BOOK REVIEWS

Foraminiferology

Manual of Planktonic Foraminifera. By J. A. Postuma. Pp. 420. (Elsevier: Amsterdam, London and New York, 1971.) \$26.50.

THE planktonic foraminifera are morphologically unspectacular. Their skeletal structure is relatively simple and their external shapes differ but little between species. During the past two decades, however, industrial micropalaeontologists (initially forced to make what use they could of the fossil assemblages present in their exploration areas) have proved by intensive study that these microfossils can provide a practical and detailed biostratigraphy of Cainozoic and late Mesozoic marine sediments. Now, nobody concerned with the stratigraphy of such rocks, especially in tropical and subtropical areas, can escape involvement with them. They also provide the best documented evolutionary lineages of any group of fossils. Publications multiply rapidly, and so do nominal species, suggested lineages and zonal schemes. These, together with the care and practice needed to recognize the often subtle specific distinctions, have created a real and obvious need for a working manual for species recognition coupled with a biostratigraphic key. Most large petroleum companies have produced their own manuals or indexes for internal use. That compiled for Shell has formed the basis of this volume.

Some 160 species of the Globigerinacea (the Heterohelidae are omitted) are described and illustrated here. Two facing pages are devoted to each species. On one, large optical photomicrographs of dorsal, ventral and axial views (often of topotypes) are juxtaposed against half-tone drawings of the same specimen in the same aspects, and are accompanied by a retouched photograph of an axial thin-section. The opposing page has brief notes of the type bibliographic reference, type locality, morphology and supposed stratigraphic distribution of the species.

The species are arranged alphabetically in three separate sections, one each for the Albian–Maastrichtian, Palaeocene–Eocene and Oligocene–Recent intervals. Each section contains both a fold-out range-chart and some photomicrographs of characteristic assemblages in thin-sections of pelagic micrites. Forty-eight zones have been adopted, modified or elaborated from previous publications and are formally defined (without type localities) for the Albian–Recent interval. The plan of the work is excellent (although scanning electron micrographs would have been preferable to drawings) and the publication standard (paper quality, typography, reproduction, and so on) is very high.

Unfortunately, the specialist will find something with which to quarrel on virtually every page. The whole work is an over-simplification. There are surprising omissions (even *Globigerina bulloides*!), many of which could lead to misidentification even of listed species (for example, *Globorotalia inflata* of the Neogene cannot be compared here with its Palaeogene analogue, *G. centralis*). Separation of Mesozoic and Cainozoic genera into different identification keys neatly avoids the difficulty of distinguishing different but similar forms of different ages (no clue is provided to distinguish, say, *Praeglobotruncana* from *Globorotalia*, or *Globigerinelloides* from *Hastigerina*). Some generic diagnoses are simply and objectively wrong—for example, *Hastigerinella* is not trochospiral, and the species placed here ("*H. bermudezi*") is a *Clavatorella*. Many stratigraphically useful genera, often of wide distribution, are omitted. To assign *Pseudohastigerina micra* to *Hastigerina* is retrograde, taxonomically and biostratigraphically. None of Pessagno's carefully defined Cretaceous taxa¹ is mentioned. At specific level, the list of omissions and corrections could be very long. Virtually no references are given to even the most important systematic or stratigraphic revisions even of the species illustrated. When synonyms are cited at all, they

reflect the state of knowledge of ten years ago. Some notes are patently absurd—for example, the author doubts that *Cassigerinella chipolensis* "belongs to the group of planktonic foraminifera in view of the imperforate wall structure", when the illustrations clearly (and correctly) show the wall to be perforate and, in any case, perforations and habitat are only indirectly related; the doubtful affinity of this genus to the Globigerinacea, because of its internal toothplate, appears from neither text nor figures.

The formal descriptions are largely superfluous. They are repetitious (for each species we are told that the wall is perforate, and so on) yet superficial; they tell nothing that cannot be seen in the pictures. No differential diagnoses of species are given, and comparative remarks are few. The "remarks" are frequently confined to a note of the provenance of the figured specimen (which, being often in the form "DB 272, Trinidad" or "Tschopp 3181, Cuba", may be useless except to those readers with access to Shell files). Not even the type stratigraphic horizons are cited, even though these could have been transcribed from Ellis and Messina's *Catalogue*² as easily as the type reference and the type geographic locality. And, yet, half of each text page of the systematic sections remains blank.

This could have been a most valuable book. With more compilative care and (perhaps) more expert knowledge, it could have been a standard work of reference. As it is, both industrial and academic micropalaeontologists must still rely on their own resources—if they are fortunate, to the first two volumes of the *Catalogue*² or to organization files; if not, to the welter of publications which still remains adequately to be assessed and summarized.

F. T. BANNER

¹ Pessagno, E. A., *Palaeontographica Americana*, 5, 245 (1967).

² Ellis, B. F., Messina, A. R., Charmatz, R., and Ronay, L., *Catalogue of Index Smaller Foraminifera*, 1 (1968), 2 (1969). (Spec. Publ. Amer. Mus. Nat. Hist., New York.)