

reviews

Fenland ecology

Peter D. Moore

Fenland: Its Ancient Past and Uncertain Future. By Sir Harry Godwin. Pp. 196. (Cambridge University Press: London and Cambridge, 1978.) £7.95.

THERE is no better living demonstration of the interaction of man with the natural environment anywhere in Britain than in the fenlands of East Anglia. Throughout prehistory and history these extensive tracts of swamp-land and bog have proved both a limitation on human mobility and settlement and, in more recent times, a valuable agricultural resource. A number of books, especially those of H. C. Darby, have considered man's conflict and symbiosis with fenland, particularly from the historical geography point of view, but this book approaches the subject from the biological angle.

In this sphere, Sir Harry Godwin is the ideal person to write such a book, for the story of the unravelling of fenland's history is essentially Godwin's autobiography. Indeed, the book has a strongly autobiographical, almost anecdotal style. It is written in an informal manner for a general readership; it avoids technical terms and jargon and does not carry references in the text, although a reading list is given at the end. This makes it easy, even exciting reading, which should prove attractive to students.

One advantage of the relaxed style is that we are provided with some rare glimpses into those chance events in history which have profoundly influenced the development of ecology in this country. Take, for example, that priceless sentence which introduces the chapter on pollen analysis, "In 1931, following a suggestion from A. G. Tansley, my wife began research in pollen analysis, a technique recently brought to notice by the Swede G. E. Erdtman . . .". It is difficult now to assess the full consequences of Tansley's chance remark.

Much of the book is concerned with the stratigraphy and palaeoecology of the fenland sediments. Rooted in the basal clays of the fens at many sites were found the preserved remains of giant bog oaks, many having dimensions far exceeding those found commonly in modern British forests; often they were over 27 metres in height.

These were inundated and killed by rising water tables as the true fens were formed. Subsequently, further woodland of a swampy nature developed over the reed bed sediments, and the sequence of species in these fen woods, leading ultimately to the establishment of pine, is of particular interest, for one finds similar developments on the other side of the North Sea and in some of the west coast submerged forests, as at Borth and Ynyslas, Dyfed.

The archaeological interest of the fenland peats is again introduced by a personal reminiscence: "I recall picking out (from the borer) what I took to be a bit of pine bark: licking it clean of peat . . . it shewed itself to be a struck flake of flint." Thus began the excavations of Shippea Hill and Peacock's Farm in fenland, now classic archaeological sites.

One of the most interesting questions in peatland ecology raised by Godwin's fen studies, is the extent to which true raised bog communities once flourished in the east of Britain. Peat cutting and agricultural developments have destroyed much of the evidence of past acidification of the fen systems leading to bog formation. At Woodwalton Fen, Godwin describes the surviving stratigraphic evidence for this process and at this site there still remain some frag-

ments of a relict, acidophilic community on the surface.

The latter part of the book concentrates on the hand of man in the modification of the fenland environment, and on the habitats and species lost as a result of exploitation. Perhaps the most important message of this book as far as mire conservation is concerned is the vulnerability of the ombrotrophic, raised mire system. The loss of this habitat in eastern England cannot be repaired; such a late stage in mire succession takes millennia to develop and the lesson of the fens should serve as a warning to those concerned with mire conservation in northern and western Britain, where similar exploitation is now occurring and where similar consequences are to be feared.

This book is essentially a compilation of scattered, largely previously published material, which is presented in a lucid, informal and readable manner. It is not so much a textbook as a personal view of a distinctive part of Britain and of the development of a field of environmental research in which the author has himself played the leading role. □

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Mathematical models in immunology

Theoretical Immunology. Edited by G. I. Bell, A. S. Perelson and G. H. Pimbley, Jr. (Marcel Dekker: New York and Basel, 1978.) Sfr. 128.

GEORGE BELL'S mass action model of the immune response made it respectable to use computer simulation in immunology. Now eight years later we have an opportunity to see how the field has progressed. This volume provides the first way of doing this conveniently, and as such can be recommended to professionals and general students. Although multi-authored, it is not a miscellaneous collection, but has a logical sequence with useful introduction and indexes. Several of the papers come from Bell's

own group of renegade theoretical physicists at Los Alamos.

As judged from this collection, mathematical models contribute more to immunology than to, say, embryology, and less than to fisheries research. Reasonable assumptions about lymphocyte triggering and regulation generate models which fit well empirical data on affinity maturation, high and low zone tolerance, and cycling antibody production. The models seem to be flexible to an extent which augurs well for the future as new phenomena are discovered, but which makes one a little uneasy at present. Thus, some models run quite satisfactorily without network suppression (Bruni, Mohler), whereas others depend on this entirely (Richter, Hoffman). Another difficulty is that in their latest version as expounded here, some of the models have grown mathematically rather