Benzing, D.H.: ***Bromeliaceae*: Profile of an Adaptive Radiation.** With contributions by B. Bennett, G. Brown, M. Dimmitt, H. Luther, I. Ramírez, R. Terry, and W. Till. - Cambridge University Press, Cambridge - New York - Melbourne - Madrid 2000. ISBN 0 521 43031 3 (hardback). 690 pp., GBP 75.00, USD 120.00.

The family of *Bromeliaceae*—a largely Neotropical family of about 2700 described species—exemplifies botanical radiation under extreme stress environment, hence representing an exceptionally suitable taxon to study related mechanisms and outcomes. The author—the Robert S. Danforth Professor of Biology at Oberlin College, Ohio, USA—together with 7 contributors USA (5), Austria (1), and Mexico (1) prepared a comprehensive book devoted to the above-mentioned challenge. Guiding questions include: why is the family inordinately successful in arboreal (epiphytic) and other typically stressful habitats and also so important to extensive fauna beyond pollinators and frugivores in the forest canopy?

The book is divided into three parts beginning with a short overview of *Bromeliaceae* intended to set a stage for the following core Part two–Basic structure, function, ecology and evolution–containing 8 chapters: Chapters 2 and 3 describe vegetative and reproductive structure (habits, body plans, stems, roots, vascular cells, foliage, trichomes, inflorescences, flowers, fruits, ovules, seeds, grains, *etc.*). Chapters 4 and 5 are devoted to selected traits of life functions, mainly of carbon exchange, water balance, and nutrition (photosynthesis and photosynthetically active radiation, water relations, stomatal conductance and associated traits as non-destructive diagnosis of plant functioning, environmental factors, mineral use efficiency, potential photosynthetic nitrogen use, leaf nitrogen and phosphorus contents in relation to net photosynthetic rate, role of foliar trichomes in nutrition, architecture and nutritional economy, feeding by ants, carnivory, *etc.*). Chapter 6 summarises recent knowledge of reproduction and life history (pollination, flowering phenology, photoperiodism, genetic structure of populations, breeding systems, genetic structure of populations, survivorship, seed dispersal, viability and germination, asexual reproduction, *etc.*). Chapters 7, 8, and 9 deal with ecology, associations with other organisms, and finally evolution and phylogeny (tolerance and resistance, succession and distribution, predators and pathogens, ant/plant association, termites, fossils, hybridisation and polyploidy, mesophytism and xerophytism, taxonomy and chemical systematics, *etc.*). The Part three (Chapters 10 to 15) presents the special topics regarding various genera and species (*Neoregelia* subgenus *Hylaeaicum, Cryptanthus, Tillandsia, Racinaea*).

The Chapter 4 dealing with carbon and water balance is the most interesting for readers of Photosynthetica. This chapter summarises knowledge on *Bromeliaceae* starting with the first papers published at the end of the 19th century, and during the first three decades of the 20th century (moisture exchange, foliar trichomes and absorptive roots, osmotic potential and other features of water relations, accumulation of nutrients and some metals, gas exchange, chlorophyll fluorescence, indicators of plant performance and physiological state, *etc.*). Further studies focused on carbon fixation pathways, water stress, light, *etc.* Recent papers deal with all areas of photosynthesis studies ranging from molecular biology to whole-plant functioning, and global climate change.

The results presented in this book in more detail focus above all on physiological and ecophysiological aspects of photosynthesis including related traits of water relations (such as stomatal conductance, water-use efficiency, H_2O/D_2O fractionation in the transpiration stream, *etc.*). Crassulacean Acid Metabolism, CAM, and ^{13}C fractionation, $\delta^{13}C$, as a measure of CAM, is perhaps the most important problem in bromeliad photosynthesis. About two-thirds from 225 species of *Bromeliaceae* for which records exist, exhibit some type of CAM. However, so far no evidence indicates C_4 photosynthesis anywhere in the family although some suggestive leaf anatomy makes a case for looking more closely at certain *Tillandsioideae*. C_3 species scatter through small and larger genera. Besides basic information on carbon fixation types, carboxylase functioning, titratable acidity, *etc.*, interesting in this chapter are data (mainly in tables and figures) on the distribution traits of photosynthesis and water relations among *Bromeliaceae* (net photosynthetic rate, $\delta^{13}C$, compensation irradiance, saturation irradiance, apparent quantum yield, photosystem 2 fluorescence, photosynthetic pigments, *etc.*). Among the three subfamilies of *Bromeliaceae*, both CAM and C_3 (*Bromelioideae, Pitcairnioideae, Tillandsioideae*). Further problems discussed in this chapter are, *e.g.*, performance of CAM *vs.* C_3 bromeliads *in situ*, effect of an abrupt decrease in ambient relative humidity and higher temperature accompanying a weather change relative to stomatal conductance and CO_2 exchange and water relations, predictors of maximum photosynthetic rate, CAM reconsidered as an evolutionary response to stress (facultative CAM to avoid photoinhibition), *etc.*

The book is well written and produced. Many schemes, tables, figures, and photographs make the book self-explanatory. It is accompanied with a list of *ca.* 800 references, and Indexes of names, subjects (this may be more extensive), and taxons. So it can be recommended to ecophysiologists, ecologist, postgraduate students, and horticulturists interested in the attractive family.

J. ČATSKÝ (*Praha*)