Animals of Europe: the ecology of the wildlife, by **Maurice Burton,** Peter Lowe, £3.25.

This useful survey of the European fauna, present and past, deals in turn with the natural regions of this corner of the Afro-Eurasian land mass: the tundra of the far north; the taiga, or northern belt of coniferous forests; the broad-leaved central forest area; the Mediterranean; and finally the Russian steppes.

The almost total absence of desert areas has meant that more of the land has been occupied by man than in other continents; the consequent destruction of natural habitats together with active persecution have driven the larger animals to their last strongholds in mountain, marsh and forest. Accounts are given of the characteristic fauna of each zone, including Arctic fox and hare, lemming and ptarmigan of the tundra; reindeer, lynx, wolverine, glutton and capercaillie (which, surprisingly is omitted from the index) of the taiga; and brown bear, bison, deer and abundant woodland birds of the deciduous forests. The treatment throughout is ecological rather than systematic, and man's influence as farmer, forester and, later, industrialist is emphasised.

The present-day status of the wolf in Europe is put forward as an example of a species under intense persecution—presumably the statement that the last wolf in Ireland was killed in the 1960s is a misprint. The Mediterranean zone, however, is presented as the classic example of habitat spoliation that had dramatic effects on the fauna: 'From this early Arcadia it has become the most ravaged, biologically, of all Europe'.

The survey ends with a section on invaders and aliens which includes much interesting and up-to-date information on species such as muskrat, coypu, American mink and collared dove. There is a select bibliography and a useful glossary.

The clear and very readable text, which is illustrated throughout by well-chosen and excellently reproduced colour photographs, is well within the capacity of the general reader and an intelligent youngster. The book would be a valuable addition to any school library.

JOHN CLEGG

The World's Cats Vol. 1. Ecology and Conservation; Vol. 2 Biology, Behaviour and Management of Reproduction, edited by **R. L. Eaton.** World Wildlife Safari, Winston, Oregon $10 and $12.50.

The two paper-back volumes each report an international symposium on cats, held in 1971 and 1973. The first included nine papers on cat species, some with good data from research, notably on North American lynx and bobcat and Indian lions and leopards. The North American studies emphasise radio-tracking techniques (but with no discussion of the possible effects of the radios on behaviour), whereas the Old World studies depended on direct observation. Five papers on management include a short but useful account of principles for pharmacological restraint, and 46 pages about captive cheetahs in western USA, where no fewer than 34 were imported in May 1970. These lengthy papers attempt to make some scientific use of this extraordinary (and, one hopes, unique) import. One litter was born in the first year and one cub survived, and only three more litters are reported in vol. 2; FPS members will hope that the research yields some more practical results for managing captive cheetahs. The final section, on recommendations for conservation, consists mainly of accounts of the status of leopard, jaguar and ocelot, and recommendations for stopping the fur trade.

Volume 2 includes papers on reproductive biology, growth, physiology, and behaviour in captive lions and tigers, on the evolution of reproductive behaviour, on interpreting mating behaviour in bob-cats from tracks, on artificially induced oestrus and captive breeding, and more about captive cheetahs, plus a lot of unedited discussion. There is some pointed criticism about conditions under which cats are kept in some zoos.

Dr Eaton is to be congratulated on organising these symposia. But the style of the papers is often anecdotal (sometimes very much so), the discussions are reported verbatim, and few papers are summarised. This presentation is not good enough in volumes costing $10 and $12.50, even though the proceeds go to research. The symposia no doubt served their primary purpose in getting scientists together to exchange information, and they encourage a wider use of zoo animals for research; but few people have the time and energy to wade through lengthy accounts and discussions, and these volumes may fail to communicate their information to a wider audience, especially when the shoddily bound, unindexed paperback comes to bits in their hands.

The initiative is to be encouraged, but let us hope for better, and more timely, productions as a result of subsequent symposia with contributions from Continental and Russian scientists. However, quantitative data on predators, and particularly on their physiology and behaviour, are scarce, and these volumes should be studied by all biologists and managers interested in this group.

DAVID JENKINS

An Ecological Atlas of Grassland Plants, by **J. Philip Grime** and **Philip S. Lloyd.** Arnold, £6.

The book's title is perhaps misleading. It consists largely of data, presented in the form of graphs and tables, on the autecology of ninety-five common British grassland plants, but the data were collected entirely from one region of Britain, that round Sheffield, from Castleton in the west to Bawtry in the east, and Doncaster in the north to Matlock in the south. It could be objected that it is unsafe to draw conclusions from such a limited area of north central England, and the authors recognise the possibility of limitations in their conclusions. On the other hand, the region studied is central and is a particularly varied one in its soils, topography and vegetation types. The intensive nature of the survey (covering some 600 field recording sites) makes it one from which reasonably reliable conclusions can be drawn.

Localities in the study area were selected on the basis of a fairly uniform scatter, and one-square-metre quadrats were selected in each at random. Within these, percentage frequency for each species was calculated by an objective technique. A table indicates the species-occurrence figure on each geological formation, subdividing these according to pH values of the soil. The proportion of occurrences in grazed, ungrazed, burned or unburned grasslands, and possible combinations of these, is given, and histograms show constancy in each pH class in (0.5 pH units) and for frequency. A polarograph diagram displays the occurrence of each species in relation to slope on the concentric axis and to aspect on the radial axes. Thus one can see at a glance whether the species in question has any preference for slopes of a particular aspect or steepness.

The authors hope that their study will be useful in connection with landscape design, nature conservation, and the management of marginal land. Certainly, within the limits of a purely regional study, it can be recommended to both plant ecologists and also all those concerned with land-use management. One would however have liked more information on such things as the effect of trampling by man and on the actual degree of association of the species concerned in nature.

FRANCIS ROSE