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BOOK REVIEWS

J. RUENESS: *Norsk Algeflora.* Universitetsforlaget, Oslo-Bergen-Tromsø, 1977, 266 pp., 153 figures, 32 photographic plates. Nkr. 86.00.

After Pankow's flora of the baltic algae this is another useful book about scandinavian seaweeds. In Scandinavia there have always been many important phycologists, but no complete algal flora of one of the scandinavian countries had been published so far. The danish algal flora of Rosenvinge and Lund has not been finished and Kylin's floras covered the southwestern part of Sweden only. Therefore, this first norwegian algal flora is an important step forward.

The text is in Norwegian, but the keys and the descriptions are easy to be read. The 478 species of algae dealt with (204 Rhodophytes, 175 Phaeophytes, and 99 Chlorophytes-Cyanophytes are not incorporated) are placed in 215 genera. Species of 180 genera are figured, sometimes more than one species of a genus. Not illustrated are those genera which mostly have only one occasional representative in Norway. I missed, however, figures of species of Hildenbrandia, Laminaria, Lithophyllum, and Ulvaria. It is a pity that the drawings are often of poor quality. Of the 153 drawings at least 33 are badly printed. Especially the washed lithographs by Kuckuck and Reinke are severely damaged. Most drawings are taken from the literature – only five are original. The 143 photographs are probably all original – no references are given for them.

Nomenclature and species concepts are according to modern literature. The critical attitude of the author is often obvious and he did not follow all new concepts gratuitously. The text is well-balanced and many keys are added. This nice book is much recommended. It is not only a great help when naming norwegian algae, but it is also helpful for identification of marine algae in other western european areas.

W. F. PRUD HOMME VAN REINE

P. BAAS, A. J. BOLTON and D. M. CATLING, (editors): *Wood structure in Biological and technological Research.* 280 pp., 25 figs., 25 plates. Leiden Botanical Series No 3. Leiden University Press. The Hague 1976. ISBN 90.602.1.302.5. Price Dfl. 80.00.

This book consists of fifteen sections based on the proceeding of a meeting organized by the Materials Section of the Royal Microscopical Society. The first paper "History of the Jodrell Laboratory as a centre for systematic anatomy" does not relate only to wood anatomy but constitutes an interesting record of the work of the laboratory and was written on the occasion of its hundredth anniversary.

The papers on aspects of wood anatomy are as follows: Wood anatomy of the Rhizophoraceae (G. J. C. M. van Vliet); Comparative wood anatomy of Bonnetiaceae, Theaceae and Guttiferae (T. Baretta-Kuipers); Observations on some anatomical features used in identification and taxonomy (J. D. Brazier); Silica grains in woody plants of the Neotropics, especially Surinam (B. J. H. ter Welle); Variation in root wood anatomy (D. F. Cutler); Some functional and adaptive aspects of vessel member morphology (P. Baas); Variation in wood anatomy of species with a distribution covering both rain forest and savanna areas of the Ivory Coast, West Africa (R. W. den Outer and W. L. H. van Veenendaal); The anatomy of branch abscission layers in *Perebia mollis* and *Naucleopsis guianensis* (Castilleae, Moraceae) (J. Koek-Noorman and B. J. H. ter Welle); Wood production and structure in relation to bud activity in some softwood and hardwood species (M. P. Denne); Short term variation in tracheid development in the early wood of *Picea sitchensis* (E. D. Ford and A. W. Robards).

The four concluding papers are concerned with the relation of wood anatomy to wood properties as follows: Biological implications of a model describing liquid flow through conifer wood (A. J. Bolton); Causes of brashness in timber (J. M. Dinwoodie); The fracture behaviour of wood in relation to its structure (G. Jeronimides); Some anatomical and physical aspects of wood-plastic (pMMA) combination of spruce (P. B. Laming). It will be apparent that diversity of the topics to which the papers

relate, makes difficult critical assessment of the book as whole. The papers vary in extent from the detailed taxonomic papers of van Vliet and Baretta-Kuipers to the five page discussion of anatomical features used in identification and taxonomy by J. D. Brazier. This latter paper would have been improved by the inclusion of photographs, or drawing to illustrate the features discussed. The paper by Baas provides a welcome note of controversy in relation to factors governing xylem evolutions. The four concluding papers have little relation to the preceeding discussions but will be of considerable interest to wood technologists.

So far as the reviewer can judge all the papers are of excellent quality and provide a good introduction to the relevant literature. However, there is an essential overall lack of cohesiveness and theme which a monograph should provide. The book is very well produced and the print is of admirable clarity.

A. B. WARDROP

H. J. WILMS & A. J. MUNTING (Ed.): Secondary Xylem I. Anatomy of Softwood (Pinus sylvestris L.). Video tape No. 77027, 1978, time 31'31". Stichting Film en Wetenschap, Postbox 9550, 3506 GN Utrecht. Price ca. Dfl. 400.00 for first copy, subsequent copies ca. Dfl. 150.00; Copies also for hire, Dfl. 22.00.

This video tape, originally designed for the elementary plant anatomy courses given at the Agricultural University of Wageningen has now been provided with an English commentary. The broader circulation thus made possible justifies the inclusion of a review in Acta Botanica Neerlandica.

The film gives a very clear and comprehensive picture of the three-dimensional structure of softwood as exemplified by Scotch Pine. Student and professional anatomist alike will enjoy the excellent light- and scanning electron micrographs which have cleverly been used to produce a lively picture of the largely static structure of differentiated xylem. The value of the film is moreover enhanced by the simulation of ontogenetic processes in cartoon fashion. In order to remind the students of the trees and forests as major products of cambial activity, the film ends with an impression of forestry and forest products utilization in the United States.

I cannot think of a better means to explain the complex structure of wood in all its aspects than by using this video tape. With the advent of modern audiovisual aids in most universities it should be welcomed by all teachers of plant anatomy.

P. BAAS

J. GRACE: *Plant response to wind.* Experimental Botany, volume 13, Academic Press, London, New York, San Francisco 1977. 204 pp., 85 Figs. £ 9.80.

This book is the first to give a rather complete review of the effects of wind on plants. It starts with a chapter on the measurement of wind, with methods ranging from the tattering of flags to Laser-Doppler anemometers the physics of air-flow and the control of air-flow in experiments.

The second chapter deals with the response of single leaves to wind. It concentrates upon the effects of wind on the boundary layer through which transport of heat and water vapour takes place. For the general reader with a biological background this section may be somewhat too academic and a few concrete examples using actual values of heat transfer coefficients might have been helpful. Furthermore the effect of wind on leaf temperatures and indirectly on photosynthesis and growth is discussed.

In the third chapter much material is found which is not reviewed in other comprehensive texts, such as the work on the effects of mild mechanical stimulation on plants and on the anatomical responses of developing plants.

In the fourth chapter: wind in relation to crops, exchange processes inside the crop and above it are treated, mainly in relation to evaporation and photosynthesis. Another section treats the transport and deposition of light particles such as spores. It is a pity that nothing is said here about transport of heavier particles i.e. seeds. Furthermore lodging of crops and wind-throw of trees are treated as well as the effects of shelter upon the physiology and the yield of crops.

The last chapter, on ecological aspects, deals with the effects of wind on vegetation in mountainous

and coastal areas. As far as possible attention is given to the experimental approach. The efffects of wind on tree growth and vegetation zonation in mountains are treated in combination with a survey of mountain climate in general. The role of plant temperatures is stressed in a discussion of the advantages of the prostrate growth form. In the section on coastal vegetation the importance of salt spray is extensively discussed and considered to be a master factor in determining vegetation zonation.

The printing errors I found are not of a serious kind. The references are given without titles, which many will see as a drawback.

Concluding it may be said that this is an excellent book in which the literature is critically evaluated and always placed in a wide physiological and ecological context.

P. STOUTJESDIJK

H. HAEUPLER: *Atlas zur Flora von Südniedersachsen.* Teil I. Verbreitung der Gefäszpflanzen. Scripta Geobotanica, Band 10. Verlag Erich Goltze KG, Göttingen, 1976, 367 pp. DM 36,–.

The Atlas covers an area of c. 20,000 km², situated horizontally from Kassel in the south up to north of Hannover near Celle, and from Detmold in the west to Helmstedt in the east. Vertically the extremes are 27 m (the river Weser near Landesbergen in the north-west) and 1142 m above sea-level (the subalpine zone at the 'Brockengipfel' of the Harz in the south-east).

This area was investigated with the assistance of 169 floristic fieldworkers in the period of 1967–1971. Before starting the project the compiler of the Atlas orientated himself in Europe, in the Netherlands too, in order to choose the grid and the best method of investigation. The mapping unit forms a quadrant of about 5.5 × 5.5 km and is based on the grid-system of Greenwich. First the field-records were listed and computerized, and later the data from available herbaria and literature were added.

The Atlas is the first one in the area of the German language with so detailed a distribution and includes 1764 maps of 1704 taxa. The distribution-maps, arranged alphabetically according to the nomenclature of EHRENDORFER, Liste der Gefäszpflanzen Mitteleuropas (1967), are preceded by maps with climatic, geological and pedological data. All the maps are rather small, 5 × 5 cm, but well surveyable thanks to the relief-shading and the indication of the main rivers, high-ways and towns. A bookmarker, belonging to the Atlas, carries the explanation of the various signs on the maps.

The data of this Atlas will also be used for the Atlas of the Flora of West-Germany, expected in 1980, with squares of about 11 × 11 km. Unfortunately the German squares and grid are not the same as in the Netherlands, and combining both maps will give some trouble. In spite of that we have great respect for the publication of Haeupler, who also takes an important part in the realization of the forthcoming Atlas of the Flora of West-Germany.

J. MENNEMA

Advances in Microbial Ecology, Vol. 1. editor. M. ALEXANDER, Plenum Publishing Corporation, New York, 1977, 268 p., $ 24.50.

The first volume of this new series on microbial ecology offers the reader a varied choice of topics touching on a considerable part of the field, although attention is focussed mainly on the role of bacteria.

In five chapters, *the role of bacteria in detritus food chains of aquatic ecosystems* (T. M. FENCHEL and B. BARKER JØRGENSEN), *ecological studies with the chemostat* (H. VELDKAMP), *microbial transformations in the phosphorus cycle* (D. J. COSGROVE), *the biochemical ecology of nitrification and denitrification* (D. D. FOCHT and W. VERSTRAETE), and the *microbial ecology of liquid waste treatment* (J. W. M. LA RIVIÈRE) are treated successively.

In reading this first volume I found myself wondering which public the editors were aiming at.

Chapter I and V offer an introduction to the subject and are of interest to, and lie at the level of, the graduate student in biology, the sanitary engineer, and the general environmentalist. The other chapters on the contrary, tend to go much more into detail, and will attract the specialist. Because the book offers something for everybody, it can be recommended to the general university library as well as to that of the microbiology department.

Since the editors apparently were aiming at the non-specialized reader, a considerable degree of conformity between the various chapters is required if misunderstandings are to be avoided. In this respect there are reasons to make improvements in subsequent volumes. For instance, on page 26 one reads 'The denitrifying bacteria are all facultative anaerobes', a statement which is fortunately corrected on page 156 by 'Much of the current literature incorrectly attributes denitrification as being due to facultative anaerobes'. In Chapters I and V, organisms such as *Thiobacillus* species are described as *chemo-autotrophs*, whereas in Chapter II the more modern term *chemolithotrops* is used to indicate the same organisms.

Because the editors of a journal generally invite specialists to write their book reviews, it is not astonishing that I was particularly captivated by the middle part of the book. I have read the contribution by Veldkamp with much pleasure. It gives a well-considered opinion on some 'hot' topics. In particular, his discussion of *heterotrophic production in bacteria* (pp. 70–77), a subject which has recently received considerable attention in The Netherlands, is highly enlightening. The article on microbial transformations in the phosphorus cycle is *per se* well written but adds little information to other recent reviews of the subject. Moreover, its title is somewhat misleading, since the important contribution of the various types of mycorrhiza is – evidently for the sake of brevity – left out of consideration.

The contribution on nitrification and denitrification gives an excellent picture of the state of the art. As a marginal note it may be remarked that the discussion of *heterotrophic nitrification* has received too much attention at the cost of the 'conventional' *chemolithotrophic nitrification*. Thus, no mention is made of the controversial role of root exudates of higher plants on the nitrification process, a subject which has been discussed at length in Rice's recent book called 'Allelopathy'.

In conclusion, the first volume of this series is of interest to a broad spectrum of readers, although the various categories will not be attracted by the same chapters. The important question as to the existence of a 'niche', which must be answered positively, must also reconcile us to the addition of a new series of volumes to the growing pile of literature on all our desks.

Those readers of the *Acta Botanica*, and particularly the ecologists among them, who are interested in aquatic systems, are advised to read Chapter 1; Chapter 3 and 4 pertain to terrestrial ecology.

J. W. WOLDENDORP