

to determine mortalities, and it was only with the application of the mathematical treatment of catch statistics developed for fish stocks that the best yields could be resolved. But this was at the eleventh hour. It might be asked whether earlier numerical assessment of the stocks might not have saved them. It is unlikely: political considerations would probably still have been paramount. Nevertheless, if they are to give sound advice, fisheries scientists must make sure that their science remains in equilibrium; studies in physical and biological and oceanography, to give the essential basic information about the biology of fish and about their physical and biological environments, must be balanced against the less glamorous study of fish population dynamics.

A. J. LEE

Seals of the World by Gavin Maxwell, with John Stidworthy and David Williams. Constable, 25s.

The first chapter is a straightforward and enjoyably readable introduction to the natural history of seals, their fascinating habits, their extraordinary metabolism by which they adjust perfectly to both hot sun on land and ice and deep diving activity in near-freezing water. The second chapter describes briefly the collision between seals and man, resulting in four of the 32 species of seals, sea-lions and walrus being in grave danger of extinction; one, the Caribbean monk seal, is probably already extinct. The walrus and the Mediterranean monk seal need total protection for a good many years to come, but are not getting it. Most of the remaining species are at present not seriously decreasing, thanks to a new and more enlightened policy of prohibition or regulation of hunting by the governments concerned.

The remaining chapters are potted life histories of each species. I picked out many entertaining and curious items, such as: once-a-week suckling over nearly a year's lactation (Cape fur seal); the walrus wears a natural Mae West (inflatable neck pouches) enabling it to support its great tusks and float upright while dozing at sea; sea elephant intestines can be over an eighth of a mile long. Inevitably, in dipping into the vast literature for their facts, the authors have perpetuated a number of inaccuracies; these ought to be eliminated in future editions of this attractive volume, the sales of which are to benefit the World Wildlife Fund, under whose sponsorship it is published.

R. M. LOCKLEY

Penguins by John Sparks and Tony Soper. David and Charles, Newton Abbot, 45s.

Although penguins have been subjected to all kinds of intensive study in the last 20 years there has been no general account of their biology; and so much has now been discovered that Murray Levick's delightful *Antarctic Penguins* no longer tells more than a small fraction of the story.

The author's opening 30-page chapter, 'Penguins as birds', which discusses the main ways in which penguins are adapted to their special way of life, is full of things that will be new to most readers, and offers illuminating comparisons with other birds. The succeeding chapters, on courtship, nest-making, family life, food and predators, although full of interest do not quite maintain the same standard, which is not entirely the fault of the authors. In a group of highly specialised animals such as penguins it is the essential specialisations, which are common to them all and make them different from all other animals, that are the most interesting things about them. When one comes down to smaller differences between the species, especially if they have to be described at second hand, it is hard to maintain the same level of interest, and the material in these middle