from science in China or Samoa would open the field to foreign competitors such as the United States. The account brings out the characteristically modern tension that German scientists already felt between the old ideal of science as an international enterprise above politics and their growing realization that government-supported science must serve, or seem to serve, political ends. More detail on the broader political context in which funding decisions were made by the bureaucracy would have further clarified this point.

Overall, this is a thoughtful book about an important subject. It is generally quite readable, although the editing could have been stricter and a more analytical approach would have made it easier to use. The note on sources is helpful, and the reader can only be sympathetic when realizing the obstacles the author had to overcome in obtaining and working with his material. May other scholars be encouraged by the results to follow his example.

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Algal Fossils

Paleoalgology. Contemporary Research and Applications. D. F. TOOMEY and M. H. NITECKI, Eds. Springer-Verlag, New York, 1985. xii, 376 pp., illus. $65. From a symposium, Golden, CO, Aug. 1983.

Calcareous red and green algae and stromatolites are widely distributed in Phanerozoic carbonate rocks, and their practical value has long been appreciated. Algal carbonates are economically important as hydrocarbon reservoirs and host rocks for Mississippi-Valley–type mineralization, and many fossil algae are sensitive indicators of paleoenvironment. These traditional concerns of paleoalgology clearly motivated much of the research reported in the 29 papers that make up this volume. But what about the paleobiological potential of fossil calcareous algae? Did multicellular red, green, and brown algae (which represent three or more independent origins of tissue-grade multicellularity) originate contemporaneously with metazoans, and do they show the same logistic pattern of diversification? To what extent have mass extinctions influenced the course of algal evolution? Has the evolution of calcareous algae been influenced by evolutionary events in marine invertebrates or vertebrates? To me, the major appeal of *Paleoalgology* lies in the fact that such questions are addressed in a number of chapters, allowing the reader to ponder the all-important question of whether an emerging pattern in the fossil record of benthic algae will require us to reconsider existing interpretations of evolutionary history in Phanerozoic oceans.

Macroscopic carbonaceous structures occur in Precambrian rocks as old as 2000 million years and are relatively widespread and morphologically diverse in Late Proterozoic shales and siltstones. H. J. Hofmann here presents an important guide to the scattered and underappreciated literature on these remains. Hofmann's own discoveries of elongated, sausage-shaped remains in 850 to 1100 million-year-old rocks from northwestern Canada consititute the best evidence for a significantly pre-Ediacaran attainment of megascopic multicellularity. These structures are morphologically regular and display a distinctly allometric growth pattern. Reports of older metaphytes, however, are less well substantiated, and I cannot be as generous as Hofmann in accepting published reports at face value. Ripped-up and redeposited fragments of microbial mats can mimic algal morphologies, as can a number of physically produced structures. The real problem in evaluation stems from high-grading. In outcrop, only one in a hundred carbonaceous fragments may appear "determinate," but if that fragment preferentially finds its way into museum drawers and journal illustrations it may elicit misleading interpretations. Most reports of Proterozoic metaphytes remain in need of evaluation, but no student of Precambrian or Paleozoic evolution can afford to ignore them. Hofmann's discussion and bibliography greatly facilitate entry into the literature.

R. Riding and L. Voronova's discussion of latest Proterozoic and Early Cambrian calcareous algae should also be of interest to a wide audience. A great deal of research, conducted mainly by Soviet paleontologists, has demonstrated that, like skeletonized invertebrates, calcareous algae radiated dramatically near the Precambrian-Cambrian boundary. Chaotic taxonomy has made analysis of this record difficult, but a new approach to classification proposed by Riding and Voronova promises to bring order to these fossils, especially if their "morphological series" can be restated with more specific reference to developmental patterns known to characterize algal morphogenesis.

In another chapter, E. Flügel demonstrates that the generic diversity of dasycladacean algae dropped by at least 80 percent across the Permo-Triassic boundary. This is a significant finding, although I wish Flügel had discussed more explicitly the constraints that dasyclad extinction patterns place on general scenarios for terminal Paleozoic mass extinction, especially given the sophisticated knowledge of Permian algal paleoecology displayed by him and several other contributors to this volume. Flügel's contention that differences in the ecological distributions of Permo-Triassic and Recent dasyclads reflect changing substrate availability must be regarded as suspect in light of the chapter by R. S. Steneck on adaptations of crustose coralline algae to herbivory in space and time. Steneck uses ecological experiments to determine the important influence of carbonate-excavating herbivores on the morphology and distribution of coralline algae. He then applies the data to an interpretation of evolutionary trends in the algal fossil record. His conclusion that the late Mesozoic and Cenozoic radiation of crustose corallines is genetically related to the radiation of carbonate-excavating animals is relevant to the evolutionary history of dasyclad algae, as well as to hypotheses linking the evolution of shell-crushing predators to the great Mesozoic revolution in marine invertebrate communities.

The chapters in this book vary widely in scope and quality. Most authors seem to have made little attempt to address an audience beyond the small fraternity of paleoalgologists. Interpretation of many chapters is also impaired by the indifferent quality of photographic reproduction. Paleoalgologists long ago convinced sedimentologists of the importance of fossil algae. With a little effort, they could equally well move into the mainstream of paleobiology.

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Cell Proliferation

The Biology of Cell Reproduction. RENATO BASERGA. Harvard University Press, Cambridge, MA, 1985. xii, 251 pp., illus. $25.

The Biology of Cell Reproduction is an in-depth and comprehensive account of our present understanding of how cells divide. Written by a scientist who for a number of years has consistently made major contributions to our knowledge of the control of cell growth, the book conveys a sense of first-hand experience with many of the key steps in the evolution of the subject.

Baserga begins by considering the biological parameters of cell reproduction. The cell cycle and its various phases are defined within the context of several biological systems. Particularly noteworthy are discussions of methods for the synchronization of cells in culture, the morphology of cells