

## BOOK REVIEWS

THE DISTRIBUTION AND ABUNDANCE OF ANIMALS, by H. G. Andrewartha and L. C. Birch, 1954. University of Chicago Press. 782 pp. Price \$16.50.

INTRODUCTION TO THE STUDY OF ANIMAL POPULATIONS, by H. G. Andrewartha, 1961. Methuen, London. 281 pp. Price £1 10s. 0d.

As the first of these books was published ten years ago, I assume I have been asked to review it because the editor feels that its immediacy has not diminished with time—an opinion with which I agree. But the book cannot be considered entirely outside the context of its publication date. It appeared at a time when the division of environment into density-dependent and independent factors was an entrenched doctrine of ecology, having all the characteristics of an established religion complete with high priests and acolytes. The orthodox concept of ecology at that time can be crudely summarized as follows: "All animal populations are kept in check by factors whose restraint on the growth of a population is directly correlated with the population's density. Only such density-dependent factors can regulate a population. The role of density-independent factors is restricted to determining the level at which the density-dependent factors inhibit further increase. The function of research in population ecology is merely to isolate in each case the limiting factor involved. Failure to find this factor is symptomatic of either sloppy research technique or of inadequate time spent on the project." This is a parody but not a gross one; the baffle-gab is authentic.

Andrewartha and Birch assault this concept of ecology with 720 pages of argument, reinforced by 750 references, claiming that at best it is an oversimplification and, at worst, naïve nonsense. They argue that the assumption of populations being regulated within narrow limits is not confirmed by empirical observation, that populations are not invariably adjusted to the prevailing environment, and that the division of environment into density-dependent and independent factors is arbitrary and meaningless.

The book touched off a polemical war in comparison with which the debate on Luther's thesis was a friendly discussion over tea and biscuits. The authors were accused of advocating a nature in chaos, a charge which suggests that such critics did not persevere beyond page 650. In fact, the book outlines three situations, illustrated with examples, which would regulate populations:

- (a) The shortage of a necessary resource in which the use of this resource by some individuals denies it to others.
- (b) The inaccessibility of a resource relative to the animals' ability to search for it.
- (c) A fluctuating environment which does not allow a population to increase for any length of time.

In short, the authors view nature as being in a continual state of change where time and chance are real entities. They review a large