

BOOK REVIEWS

R. BERGFELD: *Sexualität bei Pflanzen*. Verlag E. Ulmer, Stuttgart, 1977, 128 p., 29 fig. DM 42.–.

In this monograph sexual reproduction in fungi, algae, archegoniates and higher plants is discussed in a comparative way. Much attention is devoted to a terminology which is generally applicable throughout the plant kingdom. After a general introduction, haplontic, diplontic and haplo-diplontic organisms are described in succession. In these parts, a distinction is made between genetical and modificatory (phenotypical) sex determination. The first term is used when the sexes (or mating types) are distributed in a mendelian ratio among the progeny of a zygote, whereas the second term applies to those cases where cells with the same genetic information may express either maleness or femaleness, depending on the circumstances. Of course, in both cases sexual differentiation is genetically determined, and for that reason the terms seem hardly appropriate. Somewhat confusing may be the association of modificatory sex determination with the now obsolete concept of "relative sexuality", which means that a gamete may behave as male or female, depending on the partner. The book also includes a chapter on parasexual phenomena in prokaryotes and a discussion on the evolution of sex.

The only comprehensive treatise covering this field is volume 17 of the *Encyclopedia of Plant Physiology*, which appeared in 1967 and contains 874 pages. It is only natural that the author has not succeeded in producing a small book with the same coverage. The different systems are dealt with in a descriptive way. The text is rather compact and the inclusion of more figures might have increased its clarity. For a subject like this, which calls for a multi-disciplinary approach, many physiological and genetical aspects have been completely neglected or are only briefly described. The author refers only rarely to recent literature, which will particularly disappoint readers who want to keep abreast of major experimental advancements in this area.

Thus, the book certainly is not a summarizing account, and is sometimes quite superficial. However, what it contains may be of use for those teaching about or working in this field of study.

H. VAN DEN ENDE

H. VAN DEN ENDE: *Sexual Interactions in Plants*. Academic Press, London, New York, San Francisco, 1976, 186 p. £ 6.80, \$ 14.75.

"The Role of Specific Substances in Sexual Reproduction" is the subtitle of this monograph which was published as vol. 9 of a series on *Experimental Botany*. Consequently it is the substances and not the phylogenetic systems on which the author places emphasis. The plant hormones regulate the process of sexual differentiation and also act as mediators between sexually interacting cells. After an up-to-date introduction on sexual differentiation in plants the author presents 10 reviews (case histories) on various plants or groups of plants: *Allomyces*, *Achlya*, *Mucor*, yeast, *Chlamydomonas*, *Volvox*, *Oedogonium*, brown algae, ferns, and flowering plants. In each case history the problems and experimental approach are thoroughly described. So the student reader is quickly introduced into life cycles, action and chemistry of the specific sex hormones, and bioassay methods – and he also learns from the author that there still are many unanswered questions.

A 23 page reference list (with also a few older, but important titles included) rounds off the book which can be recommended to every biologist interested in molecular aspects of plant sexuality.

C. STUMM

K. WALTHER: *Die Vegetation des Elbtales. Die Flussniederung von Elbe und Seege bei Gartow (Kr. Lüchow – Dannenberg)*. Abh. und Verh. des Naturwiss. Ver. in Hamburg, NF, 20, suppl. 1977. 123 pp., 3 maps (1:5000). ISBN 3-490-12596-7.

About halfway between Hamburg and Berlin, just at the border of Western Germany with the DDR the small river Seege flows into the Elbe. In that area, part of a nature reserve, human influence on the environment is rather small. Freely overflowing rivers act upon a very differentiated landscape. The report gives a good impression of the astonishing rich flora in that relatively small area. For a student in plant ecology as well as in floristics it must be a small paradise.

The author who described this vegetation clearly belongs to the classical French-Swiss School, even in fully ignoring plant ecological nomenclature. References to literature are very scarce, mostly to old publications, nearly all of them from German or German writing authors. Many of the 41 vegetation types (certainly not all 'associations' as the author suggests) are characterized by dominance of one species. For instance, the tables of 'relevées' of the so-called *Caricetum gracilis*, the *Carex acutiformis* Gesellschaft, and the *Phalaridetum arundinaceae* differ little more than in nearly complete dominance of *Carex acuta*, *C. acutiformis*, and *Phalaris arundinacea* respectively. All vegetation types are well documented by complete tables of relevées in which all subtypes are pigeon-holed in an almost artificial way.

The word "Eschen-Ulmen-Wald" (*Fraxinus-Ulmus* wood) on page 105 is confusing. This may be a German word for the *Fraxino-Ulmetum*. None of the 41 vegetation types, however, bears the name Eschen-Ulmenwald. One of these is called "Eichen-Ulmenwald", with which the *Quercu-Ulmetum* is meant. Both associations closely resemble each other, and Westhoff & Den Held in their "Plantengemeenschappen in Nederland" (1969) consider them as partial synonyms.

Only in the summary the statement is found that "rests of original" *Quercu-Ulmetum* occur in the area. In this context "original" probably means "nearly natural". Nearly natural woods are so rare in NW. Europe that a more elaborate description of these woods would undoubtedly have increased the value of this paper; it seems odd that the very common "*Spergulo-Panicetum cruri-galli*" has been described in exactly the same number of pages ($1\frac{1}{2}$) as the *Quercu-Ulmetum*.

Strongly in contrast to the way nomenclature is neglected for the vegetation types, that of latin plant names is modern. Superfluously all plant names are consistently followed by author names. Citation of the author name, however, does not clarify the taxonomic concept behind the name. As an example "*Carex praecox* L." is used in a wider sense than in most recent German floras; following Ehrendorfers list (1973) the author takes *C. praecox sensu stricto* with *C. ligerica* under the first name.

Apart from rather frequent printing errors the report is well worth reading, especially because of the interesting floristic observations and the notes on the physiognomy of the vegetation types.

R. VAN DER MEIJDEN

J. T. R. KALKHOVEN, A. H. P. STUMPEL and S. E. STUMPEL-RIENKS: *Environmental Survey of the Netherlands. A landscape ecological survey of the natural environment in The Netherlands for physical planning on national level. (Landelijke Milieukartering. Een landschapsecologische kartering van het natuurlijk milieu in Nederland ten behoeve van de ruimtelijke planning op nationaal niveau)*. Studierapport no. 8, Rijksplanologische Dienst. Staatsuitgeverij, 's-Gravenhage "1976" (distributed June/July 1977). 141 pp., 4 app. (Also available as Verhandeling 9, Rijksinstituut voor Natuurbeheer, Leersum). Text in Dutch, summaries in English, German and French. Dfl. 35,-.

Already in 1974 the report, to be published in 1975, was publicly announced. It is a pity that this important report was not available until the middle of 1977. The text of the report is very difficult to understand. From the very beginning the reader is confused by a jargon which is a mixture of technical terms in the field of physical planning and that of today's ecological papers. We think it should have been written in clear, simple language. Very unfortunately the report strongly creates the impression of being a final report. The authors did not exert themselves to take away this impression.

The most important parts of the report are two large multicoloured maps, both to a scale of 1:200000. One is called "Vegetation map of The Netherlands", the second "Map of the ecological importance of the natural environment in The Netherlands". In both maps the country has been subdivided according to a simplified soil map.

Natural terrestrial vegetation is scarce in Northwestern Europe, and especially so in the too densely crowded Netherlands. A map of the present more or less natural vegetation in this country would be almost blank. Thus, the "vegetation map" indicates the "potentially natural vegetation". The authors think that already 50–150 years after human influence on the vegetation has stopped, nearly the whole country, the coastal areas excepted, will bear different types of woodland vegetations *that would be recognizable on the level of Braun-Blanquet associations*. As any scientific background information on the subject of the relation between soil type and expected woodland type is wanting in the report itself, it is difficult to judge its value. We are looking forward towards a separate article on this really interesting subject. Remarkable is the opinion of the authors regarding the future vegetations of the alluvial part of The Netherlands (which is roughly half of the country). On clayey soils with a high calcium content (about one third of the alluvial part) the *Fraxino-Ulmetum* is expected, a rare woodland type which at present is only known from thick sandy fluvial deposits. We think, however, that none of the associations of the *Ulmion carpinifoliae* thus far known from the Netherlands can be expected on these soils which are since long so intensively cultivated that hardly any half-natural vegetation is left, let alone woodland. The authors should have explained their assumption.

The second map gives an image of the present density of "natural elements" in The Netherlands. It is a combined evaluation map from botanical and zoological data. Although the zoological evaluation strongly influences the final result, the data on which this evaluation has been based are unfortunately lacking.

The botanical evaluation is a result of a survey of "ecotopes" (in the sense of Transley). The method used differs little from the one described by the third author in *Gorteria* 6, 1974, p. 92–98 (with English summary). From that article and the remarks on the method in the present report it is clear that the authors believed that the ecotope method would provide reliable results in which only a minor amount of real fieldwork should be necessary. We entirely disagree with the authors in this respect. After carefully checking the results for a number of sufficiently large areas (10–20 square kilometers per area) outside the larger wellknown nature reserves, we concluded that the ecological map is very incomplete as a result of the neglect to do fieldwork. Even a country as small as The Netherlands with a flora so well known, yet so poor, needs for the greatest part of its area to be investigated in the field, also for evaluations on a scale 1:200000. (A detailed comment for one area on the

botanical evaluation according to the ecotope method is in print: R. van der Meijden and A. Abma: *De flora van de Dordtse Biesbosch. Inventarisatieresultaten met de oude en de nieuwe florastatistiek*. Rijksherbarium, Leiden, 49 pp.). According to the authors, the map is to be used only on the national planning level. They neglected, however, to explain *why* it cannot be used on the provincial, regional, and local level. The answer must be: because it is not exact. We are afraid that the results will be largely misunderstood, thus giving rise to many wrong decisions which can damage the poor remnants of nature in this country. We can only hope that the public authorities will soon provide funds for correcting the map by fieldwork.

R. VAN DER MEIJDEN
W. V. RUBERS

T. W. GOODWIN (ed.): *Chemistry and Biochemistry of Plant Pigments*, 2nd. Edition. Vol. I and II. Academic Press. London, New York, San Francisco 1976. Vol. I 870 pages, illustrated. Price £ 26.50 (US \$ 65.75), Vol II 373 pages, illustrated. Price £ 12. 00 (US \$ 29.75).

Although the present multi-author work is formally the second edition of a volume which appeared in 1963, a comparison shows that it is in fact a new book. The chapters have been completely rewritten, for some chapters new authors are responsible, and new topics (betalains, flash kinetic photometry, analytical methods for quinones and phytochrome) have been included.

The work is divided into four sections. The first deals with the nature, distribution and biosynthesis of the various pigments (623 pages), the second discusses their functions (156 pages), the third is concerned with metabolism in senescent and stored tissues (62 pages), while the fourth part (volume II) extensively deals with analytical methods.

The pigment classes, covered in this work, are the chlorophylls, the carotenoids, the bili-proteins and phycobilins, phytochrome, the flavonoids, the betalains and miscellaneous pigments. Although also in this edition the plant cytochromes are not dealt with, they are to some extent discussed in an excellent chapter on pigment function in photosynthesis.

The various chapters have been written by authors still actively engaged in research in the field on which they write, all with international reputations. According to the preface the book is intended "for undergraduate and postgraduate students as well as for professional researchers". "It will also be of great value for the increasing number of botanists who have a keen interest in the biochemical aspects of plant physiology".

According to the reviewer especially the last mentioned group will welcome the appearance of both new volumes on plant pigments. Although the various chapters differ in the amount of details offered they are clearly written and the work as a whole contains a wealth of information of which much use can be made for teaching as well as for practical university courses and laboratory exercises. Especially the chapters on the carotenoids and on phytochrome are very well composed; the former contains many tables of great practical value.

Although in the first edition the plant pigments could be covered in a single volume, one might wonder whether its apparent success of twelve years ago will also hold for the next future. The great advances made in recent years in various subjects covered in the present work are such that a number of separate monographs, as possible parts of a series on plant pigments, would probably better fulfil the needs of professional researchers than the present all-in-two-volumes way of publishing.

Probably, apart from those engaged in the food industry, most research workers are concerned with special pigments and probably have little need for detailed information on non-related substances which only share a number of conjugated double bonds with the compounds of their interest.

Paper, printing and binding of the two volumes are of perfect quality. The price is moderate, considering the amount of information of high quality offered.

J. VAN DIE