animal organisms cannot be interpreted satisfactorily on the basis of 'mechanical' concepts such as tropisms and reflexes, but at all levels of evolution requires a teleological explanation. The reasoning is largely deductive from certain principles which Dr. Lundholm postulates, but is also supported by empirical observations. The assumption must be made that all animals experience inner urges towards goals the prosecution of which will satisfy their needs; and to this the further assumption must be added that conative experiences, the impulses themselves and their consequent activities, are directed by some kind of awareness, analogous to our own, which guides them to their goals.

The thesis is also developed that specialised (instinctive) behaviour forms become differentiated from a more primitive, generalised form, in which curiosity, together with the impulses of deference or defiance towards the environment, give rise to adaptive behaviour. In the first case the animal adjusts itself to its environment; in the second it modifies the environment so as to satisfy its biological needs. The combination of these impulses working together leads to belief in the reality of the particular kinds of psychological objects that constitute the 'world' of the animal in question, from the protozoa up to man; and it implies both insight and foresight. Curiosity, again, because of a law of the "affinity of cognitive dispositions", groups together similar psychological objects whenever a specialised impulse is activated, reinstating experiences of conative cycles set up by like impulses in the past. Language provides names for such objects—'dangerous', 'valuable', and the like. But when curiosity dominates its accompanying specialised impulse, there is no such selectivity; the mind reviews a general past in which event is related to event, and the objective relations between them are apprehended. This makes the conscious planning of means towards ends possible.

The monograph, which belongs to the literature of hormic psychology, shows traces of the influence of configurationism. It is both suggestive and stimulating.

Naturalists on African Lakes

Inland Waters of Africa: the Result of Two Expeditions to the Great Lakes of Kenya and Uganda, with Accounts of their Biology, Native Tribes and Development. By S. and E. B. Worthington. Pp. xix+259+40 plates. (London: Macmillan and Co., Ltd., 1933.) 15*s.* net.

DR. AND MRS. WORTHINGTON still found the place and occasion when the feel of a rifle was 'comfortable' during the night. They were also 'roasted' in places fit for no human life, ran constant and inevitable risk in their small boats on great lakes, and had marmalade for breakfast in one of the special hells they saw fit to visit. Such things make good reading, but cannot well be introduced into scientific papers, or official reports, and the authors have done a service in writing a general book, where the reader can find both enlightenment and entertainment.

A further and better justification is that travellers, and especially such travellers, inevitably make many important and suggestive observations in geography, anthropology and natural history, which are not perhaps sufficiently complete or novel for scientific papers, but, when put together in this way, provide a very good picture of African life. This will be of historical importance in only a few years' time, so rapid are the changes of the present age in Africa. The fathers of some of the Worthingtons' most skilful clerks or artificers may have been cannibals. What will the sons be?

Specialists and other students should look in this book for readable and, no doubt, very fair accounts of some interesting subjects. A survey of primitive craft, culminating in the Baganda canoe, suggests evolution rather than dispersion. The decay of communal emotion, in favour of individual emotion, is traceable in a comparison of dances, of which a very fine account is given, including the music. Canoe songs are not as well done as might have been expected, although it is good to have a record of the "Song of the Crowned Crane".

The changes in watersheds, with pluvial periods and earth movements, are well summarised in connexion with the distribution of species of freshwater fishes, the last in itself a fascinating problem. Angling, food chains, farming the waters and artificial dispersion of species, are serious problems described. The account of the solution of the *Tilapia* problem in Lake Victoria reads: "Constant fishing every day throughout many years in the Kavirondo Gulf had reduced the stock of fish to such an extent that their breeding had been seriously affected"; whereas the senior member of the Lake Victoria survey wrote, referring to the whole lake, ". . . this diminution of stock has not yet gone so far as to reduce the number of ngege that annually enter the fishery" (1929, p. 11).

The book is well printed, but would have been easier to read had the lines been further apart. Clear maps are in sufficient quantity and the photographs are interesting and beautiful, which means that serious difficulties of the tropics were surmounted. There is an index. M. G.