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Chrysophytes: aspects and problems by J Kristiansen & RA Andersen - Book review

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Chrysophytes: Aspects and Problems

Edited by Kristiansen and R.A. Andersen. (1986) Cambridge University Press, Cambridge, pp. xiv + 337.

Containing twenty-one of the papers from the first International Chrysophyte Symposium, held at the University of North Dakota in August 1983, this book reflects the growing interest in the chrysophytes over recent years. Although the chrysophytes have long fossil histories and an almost ubiquitous distribution today, and many species have become familiar subjects for cell biologists, as a group they remain an enigma: traditionally, the chrysophytes are a group in which 'protozoal' representatives have been closely allied with autotrophic forms. Yet the heterogeneous nature of the group is best illustrated in that, despite several new classificatory schemes proposed over the last ten years, there is still no agreement as to the limits or the composition of this group.

This dilemma is addressed in the first section of the book, particularly in the opening paper while the following three papers (on ultrastructure, marine chrysophytes and the actinophryid heliozoa respectively) attempt to restructure the group into a better circumscribed and more natural group.

The taxonomy of various groups of chrysophytes including those bearing silica scales, the loricate rhizopodial chrysophytes, and the genera Mallomonas and Sacchochrysis are examined in the second section while the third section is concerned with cell biology - covering such topics as scale construction, autofluorescent vesicles and their exocytosis in Ochromonas, and chloroplast DNA in Olisthodiscus.

Population dynamics are probably of most interest to ecologists and such studies are reported in the fourth section. For example, Lake Lacawac in Pennsylvania is an oligotrophic acidic lake dominated throughout the year by chrysophytes apparently because of its low nutrient status: interestingly, coastal acid lakes in Australia are generally dominated by desmids. Other papers in this section deal with blooms in relation to B group vitamins, carbon and sulphur uptake and on the effects of temperature on vegetative growth and reproduction.

The final two sections overlap, dealing with biogeography and palaeobiology respectively. Because of the ease with which scales and cysts can be mineralised, microfossils of chrysophytes in lake sediments are increasingly utilised in reconstructing past physico-chemical conditions in lakes - an important tool for studies of lake development. Several papers deal with these aspects and the final paper is a proposal for a standardized nomenclature and terminology for chrysophycean cysts.

The volume is well produced, of good quality paper and contains an index - so often absent in symposium proceedings. There are few typographical errors - e.g. the first couplet in the key to the family Stylococcaceae on p.82 has been omitted - and, with one or two exceptions, all diagrams are clear and legible. Although the volume makes

a useful contribution to an understanding of the chrysophytes, and certainly is an up-to-date reference in this area, it is a specialist volume unlikely to be of wide appeal to the general biologist/ecologist. Nevertheless, it comprises an important reference work for such areas as algology, limnology and biological oceanography - and as such can be highly recommended for acquisition by libraries and relevant research centres.

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