

PALYNOLOGY AND ITS APPLICATIONS

By Shripad N. Agashe, Department of Botany, Bangalore University, Bangalore. Published by Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi. 2006. pp. 257, Price: Rs. 375.00. Foreword by Walter H. Lewis.

'Palynology and its Applications' authored by S.N. Agashe, a well known palaeobotanist, palynologist and aerobiologist, is a welcome publication for undergraduate and post-graduate students of botany and researchers in palynology and aerobiology. Indian palynological literature is widely scattered in various scientific journals, ranging from well known to obscure. It therefore becomes very difficult for a beginner in this field to find fundamentals of the subject at one place and therefore need for a book was always felt. In India, such attempts were made earlier by P.K.K. Nair and M.R. Saxena. Publication of the book under review is yet another effort in this direction.

As the name itself indicates, the book takes care of both basic and applied aspects of palynology. The book is divided into 18 chapters, besides Bibliography and Index.

The first three chapters are of introductory nature and present an introduction of the subject; historical account of development of palynology in India and various centres of research in this field; and genesis and production of pollen and development of pollen wall and tapetum.

The next five chapters (chapters 4 to 8) are devoted to morphology of various microfossil types. Morphological terms used in the description of spores and pollen are clearly defined, supported by their sketches. This part will be particularly useful in study and identification of spores and pollen. Pollen morphology of selected angiosperm and gymnosperm genera/ groups has also been dealt. This part is suitably illustrated with text-figures and photographs (including SEM photographs) to show morphological details. Spore morphology of algae, fungi, bryophytes and pteridophytes has been discussed with illustrations and suitable examples. A brief account of the morphology of other microfossils, viz. dinoflagellates, acritarchs,

coccolithophorids, chitinozoans, foraminifera (including microforaminifera), scolecodonts and microscopic colonial algal forms also finds place in this book. Surprisingly, this chapter is scantily illustrated.

Techniques constitute an important part of any palynological investigation. It is therefore appreciable to find a chapter incorporating various techniques of modern and fossil pollen preparations for microscopic examination, including TEM and SEM.

Application of pollen studies in taxonomy, ecology and plant evolution and antibacterial properties of pollen are also mentioned. The fundamentals, methodology and application of melittopalynology are discussed and these studies carried out in India, and particularly in Karnataka, have been highlighted.

Aeropalynology and its implications in human health have been dealt with in detail and as many as four chapters (Chapters 13 to 16) are devoted to this subject. History of development of aeropalynology is followed by an account on production, liberation, dispersal and gravitational settling of spores and pollen grains. Sampling methodologies and instruments used in sampling are thoroughly discussed. A chapter has been devoted to various allergies caused by airborne spores and pollen, various tests used to detect allergens, allergenic differences of pollen and current trends in immunotherapy. Fungi are the major constituents of aeroallergens and therefore a full chapter is devoted on this subject, dealing with both indoor and outdoor aeroallergens and diseases caused by them along with their diagnosis, treatment and control measures.

Forensic palynology deals with the use of palynological science in investigation of crimes, e.g. burglary, abduction, rape, assault, forgery, drug trafficking, murder, etc. This has successfully been explained with the help of authentic examples.

The role of palaeopalynology in exploration of fossil fuels, e.g. coal, oil, is well known. The book presents the methodology involved in such studies and also deals with the reconstruction of past vegetation through palynological means. It is striking to note that the work done at the Birbal Sahni Institute of Palaeobotany (BSIP) could not find a place in this chapter. It is difficult to imagine that any book on Indian palynology could be completed without including reference of D.C. Bharadwaj, K.M. Lele, B.S. Venkatachala, Vishnu-Mittre, etc. Inclusion of some work done at the BSIP would have definitely enhanced value of the book.

The proof of the book appears not been read carefully. The book has several spelling errors, e.g. Eisenack is spelled as Eisenacc (p. 88), Faegri as Fargri (p. 242), etc. Bibliography is always the essence of any scientific publication but the same is a neglected part in this book and lacks uniformity and accuracy. Arrangement of references is not in proper order. Many papers quoted in the text could not find place under Bibliography, e.g. Batten 1982 (p. 86), Bryant and

Mildenhall 1995 (p. 226), McMore 1997 (p. 228), Wilson 1978 (p. 228), Agashe 1996 (p. 232), Cheddadi et al. 2001 (p. 236), etc. Similarly, Punt 1984 (p. 111) in text is referred as Punt 1986 (p. 248) in Bibliography. Although there is only one reference of Sahni (1948), still it is referred as Sahni (1948b). Bibliography contains several errors of punctuation as well. Index needs be more exhaustive to be useful for readers.

The book is fairly illustrated with several text-figures and photographs, including the coloured ones. In general, the book is well presented and the text is printed nicely on a good quality paper. The author and Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi deserve appreciation for bringing out an informative book for Indian students and researchers of botany in general, and palynology and aerobiology in particular.

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