

operative surgery in the pre-anaesthetic days. He has discovered happy "phrases of melody" amidst the grim picture our war-bedevelled, transitional atomic generation also presents. The more widely informed and perchance saner world of our generation's grandchildren may thereby be encouraged to cultivate harmonious perspectives amidst its inevitable turmoils. Meanwhile, his explorative attitude to the science of living has not only rewarded him, but also enlightens the present international audience of readers this book is bound to reach.

RAYMOND A. DART

OUR NATIVE VEGETATION

Britain's Green Mantle

Past, Present and Future. By A. G. Tansley. Second edition. Pp. 327 + 140 plates. (Allen and Unwin: London, 1968.) 50s.

It is good to see a second edition of Sir Arthur Tansley's excellent account of Britain's green mantle of vegetation. Its aim was to provide for non-specialists who wished to know more about our native vegetation. The author claimed that it was written "so as to be easily intelligible", the few technical terms used being clearly explained; but also so as "to furnish a good deal of solid information". There can be no doubt that it achieved both aims and that it remains by far the best general introduction to the scientific study of our vegetation. We are therefore grateful to the publisher for this second edition and to Dr Proctor for his judicious and sensitive handling of the task of revision. He has for the most part retained the original wording and has brought the text up to date by additions and a certain amount of rearrangement. On page 197, for example, he has inserted a new paragraph about the south-western type of dry heath in which western gorse (*Ulex gallii*) replaces the eastern dwarf gorse (*Ulex minor*) and in which the bristle bent (*Agrostis setacea*) is often prominent. At the bottom of the same page a second new paragraph deals with the vegetation of the serpentine plateau of the Lizard Peninsula and its rich assemblage of species rare or absent elsewhere in the country. These two paragraphs have been inserted without altering the original text and without interrupting the descriptive flow.

In an equally skilful manner Proctor has added a valuable section on limestone grasslands in the north and west, drawing on his own intimate knowledge of these areas. He has also provided an important section on the origin of the Norfolk Broads based on researches by Dr Lambert and Dr Jennings carried out since the first edition appeared. Other chapters have required more substantial alteration in the light of new knowledge, including those on pollen-analysis and prehistory and on mountain vegetation. The final chapter on "Conservation and the Future" was written by Sir Arthur Tansley at the height of his efforts for the setting up of a "Biological Service", efforts that resulted in 1949 in the establishment of the Nature Conservancy. It is very fitting that the last chapter of this second edition of his book should pay tribute to his long devotion to the cause of nature conservation in Britain and to its successful outcome.

Those familiar with the first edition will find unexpected changes in the illustrations. Proctor explains that the blocks for the original plates were no longer available and that he had had to select a new set of illustrations. He may be warmly congratulated on that selection. It includes some from the first edition, notably the very beautiful photographs of beechwoods by R. J. Lythgoe and H. Godwin, the detail of fen in east Norfolk by Marietta Pallis (which appeared in "Types of British Vegetation" as long ago as 1911) and G. E. Briggs's fine

study of old *Cladium* leaves caught up in bushes of *Frangula*. It includes for the first time several of J. K. St Joseph's very striking and informative aerial photographs and some beautiful studies of native Scots pine forest by R. M. Adam. A very substantial proportion of the new set, however, are vegetational studies and plant portraits taken by Proctor himself, and they are superb. In all, there has been some shift of emphasis but quite certainly no fall in quality in the illustrations.

A. R. CLAPHAM

SURVEY OF VIRUSES

The Biology of Animal Viruses

By Frank Fenner. Vol. 1: Molecular and Cellular Biology. Pp. xiii + 474 + 27. (Academic Press: New York and London, March 1968.) 172s 8d.

To make a comprehensive account of animal virology at its present stage of development is clearly a major undertaking, and most of the other recent books on the subject have, in fact, been the work of several authors. The amount of subject matter covered in this book is reflected in its division into two volumes and unfortunately also in their price.

In the first volume the layout is by groups of viruses, based on a classification which occupies the first chapter. The classification and nomenclature of the virus groups adopted will not appeal to all animal virologists, but it is impossible to devise a classification or nomenclature which does. One scheme of classification, based on Bellett's work, is presented as a dendrogram, giving the impression that viruses may have evolved in much the same way as other organisms. This is unfortunate because, as is pointed out later in this chapter, almost nothing is known about the origin of viruses and different groups of viruses may have had separate and very different origins. Apart from this, the adoption of widely used names for the groups in conjunction with cryptograms and the avoidance of latinized names make for a very workable system.

The structure and composition of viruses of the various groups are presented in turn, and the tables summarizing the properties of the virus particles are particularly useful. Some of the numerical values given will be subject to change, but it is an indication of how successful the author has been in keeping the book up to date that there are so few changes needed now. Having described the virus particle in detail, the structure and function of the animal cell is then covered in outline. This serves as a preliminary to an extensive treatment of virus replication. The early stages of virus infection are sufficiently similar for all animal viruses to allow them to be described together. Later stages of the replication of representative viruses from each group are then described in more detail, with a summary at the end of each section and clear diagrams of intracellular events during replication. Some of the other illustrations in the book, particularly electron micrographs, are not so successful. A few seem to have suffered in reproduction to such an extent that they lose much of their value.

Host cells are changed in many different ways by virus infection, and the changes observed are often highly characteristic of the virus concerned. Effects such as antigenic changes, transformation and formation of polykaryocytes are mentioned here in what is unavoidably a rather heterogeneous section. Interactions between viruses are becoming increasingly important in both biological and biochemical studies of animal viruses, and these are dealt with in some detail. The characteristics of the various types of mutants such as temperature sensitive, plaque type and host range, which have been reported for different viruses are described here, and comments