Bird Census" is not convincing and the author's figures are unbelievably accurate. On p. 48 he states: "The Liverpool Census for 1935 showed 95,000 House-sparrows, 27,000 Starlings, 1,680 Wrens, 1,310 Greenfinches, etc." Ornithologists who have essayed a bird census, even in a relatively small area in the country, know how difficult it is to arrive at a satisfactory assessment. A census of starlings or sparrows in a large city such as Liverpool will be regarded by most competent ornithologists as unreliable. In compiling the hundred pages of notes on the birds of the Liverpool Area much painstaking search of records must have been involved, but the author's own work would not have suffered by less frequent reference to himself. The volume is illustrated with two maps, one sketch and thirty-one photographs, of which those of the long-eared owl and the lapwing in flight are indeed good.

R. K. PERRY.

Transients in Electric Circuits

Using the Heaviside Operational Calculus. By Prof. W. B. Coulthard. (The Specialists' Series.) Pp. viii+203. (London: Sir Isaac Pitman and Sons, Ltd., 1941.) 25s. net.

IT has been said by an eminent American engineer that whereas problems in transient phenomena can only be solved by the application of the calculus, the terrors which this branch of mathematics holds for many engineers have largely been removed by the substitution of the Heaviside operational calculus. Transients may be controlled or fortuitous, but in either case the transient response of a network to excitation can be solved expeditiously and with minimum labour by the technique which has been built up around Heaviside's original methods.

The book under review presents a modern version of this technique in its application to the study of electric circuits consisting of static networks, rotating machines, and component structures. Circuits having both linear and variable parameters are analysed, as well as those which can be regarded as lumped on one hand and in which expansion yields negative powers of the differential operator p , and smooth on the other hand, wherein expansion gives fractional positive powers of p .

Fourier series and integrals are discussed in order to throw further light upon operational methods and to show that the integral yields a long list of operators and their equivalences.

The book is a particularly valuable one to the research worker and to the mathematically inclined engineer.

Nature Abounding

Edited by E. L. Grant Watson. Pp. 350. (London: Faber and Faber, Ltd., 1941.) 10s. 6d. net.

EARTH, air, fire, water, these were the elements as conceived by the philosophers of other days, and under these heads Mr. E. L. Grant Watson, in the present work, has assembled an unusually readable and varied prose selection, representative of the interest with which Nature, to the seeing eye, abounds. He has chosen widely and well. Nature's appeal is for the many, and the compiler has sought his materials, not only in the writings of professed naturalists, explorers and physicists, but also among those of sportsmen, novelists, essayists, gardeners, farmers, and, not least, of the ordinary man. Thus passages from Darwin and Wallace rub shoulders with not less informed observations by Hardy the novelist, Tomlinson the sympathetic voyageur, or Borrow the wayfarer. As he turns the pages, the reader will meet many old and expected friends: Fabre, Hudson, Herman Melville, Izaak Walton and others, and among newer ones, Frazer Darling, Kenneth Graham and Sir James Jeans, to take only a few at random.

The knowledgeable reader, with critical intent, may perhaps peruse this book with the view of testing the compiler's selection against his own recollection of outstanding passages in classic works. Of course, he will find omissions and an unwelcome abbreviation of his own particular favourites, but as Mr. Grant Watson points out, the literature of exploration, travel and natural science in its several branches is so extensive that there can be no question of compiling a complete work. But books of this nature are all too rare, at least so far as the literature of science is concerned, and it seems not impossible that they may have a considerable future, particularly for the specialist worker whose time for general reading is necessarily limited. More is the pity that war-time conditions should condemn such noble text to such indifferent paper.

Oriri

By Marie C. Stopes. Pp. ix+27. (London and Toronto: William Heinemann, Ltd., 1940.) 3s. 6d.

THIS considerable poem has already been reviewed, and favourably reviewed, in various literary journals. It is the love story of a man and a woman in a setting in which objects of Nature, earth, trees and flowers, are harmonized to the central theme. In the Argument, the author tells us that: "Interwoven into the tale is a crystallization of most of what matters fundamentally in the sciences of geology and physiology, in the art of love, and in religion." The poem has indeed a scientific content, but so pervading is the artistic sense, so effective the condensation, that the work, which may well be considered as briefly epic, makes its appeal, as the author intended, as poetry.

"Time's sands shine dripping over
With burdens of delight
Garnered from all the past:
Again the bright sea sparkles on this hill
And slowly specks of life shed through its blue
Their fragile vestures, piled to build a land."

Not the least unusual feature of this remarkable work is the brief appendix in which the scientific basis for the imagery used is indicated.