
BOOK REVIEW

The Fossil Record – 2

by M.J. Benton

Under the editorship of M.J. Benton of the Department of Geology, University of Bristol, U.K., *The Fossil Record 2* has been published in 1993 by M/s Chapman & Hall, London. The voluminous publication containing 45 chapters by 90 contributors in 845 pages is priced at £ 95.00. It is an updated and welcome version of the earlier published — *The Fossil Record : A Symposium with documentation (1967)* by Harland *et al.* (Editors). This updating covers all groups (except Monera) at family level, stratigraphical age of the fossil records, as far as possible at epoch / stage / sub-stage levels, intervening data for many groups, the first and last records and includes monophyletic, cladistically determined families within many groups of fossils.

Importance of palaeontology in current and future researches can not be underestimated, ignored or condemned through curtailment of funds by the governments and other agencies or by our own colleagues working on tectonics (neo-tectonics), oceanography, hard rocks, environment and other eye-catching disciplines. The purpose of this review is certainly not to detail or attempt a justification on this aspect. It is rather to highlight the text, to identify and appreciate the tremendous hard work put in by the contributors (including that of Benton who has authored three chapters) and equally the coordinating spirit of Benton — the Editor. It also points out something to have been done which is too late for *The Fossil Record 2*, but not so for *The Fossil Record 3 ?* by Mister Benton. Let us assure him about the definite and sufficient advancements in palaeontological researches certainly to be achieved during the coming twenty to twentyfive years. Benton acknowledges that each contributor has vowed not to associate himself with such a gruesome task as of working for the present publication. All the same, Benton has not taken any such oath of not venturing (editing) the *Fossil Record 3 ?*. We wish him all

success to accomplish this. Collinson *et al.* (in this book) write about their chapter "We hope that this chapter will initiate production of a more intelligent and informed set of data in the (hopefully) computerised third edition of *The Fossil Record*".

Benton's statistics of 84 per cent British authors in 1967 *Fossil Record* and their subsequent decline to 68 per cent in the 1993 *Fossil Record – 2* should not be discouraging both to British and non-British palaeontologists. In India, at the Birbal Sahni Institute of Palaeobotany, Lucknow as well as at Calcutta, Pune, Bangalore, Nagpur and other universities all branches of palaeobotany and palynology right from Precambrian to Holocene are being actively practiced. As far palaeontology, to name a few, we have recognised research centres at Banaras Hindu University (foraminifera and ammonites), Panjab University (vertebrates), Delhi University (radiolarians) and several others.

The Fossil Record - 2 has been arranged broadly into three major groups — the Basal, the animals including vertebrates and invertebrates and the plants. The Basal group has three chapters, viz., Monera (Bacteria, Blue Green algae), Fungi and Algae. Twenty nine chapters form the invertebrate regime. One of the best understood fossil groups of invertebrates — Mollusca, has been given eight chapters coverage. The taxa listed in questionable Mollusca or Mollusca incertae sedis have additional characters beyond those of molluscan scope. Twelve chapters are devoted to the vertebrate group. The plant group contains four chapters on Bryophyta, Pteridophyta, Gymnospermophyta and Magnoliophyta (Angiospermae). A new Class Lagenos-tomopsida has been created in the chapter Gymnospermophyta. The last chapter Magnoliophyta (Angiospermae) includes comments on 1967 list of angiosperms, problems of the angiosperm record, procedure for the current list, extinct angiosperm

families and standards and principles for author's comment.

Benton has wisely addressed himself and so also to the contributors to identify and comment on issues like inclusion and exclusion of a taxon in a family, treatment of questionable, poorly preserved, poorly represented incomplete specimens, specimens of uncertain age and ambiguously defined previous records with uncertain stratigraphical data. These controls (or instructions) have been religiously followed almost in all chapters leaving very little scope for reviewers and critics to sharpen their razor edges. About the stratigraphical ages, we all know the difficulties in going down to sub-stage or zone level. Family and Stage have therefore been selected as the working unit in this Volume.

Summarized version of the stratigraphical scheme (the Geological Time Scale) of Harland *et al.* (1990) in the Preface (Figure P.1) is impressive. Some equivalent divisions of time preferred by a few authors is added in the column Alternative Stage Designation in Figure P.1. Authors who have followed schemes other than that of Harland *et al.* (1990) have said so in their respective introductory columns. Abbreviations of sub-erathem, system and sub-system, series and stage have been given in Figure P.1 for the convenience of readers and have also been used in all range diagrams. One would also not miss Figure P.2 and Figure P.3 again in the Preface. These figures show the number of listed families per chapter in the Fossil Record 1967 and the Fossil Record 2 of 1993 through bar diagram and chart respectively. Some "taxa not divided to family level" and "most taxa divided to family level" are indicated by asterisks (* and **) in Figure P.3. During the intervening period of about 25 years (between 1967 and 1993 publications of the Fossil Record) the number of families have been increased from 2924 to 7186 and this certainly shows tremendous advancement in the palaeontological studies. Allowances have been kept on some families which were lost due to critical taxonomic revisions.

Each chapter has been provided with a brief introducing the groups, taxonomical controversies and open areas of further critical research in a general way. The first and the last records of each family are uniformly given by all authors on the basis of pub-

lished, under publication (MS) and unpublished (Pers. Comm.) documents. Living families have been marked as "Extant" facing the first record. At places, "intervening records" have been included, followed by comments for some families. In some cases "next youngest" is provided after the first and last record. Another point of interest is the range diagrams which are produced in all chapters. The solid lines show the geological range of all families or family equivalent taxa, while the dotted ones indicate uncertain range terminations. All range diagrams are numbered in accordance with the number of chapters. Accordingly, Figure P.1 speaks for figure 1 from Preface and Figure P.2 for figure 2 from Preface and so on. Similarly, designations as Figure 3.1 to Figure 3.4 are for Chapter 3 on algae. Key for range diagrams are inserted in the chart itself and are numbered. It is convenient to look for the ranges with this arrangement. In contrary to the 1967 Fossil Record, authors and dates of establishment of all taxa in each chapter have been given in the present book. This is an advancement over 1967 edition. The authorship of the chapter on Mammalia was decided by the flip of a coin. Surely, this is the first record to me and the coin must be preserved for resolving the authorship dispute (or any other dispute?). Bacillariophyta (P. 22-24) is the only Phylum where additional information on "Includes Genera" is given. As a worker on fossil diatoms and silicoflagellates, I am delighted to see it.

Lastly, I wish that the first and the last records could have been illustrated to have a "feel" of fossils, that a chapter could have been given on fossil palynology and another on smaller group of siliceous microfossils — the phytoliths and the ebridians and finally that this volume could have been divided into three parts titled as The Fossil Record — Vertebrate, The Fossil Record — Invertebrate and The Fossil Record — Plants. This would have also reduced the weight (about 3 kg) of this volume for easy and frequent consultations.

The book under review is nicely printed by the University Press, Cambridge, Great Britain, as per international standard. All stratigraphical range charts are produced by Ms. Rachael Walker of Bristol on the basis of author's manuscripts and these are on computer disc so that these can be revised when

needed. References at the end of each chapter are thorough and there is perfect indexing in the last pages of the book. Considering the price (£ 95.00), which could not have been lesser than that for obvious reasons, institutional and university libraries must rush for this book. This will be useful to all engaged in palaeontological studies and researches and will remain a classic in the field. Compliments to all connected with this publication.

ANIL CHANDRA

Birbal Sahni Institute of Palaeobotany, Lucknow, India