

Access to soil ecology

The Distribution and Diversity of Soil Fauna. By John A. Wallwork. Pp. xii+355. (Academic: London and New York, April 1976.) £11; \$17.25.

IN 1970 Wallwork published his *Ecology of Soil Animals* which has since been accepted as an invaluable reference and teaching aid. With commendable frankness he introduces the new book as "something of an Adam's rib, a companion volume . . .". To anyone who has shared the development of his subject over the past thirty years, reading the new work is a most enjoyable experience for many original insights, a clear and often amusing style, and some superb illustrations. The atmosphere conveyed is almost that of a set of personal discussions, perhaps following a series of seminars, among people already familiar with the jargon and many of the ideas.

The chapters are mainly devoted to

major ecosystems in turn, grasslands, moorlands, forest soils and so on. Here Wallwork encounters the organisational problem which faces all writers of ecology books: the material to be covered is related in many logical 'dimensions' but must be discussed in linear order. Many topics, common to different ecosystems must either therefore be repeated or introduced rather arbitrarily in a particular chapter. The second practice is followed—for example, discussions of pedology and feeding biology in the grassland chapter—and the problem of re-locating a particular discussion is not fully met by means of cross references. One feels the need for a diagrammatic master plan in the introduction. The excellent index, however, goes a long way to overcome this difficulty.

The chapter on "agricultural practice and the soil fauna" is a short but valuable introduction to the literature of a fast-expanding field; and the final chapter faces the perennial problem of how so diverse a fauna persists in an

apparently rather uniform and narrow spatial zone. Throughout, the discussion is immensely strengthened by Wallwork's experience of soils from all parts of the world.

This is hardly, as claimed on the book jacket, "a basic introduction to the subject for students unfamiliar with the soil fauna". Many terms and ideas are either used without definition or are only defined after first introduction (the vocabulary of saprophage, fungivore, and so on, and the terms 'stentotopic' as against 'eurytopic'). These are perhaps further indications of the true readership of the book: it is probably best thought of as a synthesis, a companion volume and extension of *The Ecology of Soil Animals* and a valuable means of access to the literature of soil ecology.

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Somatic chromosomes

Chromosomes in Mitosis and Interphase. (Handbuch der Mikroskopischen Anatomie des Menschen.) By Hans George Schwarzacher. Pp. viii+182. (Springer: Berlin and New York, 1976.) DM 136; \$55.80.

THIS monograph is essentially concerned with the structure and organisation of the somatic chromosomes of man and I must say at once that I enjoyed reading it. Schwarzacher's excuse for writing such a book is the veritable flood of new information on human chromosomes that has been unleashed following the development and application of a wide variety of new techniques over the past few years.

The information and discussion is parcelled into ten chapters beginning with simple accounts of chromosome morphology, nomenclature and the human karyotype. There is a good review of what little we know of chromosome structure in the interphase nucleus as revealed by histochemical and electron microscope studies, supplemented by the observations on prematurely condensed chromosomes obtained by the method of Rao and Johnston using the cell fusion technique. Heterochromatin and chromosome fine structure, as studied by electron microscopy, are considered in detail, as are the main techniques utilised to produce the various banding patterns in human chromosomes. The two chapters on chromosome banding and fine structure are particularly

● *Climate and the Environment* by J. F. Griffiths (UK edition by Paul Elek reviewed in *Nature*, 262, August 5, 523, 1976) is also published in the USA by Westview Press, Boulder, Colorado 80301. Price: \$12.75.

good, and present a clear account of the facts and the various interpretations and speculations on mechanisms and structure. In such a rapidly developing field it is inevitable that some parts of the text are a little out of date—for example, some of the more recent work on human satellite DNAs is not discussed, but this is not a major criticism.

Geneticists who have not been following closely the human cytogenetic scene should be impressed by a wealth of chromosome polymorphisms that have been unearthed in the chromosome complements of various human populations using modern cytological techniques, and these are admirably summarised by the author. Man's chromosomes are varied indeed and, for example, our own studies in Edinburgh reveal that some 3% of the local population have inversions involving the whole or part of the C band on chromosome 1; that all of us are heteromorphic for one or more C- or Q-band regions; and that the chromosome phenotype of an individual may be almost as distinctive as his fingerprints! Schwarzacher, in fact, points out that an analysis of chromosome polymorphisms would give successful paternity exclusion tests in about 75% or more of cases.

The text of the book is very clearly written; it is well illustrated and easy

to read with only rare glimpses of minor problems of translation from the German, as in sentences such as "With this term the morphologic separation of complete chromosome sets of genomes is meant."

The general style tends to be rather more descriptive than discursive and I personally would have preferred more discussion of some of the interesting points brought out by the author. For example, a photograph and two lines of text impart the information—substantiated by all workers interested in chromosome replication—that daughter strands are always placed to the outside of parental templates. This implies a certain pattern of DNA segregation which must of itself reflect on organisation of chromosome structure—something that is not really considered in the book.

This little book is timely, and shows that we have come quite a long way in the past five years or so towards revealing the enormous diversity and variation in structure of man's chromosomes, but we have a long way yet to travel before we can really understand what these variations mean both in terms of chromosome organisation and in possible consequences to the individual. Swarzacher's summary sets a very useful background and is to be highly recommended to those who are already journeying in this field or who are about to start on their travels.

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