

separated milk in Chapter xii, whilst the whole of Chapter viii is devoted to biological investigations of milk, etc. Chapter ix is similarly devoted to miscellaneous emulsions, including emulsified bitumen as a road dressing, emulsified oils and fats as leather dressings, margarine and salad dressings as edible emulsions, with brief references to the delustring of rayon, the sizing of paper, and the preparation of agricultural sprays.

Author and subject indexes are provided, but the latter fails to guide the reader to clear definitions of terms such as cybotaxis, dineric interface and thixotropy, which may be cited as cases where it would be of real value to quote the first usage of names which are relatively new in the literature. The new edition is of obvious merit and is likely to prove indispensable even to those who already possess one of the earlier issues.

Animal Life in the Forth Area

A Vertebrate Fauna of Forth

By Leonora Jeffrey Rintoul and Evelyn V. Baxter. Pp. lv + 397 + 16 plates. (Edinburgh and London : Oliver and Boyd, 1935.) 25s. net.

HALF a century ago, Harvie-Brown projected a great co-operative work on the vertebrate fauna of Scotland, each volume to deal with one of the zoo-geographical divisions delimited by the principal watersheds and other natural boundaries. The greater part of the scheme was accomplished, with valuable results, but some gaps remained : one of these has now been filled, through the successful undertaking by Misses Rintoul and Baxter of the task which William Evans did not live to complete. Considering the great disparity in time, the unity of the series is chiefly important on the historical side, and as a contemporary account the new book must stand on its own merits. It can well do so.

This volume on "Forth" is, indeed, of value from much more than a local point of view. It deals with a highly interesting region, which constitutes almost a cross-section of Scotland at the junction of Lowlands and Highlands, and includes a wide variety of country. The region consists of the drainage area of the River Forth, and of all the lesser streams that flow into its great estuary between St. Abbs Head and Fife Ness. On the map it appears roughly Y-shaped, two long arms enclosing the Firth of Forth and a shorter stem following the valley to its head. On the east it has its island outposts such as the Bass Rock, and on the west the land rises above 3,800 feet at the summit of Stobinian. The whole of three counties and large parts of five others are included, with fragments of three more.

There is thus a great diversity of environment, from the waters of the firth with their seals and gannets to the high mountains with their blue-hares and eagles. There is, too, the added interest attached to a transitional zone : it approaches,

for example, the northern limit of the garden-warbler and includes the most southern point in the range of the Scottish ptarmigan. Birds, of course, bulk more largely in the book than all the other vertebrates together : the fishes are rightly dealt with quite briefly, as the purely marine forms cannot be very usefully discussed on this regional basis. The major interest is therefore inevitably for the ornithologist.

The two experienced naturalists who have written the book are well equipped for the purpose. They have lived all their lives in the area, giving much time to study of its fauna, and they have already made numerous and notable contributions to the subject. During the last ten years, moreover, they have systematically worked the area with the special object in view, visiting all parts at every season. The statements as to present status and distribution are therefore based to a remarkable extent on first-hand observation—although the help of others has also been freely used—and are definite, comprehensive and up to date. As was to be expected, the authors are particularly informative regarding migratory movements of the birds : in a special chapter they deal generally with this topic, and throughout the avifaunal section are to be found the abundant results of their well-known work on the Isle of May.

As it fortunately happens, there is also available a wealth of information relating to earlier times, and the published sources of this have been diligently and critically examined. It has thus been possible to present some picture of the effects which changes in the environment have wrought upon animal life in the area : a special chapter is devoted to this aspect, and there are also numerous references in the main body of the work which bring out points of much interest.

The modern standard for regional faunistic studies is a high one ; but Miss Rintoul and Miss Baxter have produced a volume which can take its place among the very best of its kind. A. L. T.