

BOOK REVIEW

M. Dan GEORGESCU, 2018. **Microfossils through Time: an introduction – First steps in micropaleontology**. Schweizerbart Science Publishers, Stuttgart, 400 p. & 269 figs. Hardcover. ISBN 978-3-510-65413-0. 79,00 €.

This new textbook is designed “to present the students with a coherent perspective of micropaleontology” as the author explains himself in the introduction. Hence it appears as a traditional teaching textbook in its contents and organisation, but it is an appearance only! The book is rather a condensed encyclopaedia on micropalaeontology that goes far beyond the lines of common teaching. Firstly because it is introduced by a general chapter (‘Preliminary concepts’) that exposes – with verve! – the classical and less classical concepts of (micro-)palaeontology, stratigraphy, geology and science in general. Secondly because it is not restricted to the microfossils as most textbooks are, but includes micro-remains of macrofossils as well. Any researcher that has ever been confronted to a thin section or sieved sediment knows that micro-remains are often more abundant than the prospected microfossils, and that their identification is sometime difficult. In this book, all these tiny fossils and fragments are treated equally. Thirdly, each fossil group benefits from a three-fold development: description of the morphology and (palaeo-)biology, presentation of update classifications, discussions on the stratigraphy, evolution and applications in science and industry. The references are rich, comprehensive and update but the classical works are not overlooked, which fix a widespread issue that concerns a growing number of recent textbooks. An index of generic names allows a comfortable navigation through the taxonomy and chapters.

Georgescu’s book is abundantly illustrated with schematic figures and hundreds of magnificent pictures of fossils. However, these pictures are both the strength and the weakness of the whole book. Strength because they give a proper support to the author’s explanations. But weakness because the figured material is so beautiful that it does not represent what most fossils are when found under the microscope.

As explained above, the first section of the book introduces the preliminary concepts that are mandatory to understand the next chapters: what science is and what its principles are, what fossils are and how they form, what (bio-)stratigraphy, evolution and taxonomy are. It also presents a condensed history of micropalaeontology as a science and its further developments. Section B presents the fossil prokaryotes (Bacteriophyta and Cyanophyta) and their roles in the formation of rocks and in the early evolution of life. Section C concerns the ‘Plant-like’ protists, i.e. photosynthetic eukaryotes: Rhodophyta (red algae), Pyrophyta (dinoflagellates and ebridians), Chrysophyta (chrysophiceans and silicoflagellates), Bacillariophyta (diatoms), Haptophyta (coccolithophorids), Prasinophyta, Chlorophyta (green algae) and Charophyta. The renowned and less known microfossils are presented and their stratigraphical and palaeoecological applications are detailed. Section D concerns the ‘Animal-like’ protists, i.e. the microscopic unicellular animals: Arcellinida and Euglyphida (testate amoebas), Foraminifera, Radiolaria, Ciliophora (calpionellids and tintinids), Choanoflagellata. The chapter dedicated to the foraminifera is by far the largest and most detailed one due to the number of taxa presented and their crucial importance in biostratigraphy and environmental reconstruction. Section E concerns the Fungi and plant micro-remains, i.e. the micro-palaeobotanic objects: Fungi, spores and pollen, phytoliths. The palynological chapter is weaker and eludes unfortunately Palaeozoic problematics. Section F includes the micro-remains of meso- to macro-scopic invertebrates. As announced above, this section is the most original of the book and makes it rather unique among the micropalaeontological textbooks mass. It treats the fossil metazoan embryos, the poriferan and octocorallian sclerites,

fragmented skeleton of conularians, echinoderms and bryozoans, micro-molluscs, hyoliths and tentaculites shells, annelids (scolecodonts) and chaetognathans jaw apparatuses, arthropod skeletal elements and coprolites. Finally, a larger chapter is dedicated to the ostracods and their utility in (palaeo-)ecology. Section G concerns the chordates and vertebrates where the conodonts occupy a larger chapter. The other treated groups are the fish micro-remains (teeth, dermal sclerites and otoliths), dinosaurs and mammals teeth. The last section H regroups the microproblematica and incertae sedis microfossils, including the acritarchs and chitinozoans.

In conclusion, ‘*Microfossils through time: an introduction – first steps in micropalaeontology*’ is not only an introduction and guides not only the first steps of students in micropalaeontology but can also orient professional earth science researchers into a wide area of taxonomy, stratigraphy and application in a richly documented and illustrated book.

Julien DENAYER
University of Liege