not employing contemporary models in the analysis of older data; the fact is that few laboratories currently work on *Euglena* and the number of papers on *Euglena* has decreased sharply. The cause of the decline in the popularity of *Euglena* is obvious: no one eats *Euglena*; no one gets sick from it; and—unlike *Chlamydomonas*—it has no sex. *Euglena* remains nonetheless one of the best organisms for the analysis of plastid development on the levels of molecular genetics, biochemistry, *and* physiology. *Euglena* is an organism waiting for a good paradigm.

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Concerns of Stratigraphy

Quaternary Type Sections. Imagination or Reality? JIM ROSE and CHRISTIAN SCHLÜCHTER, Eds. Balkema, Brookfield, VT, 1989. viii, 208 pp., illus. $48. From a symposium, Zurich, Switzerland, Oct. 1985.

Type sections are the fundamental reference points of geological stratigraphy—quarry exposures, road cuts, sea cliffs, or even cores from borings (drill holes) in which formal litho-, bio-, and chronostratigraphic units are defined and to which newer field discoveries must be related. Original type sections are rarely perfect, because they commonly derive their status through pragmatic considerations. A type section may have been merely the first or only section discovered, the best preserved, or the closest to a research center. Such accidents do not necessarily provide truly representative lithologies, complete suites of fossils, and the absence of internal hiatuses (unconformities). Geologic correlation nevertheless requires reference points, and such points should be fixed by convention and should not be changed casually.

The title of this volume promises a discussion of such considerations, which could be of broad interest. Only a few of the papers address the concept of type sections, however, and many of them make no mention whatsoever of a type section, let alone evaluate the role of type sections in Quaternary stratigraphy. Nor is there an introduction or overall summary putting the question raised in the title into some perspective. This is not to say that the contributions are not interesting and valuable in their own right, but for those attracted by the title *caveat emptor*.

In part 1 (Basic References), R. G. West briefly reviews the type sections used for the subdivision of the British Quaternary, including a historical perspective and a useful table of the type sites for all the "stages" of the British Quaternary stratigraphic column. He concludes with a strong pitch for detailed descriptions of formally defined sections in order to improve terrestrial Quaternary stratigraphy, and he insists that "a framework should not be placed on the marine isotope stages." Next, more than equal space is given to N. J. Shackleton, who convincingly argues for a marine isotopic framework but does not address the concept of a type section.

J. Rose addresses finer scale subdivisions, stades or stadia, in the British Quaternary, concluding that only a few of them have been formally defined. Rose reviews the concept of type sections, including unit stratotypes, holostratotypes, lectostratotypes, and hypostratotypes. So far, so good, but he then goes on to make it clear that there is a "preference for a stadial stratotype to show direct evidence of glaciation," thus building climatic and genetic interpretation directly into what should be strictly a descriptive classification. Charles Turner also (p. 42) raises the issue of climatic classification, specifically in the form of "geologic-climate units," as defined by the 1961 American Code of Stratigraphic Nomenclature. It seems to have escaped all the contributors that a newer North American Code of Stratigraphic Nomenclature exists that was published two years prior to their symposium and explicitly excludes "geologic-climate units."

Rose clouds the issues even more by stating that "at present chronostratigraphy has no role" (p. 58) in defining British stadials. This statement is comprehensible only when it becomes clear that Rose does not utilize "chronostratigraphy" in the sense of the 1961 American Code or the Hedberg *International Stratigraphic Guide*, both of which he cites as authorities. In fact, chronostratigraphy is not treated correctly anywhere in this volume. Rose has the cart before the horse in defining chronostratigraphic boundaries by their absolute dates in years. In the terminology of the current North American Code, such "stadials" would be "chrons"—chronometric, not chronostratigraphic, subdivisions.

The remaining two-thirds of the volume has essentially nothing to do with type sections, but does contain some very interesting papers on lithostratigraphy, biostratigraphy, and paleosols of the circum-Alpine region, the French Massif Central, the Pyrenees, the Netherlands, and Poland. Three papers are especially noteworthy. M. Reille and J.-L. de Beaulieu describe long pollen sequences from the volcanic basins (maars) of the French Massif Central, which rival that of Grande Pile so often cited these days. Helmut E. Stremme discusses the correlation of paleosols between northern Europe and the Alps, which leads him to a correlation of the (northern European) Holsteinian with the (Alpine) Günz/Mindel interglacial, both dated at more than 350,000 years, although this conclusion is not universally accepted. Finally, R. Hantke reviews the probable course of early and pre-Quaternary climatic development on both the north and south slopes of the Alps, going back to Oligocene and Miocene glaciation.

In conclusion, the question raised in the title of this book is never answered. It appears that the symposium that spawned the volume was based on an interesting problem, but none of the participants came to grips with it.

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Biochemistry. J. David Rawn. Patterson, Burlington, NC, 1989. xl, 1105 pp., illus., + index. $49.95.

Engineering Rock Mass Classifications. A Complete Manual for Engineers and Geologists in Mining, Civil, and Petroleum Engineering. Z. T. Bieniawski. Wiley-Interscience, New York, 1989. xiv, 251 pp., illus. $54.95.

Evolution of the Global Biogeochemical Sulphur Cycle. Peter Brimblecombe and Alla Yu. Lein, Eds. Published for the Scientific Committee on Problems of the Environment, International Council of Scientific Unions, by Wiley, New York, 1989. xxiv, 241 pp., illus. $104. SCOPE, vol. 39. From a workshop, Tallinn, Estonia, 1984.

The Great Scientists. Jack Meadows. Oxford University Press, New York, 1989. 256 pp., illus. Paper, $18.95. Reprint, 1987 ed.

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Land Filled with Flies. A Political Economy of the Kalahari. Edwin N. Wilmsen. University of Chicago Press, Chicago, 1989. xviii, 402 pp., illus. $60; paper, $17.95.

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Preventing AIDS. The Design of Effective Programs. Ronald O. Valdiserri. Rutgers University Press, New Brunswick, NJ, 1989. xvi, 304 pp. $38; paper, $15.

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