

## BOOK REVIEWS

Editor: K. T. KISS

DILLARD, G. E. (2000): Freshwater algae of the Southeastern United States. Part 7. Pigmented Euglenophyceae. – *Bibliotheca Phycologica*, Band 106. J. Cramer, Berlin, Stuttgart, 135 pp. (with 20 plates)

This book is the seventh in planned series of freshwater algae occurring in the Southeastern United States. It contains the key of orders, genera and species of pigmented Euglenophyceae and short description of each genus and species. The classification employed herein for the euglenoids is the system of Smith (1950) and Prescott (1962) and a widely used system of Leedale (1967). Additionally it gives the distribution of species in Southeastern United States.

The short first part of the book gives a general description of class Euglenophyceae with a non-detailed terminology. The lack of this detailed terminology of important features makes it difficult to use the “keys of species” mentioned by drawing later. The book contains 20 plates with 295 good quality drawings.

One *Colacium*, one *Cryptoglana*, 67 *Euglena*, 2 *Eutreptia*, 14 *Lepocinclis*, 63 *Phacus*, 15 *Strombomonas* and 85 *Trachelomonas* species are discussed in the book.

This is not an “identification book”, and makes no pretence about attempting to cover the pigmented Euglenophyceae world. Dillard’s book is worth reading not only for those interested in Euglenophyceae taxonomy specially, but for all phycologists, as well.

I. GRIGORSZKY

GRAHAM, L. E. and WILCOX, L. W. (2000): *Algae*. – Prentice Hall, Upper Saddle River, 723 pp.

Book written especially for use by students as a primary text in phycology courses, it provides a comprehensive and up-to-date overview on the algae.

Twenty-three main chapters are present on 700 pages, with a glossary, list of cited literature, a taxonomic and a subject index. Five introductory chapters deal with the general features, importance, diversity and relationships of the algae, this book being the first text that integrates algal associations with other organisms in food webs, symbioses, and pathogenic interactions. The role of algae in the global biogeochemistry is also emphasised. A group of 15 chapters (chapters 6, and 8–21) treats the characteristics of cyanobacteria, cryptomonads, dinoflagellates, ochrophytes, red and green algae, including group-specific structural, physiological, evolutionary and ecological information. Chapter 7 offers a detailed study on the phenomena of endosymbiosis and its role in the origin of eucaryotic algae. Algal groups were arranged based on modern approaches to algal systematics, concerning recently used analytical techniques in molecular biology (rDNA sequence analysis). The book is illustrated by nearly 1,000 drawings and good quality photographs taken with light- and electron microscope (both TEM and SEM) showing the representative genera. Chapters are designed to stand alone, the content not depending on that found in other

chapters so they might be read in any order. The book concludes with two chapters focused on phytoplankton, seaweed and periphyton ecology.

The extensive list of cited literature contains both very recent and older, classical references; every chapter also includes a short list of books recommended by the authors for those interested in more details on that subject. Readers also might find useful the geological time scale showing the important events that occurred in algal evolution during time.

It is a very useful textbook not only for students and university teachers but also for phycologists and researchers too, in the field of aquatic ecology and technological applications of algae.

A. KOZMA

KRAMMER, K. and LANGE-BERTALOT, H. (Unter Mitarbeit von HÅKANSSON, H. and NÖRPEL, M.) (2000): Bacillariophyceae. 3. Teil. Centrales, Fragilariaceae, Eunotiaceae. – In: Ettl, H., Gerloff, J., Heynig, H. and Mollenhauer, D. (eds): Süßwasserflora von Mitteleuropa. Band 2/3. Spektrum Akademischer Verlag, Heidelberg, Berlin, 598 pp. (with 2188 figures in 167 plates)

This is an enlarged edition of the former third volume of this book with some correction and addition. Nevertheless we can repeat our former review in many respect. The third volume of the series about diatoms is the most heterogeneous. One reasons because the book concerns not only the two Pennales families with 13 genera, but 15 genera of the Centrales, which are in many respects different from the pennates. Another reason can be, that the book was written by four authors:

Centrales: *Melosira*, *Orthoseira*, *Ellerbeckia*, *Aulacoseira*, *Skeletonema*, *Acanthoceras*, *Chaetoceros*, *Rhizosolenia*, *Pleurosira*, *Actinocyclus* by Krammer; *Cyclotella*, *Cyclostephanos*, *Stephanodiscus*, *Thalassiosira*, *Stephanocostis* by Håkansson.

Pennales: *Tetracyclus*, *Diatoma*, *Meridion*, *Asterionella* by Krammer; *Tabellaria*, *Synedra*, *Fragilaria*, *Opephora*, *Hannaea*, *Centronella* by Lange-Bertalot; and *Eunotia*, *Actinella*, *Peronia* by Lange-Bertalot and Nörpel.

The original structure of the first edition is followed here. The introduction deals primarily with terminology. It is practically an addition to the morphological glossary of volumes 2/1 and 2/2. Unfortunately, this volume includes only the German terminology, unlike volume 2/1 in which we can find the English, French and Latin equivalent of terms. The second chapter begins with the determination key of the centric diatom genera. A short general description of the first genus (*Melosira*), the determination key of the species, and their morphological description follow it. This construction is typical for the remainder of the book. The morphological description is primarily based on characteristics seen in light microscope, although for several species it mentions microstructure studied under electron microscope. The distribution of the species, habitat and lifestyle, and occasionally their bioindicator (saprobity, trophity) characteristics are also given. All of these characteristics, whit 167 tables containing 5–20 micrographs (LM, EM) on each, help to determine each taxon. The book ends with a taxon-list and with an additional part about several genera and species, their list and references (21 pages).

Before starting our critical comments, we would like to mention that we are well aware of the great difficulties, which is most noticeable in the Centrales order. New genera, many new species and infraspecific taxa have been described here, during the last 20–25 years as a consequence of the ever-extending use of the electron microscope. Many of these

descriptions were not thorough or cautious enough. Therefore unifying them in a common system (or key) is very difficult. Unfortunately, the authors were not able to fulfil this task entirely. Those users who do not know the centric diatoms thoroughly can be misguided even at the level of genera. For example, according to 10a (determination key of Centrales – see page 6) – areolae are arranged in sectors – we cannot get to *Thalassiosira* or *Stephanocostis*, as this feature is characteristic only in the *Actinocyclus* and *Coscinodiscus* genera. Possible misguidance as a result of imprecise or inaccurate specification might also occur in the *Cyclotella*, *Cyclostephanos*, *Stephanodiscus* and *Thalassiosira* species. It is even more disturbing since the key should be the base to distinguishing species.

It would be very important to have the main characteristics of EM structure in addition to light microscopic structure, especially for the tiny *Cyclotella*, *Cyclostephanos*, *Stephanodiscus* and *Thalassiosira* species. They are often missing or incomplete. In these cases descriptions should have been supplemented with TEM or SEM micrographs.

It is an old and good tradition of the series that, since many of the species are cosmopolitan, more than just Central European taxa are included in the book. Therefore, it is acceptable that *Cyclotella stylonum* Brightwell from tropical seas; *C. baikaliensis* Skvortzow from Lake Baikal; *Cyclostephanos tholiformis* Stoermer, Håkansson et Theriot and *Stephanodiscus agassizensis* Håkansson et Kling described from North America; *S. aegyptiacus* Ehrenberg etc. are included in the book. By this reason it is not understandable why other species also found in Central Europe were left out or not described in detail (e.g. *Cyclotella costei* Druart et Straub, *C. pseudocomensis* Scheffler, *C. meduanae* Germain or *Stephanodiscus delicatus* Genkal and *Thalassiosira guillardii* Hasle). The fact that they were not mentioned is especially disturbing because there are possibly synonymous species like *Cyclotella hakanssoniae* Wendker or *Stephanodiscus parvus* Stoermer et Håkansson, which are considered a synonymous or invalid taxon by many authors.

In the first edition of this volume were some small mistakes concerning on micrographs of *Skeletonema potamos* (two LM pictures of a blue-green alga on Table 85). Unfortunately author made a new mistake: on Table 85, Figs 4 and 7 show not *Skeletonema potamos*, but some other small centric diatom, may be *Cyclotella pseudostelligera*.

It is difficult to understand and accept why the “leader” of authors, Lange-Bertalot did not suggested Håkansson to make a real and detailed revision, addition of Thalassiosiraceae family. Even she did not utilise her own results published the last years (papers mentioned here are only from Diatom Research: *Cyclotella caspia* – Håkansson et al. (1993), *C. exigua* – Håkansson (1996), *C. wulfiae* – Meyer and Håkansson (1997), *Stephanodiscus heterostylus* – Håkansson and Meyer (1994)).

In spite of these critical comments, I recommend this book not even to those who already possess the first two volumes, or the first edition of this one. It will be important for algologists in their daily work, botanists dealing with general taxonomy, and applied hydrobiologists. It is useful in university education, too.

K. T. KISS

LANGE-BERTALOT, H. (2001): Diatoms of Europe. Diatoms of the European inland waters and comparable habitats. Volume 2. Navicula sensu stricto. 10 genera separated from Navicula sensu lato Frustulia. – A. R. G. Gantner Verlag, K. G., 526 pp.

This book is the second volume of a serial, which is a revision and synopsis of *Navicula sensu stricto*. The first volume dealt with the genus *Pinnularia*. Beside the revision of 150

*Navicula* taxa, the author separated 10 genera from *Navicula sensu lato*. The genus *Navicula* (*sensu stricto*) was divided into two sections: Alinea (this is a new section) and *Navicula*. The genera *Hippodonta*, *Craticula*, *Geissleria*, *Neidiopsis*, *Mayamaea*, *Adlafia*, *Decussata*, *Fistulifera*, *Aneumastus*, *Haslea* and *Frustulia* previously belonged in *Navicula sensu lato* and of *Frustulia*.

The first part of the book is the diagnoses and discussions of the taxa, the second one is the key for the identification of diatoms and the third one is the Latin diagnoses of new taxa.

Very useful part of the book is the ecological group of species, but the ecological characterisation of species needs exact taxonomic knowledge.

To help intensify our taxonomic knowledge, the book contains 140 tables with many good quality photos made by first of all light microscopy and unfortunately only a few scanning electron micrographs can be found in it. Lange-Bertalot also described 30 new taxa in this book.

The description and separation of taxa is based only on the morphological features of diatoms. Recently, when the rDNA sequence analysis started to be applied in taxonomy of diatoms also, and one of the aims of diatomologists is to diminish the number of diatom taxa, one can hardly understand why it can be useful to describe and separate so many taxa based only on the valve morphology. É. ÁCS

REICHARDT, E. (1999): Zur Revision der Gattung *Gomphonema* Die Arten um *G. affine/insigne*, *G. angustatum/micropus*, *G. acuminatum* sowie gomphonemoide Diatomeen aus dem Oberoligozän in Böhmen. – In: LANGE-BERTALOT, H. (ed.): *Iconographia Diatomologica*. Volume 8. A. R. G. Gantner Verlag, K. G., 203 pp. (with 1090 figures in 68 plates)

A diatom expert who has ever investigated a sample which contains a lot of *Gomphonema* spp. knows very well how many difficulties may occur throughout the identification of these taxa and how poor the information is given to us by our usual identification books. That is why this book, which is written by a uniquely excellent expert of the *Gomphonemas*, should receive the warmest welcome of diatomologists.

The 8th volume of *Iconographia Diatomologica* summarises the results of lots of years of precise work with many ecological data about the concerned taxa. This very well-structured, perspicuous volume of high standard analyses four groups of widespread and frequently incorrectly identified gomphonemoid taxa. The morphologically similar taxa, like the *Gomphonema affine/insigne* group, the *G. angustatum/micropus* group, the *G. acuminatum/coronata* group and finally the *G. bohemicum* group are here redefined and divided. Altogether 47 species, 1 subspecies, 3 varieties and 2 morphotypes, among them 21 sp. nov., 1 subsp. nov. and 1 var. nov. are discussed with an open-minded taxonomic concept. The author introduces the history of these problematic taxa with outstanding accuracy and illustrates the constant taxonomic uncertainties of the concerned groups. The different stages of diatom life cycle were taken into consideration when describing the taxa. This scientific trend should be appreciated as well. Though the separating markers are not only light microscopic but also electron microscopic ones, the taxa mentioned here are well identifiable by using only light microscope. Thus, the author considers the aspects of practical work with diatoms, too. Sixty-eight tables with 1090 EM and LM photos of high quality support the text. Although still hardly anything is known about the genetic background of the physiognomic characteristics of diatoms, studies like this are very important in making the first steps towards a redefined taxonomy. This is particularly true for the “collective

species" like *Gomphonema angustatum* and *G. acuminatum*, which often turn out to inhibit us in gaining ecologically valuable information. The style of the author is very readable and enjoyable, it gives the reader the feeling to be just in his lab. The chapters about the "group" of *G. acuminatum* and *G. bohemicum* are especially interesting. *G. acuminatum*, which has been always considered as a well defined species is proved to be dividable into multiple taxa and *G. bohemicum*, which is sometimes found in living material nowadays, is an extinct species. The clearly demonstrated methods can be also well employed by many diatomologists.

The time, when all these new taxonomic considerations can be rendered into the practice, is probably a little more remote, but this kind of revision work is full of promise and particular importance. It is to be hoped that this volume and all the other volumes of *Iconographia Diatomologica* will be accessible to as much diatomologists as possible. It would be also desirable if all the experts adjusted themselves to *Iconographia Diatomologica* to make the identification and papers about diatoms more and more consistent and easy to survey.

K. SZABÓ

WHITTON, B. and POTTS, M. (eds) (2000): The ecology of cyanobacteria. Their diversity in time and space. – Kluwer Academic Publishers, Dordrecht, Boston, London, 669 pp.

"The ecology of the cyanobacteria" by Whitton and Potts is intended to be the sister-volume of "The molecular biology of cyanobacteria" edited by Donald Bryant, published in 1994. It is the first comprehensive work that focuses solely on the ecology of these organisms and also shows the importance of molecular biology in understanding the interactions between cyanobacteria and their environment. Two introductory chapters present an overview of the ecological and morphological diversity, taxonomy, molecular ecology and use of cyanobacteria as well as the origins of the cyanobacterial lineage. Chapters 3–13 describe the characteristic cyanobacterial communities of various habitats, like sea- and freshwater, soil, rice-fields, limestone, with the adaptive strategies to the extreme conditions of thermal springs, hypersaline and polluted water, polar regions and deserts. Most of the chapters include aspects of physiology, biochemistry, geochemistry and molecular biology, too. The phenomena of freshwater cyanobacterial blooms is discussed through a whole chapter, which emphasises the role of environmental factors in producing the blooms and how can they be controlled. There are three chapters dealing specifically with molecular ecology of the cyanobacteria. A detailed description of the morphology, physiology and systematics of two well-known genera, *Nostoc* and *Arthrospira* (*Spirulina*) is also given.

The book comprises 22 chapters written by leading experts from all over the world. It carries 32 colour plates that provide a comprehensive documentation of cyanobacterial cells and their environments. Every chapter figures as a stand-alone book, with references list at the end. The volume has three indexes: of organisms, genes and their products, and subjects.

It is a valuable book that can be recommended to researchers and specialists in the field of microbiology, plant molecular biology, geology, water management and environment sciences. It should be also useful in university education.

A. KOZMA

WOŁOWSKI, K. (1998): Taxonomic and environmental studies on euglenophytes of the Kraków-Częstochowa Upland (Southern Poland). – *Fragmenta floristica et geobotanica*, Supplementum 6: 3–192. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków. (with 337 figures, 13 tables and 29 photographic plates)

This very handsome book represents a tremendous amount of fieldwork on euglenophytes of Kraków-Częstochowa Upland (Southern Poland). It gives information on taxonomy, occurrence and environmental characteristics of Euglenophyta species occurring in various types of water bodies. A short introduction is followed by an overview of the findings provided and emphasising the impressive number of taxa found in this study. 206 Euglenophyta taxa were identified, among them 161 taxa new for this area, and 69 new for Poland. Probably the key of species could rise the value of the very useful and good book. All the taxa are briefly described and illustrated using the original drawings. The huge amount of time and effort the author put into this book has reaped a valuable new reference with many LM and SEM photographs. Five taxa: *Euglena truncata*, *Trachelomonas botanica* var. *borealis*, *T. decorata*, *T. hirta* var. *duplex* and *Phacus acuminatus* var. *indica*, are new to the European flora. Very rare taxa occur, as *Euglena slavjanskiensis*, *E. sima*, *E. hirudo*, *Trachelomonas ovoides*, *T. guttata*, *T. sarmatica*, *T. lomnickii* and *T. gregussii* var. *danubialis*. Detailed information are given on annual observations of euglenophyte populations occurring in four karstic ponds together with physico-chemical characteristics.

This work will serve as an important book of reference for anyone interested not only in euglenophytes of Kraków-Częstochowa Upland, but euglenophytes all over the world.

I. GRIGORSZKY