

Stockholm.

- ERDTMAN, G., B. BERGLUND & J. PRAGLOWSKI (1961): An Introduction to a Scandinavian Pollen Flora. *Grana Palynol.* 2: 3-92.
- ERDTMAN, G. & P. SORSA (1971): Pollen and Spore Morphology/Plant Taxonomy. Pteridophyta. Almqvist and Wiksell, Stockholm.
- HARMATA, K. & J. KORNAS (1978): Spore morphology of two varieties of *Oleandra distenta* (Davalliaceae, Filicopsida) from southern tropical Africa. *Zesz. Nauk. Univ. Jagiellonskiego* 193. *Prac. Bot.* 6: 7-14.
- JOSHI, S.A. (1966-67): The use of spore morphology in the taxonomy of some Indian ferns. *Palynol. Bull.* 2 & 3: 69-84.
- LIEW, F.S. (1977): Scanning electron microscope studies of the spores of Pteridophytes. XI. The family Oleandraceae (*Oleandra*, *Nephrolepis* and *Arthropteris*). *Gardens Bull. Singapore* 30: 101-110.
- LUGARDON, B. (1978): Isospore and microspore walls of living pteridophytes: Identification possibilities with different observation instruments. *Palyn. Conf. Lucknow* 1: 152-163.
- MITUI, K. (1977): Spore wall structure of some Japanese species in Polypodiaceae S. St. *Bull. Nippon Dental Univ. Gen Ed.* 6: 119-124.
- NAYAR, B.K. (1964): Palynology of Modern Pteridophytes, Chapter VI, pp. 101-141. In: *Advances in Palynology* (ed. P.K.K. Nair), National Botanical Gardens, Lucknow.
- TRYON, R.M. & A.F. TRYON (1982): Ferns and Allied Plants. Springer-Verlag, New York.
- VERMA, S.C. & S.P. KHULLAR (1978): Some considerations of spore morphology and evolutionary biology in ferns. , Birbal Sahni Institute of Palaeobotany, Lucknow (1976-77). *Proc. IVth International Palynol. Conf.* 1: 143-161.
- WAGNER, W.H. Jr. (1974): Structure of spores in relation to fern phylogeny. *Ann. Miss. Bot. Gard.* 61: 332-353.
- WILCE, J.H. (1972): Lycopod spores, 1. General spore patterns and the generic segregates of *Lycopodium*. *Amer. Fern J.* 62: 65-79.

40. OCCURRENCE OF *BATTAREA STEVENII* (LIB.) FR. (TULOSTOMATACEAE) IN MYSORE - A NEW RECORD FROM SOUTH INDIA

(With a plate)

OBSERVATIONS

As uncommon gasteromycete, was consistently observed and collected at Manasagangotri, Mysore, Karnataka, South India during south-west monsoon of 1986-93. The curious nature of its fruiting body prompted us to characterise and identify the taxon.

The fruiting body emerges through the soil exerting considerable force during the rainy season. Cracks appear on the soil surface before the emergence of the fruiting body. Removal of the surface soil at that site, 25-30 cm deep, reveals 1-3 closed large basidiocarps arising from a branched or unbranched woody rhizomorph (Pl. 1, Fig. 1). Each such fruiting body consists of volva enclosing the stipe and the dome-shaped gleba protected by the peridium (Pl. 1, Fig. 2). The gleba is traversed by reticulate capillitium and spores. The spores are intermixed with coarse hyaline hyphal threads of the capillitium and free elongated annularly and/or

spirally thickened elaters (Pl. 1, Fig. 3). The spores are globose to sub-globose; yellowish-brown; finely punctulate; 6-7 μ m in diameter. After sometime the stipe elongates and pierces through the single-sheathed volva, which remains underground as a cup-like involucre (Pl. 1, Fig. 5). The volva is very large and measures 10 cm in height, 8-10 cm in diameter and 25-32 cm in circumference. The young overground part of the fruiting body simulates a mushroom (Pl. 1, Fig. 4), but 2-3 days after its emergence and by the time stipe attains a considerable height (25-30 cm) its appearance is entirely different from that of a mushroom (Pl. 1, Fig. 6). The stipe and peridium together measure up to 30 cm in height. The bell-shaped peridium is situated apically on the stout scaly stipe and measures 6-9 cm in diameter and 5-7 cm in height (Pl. 1, Fig. 4). It gradually assumes a discoid shape as it reaches maturity (Pl. 1, Fig. 6). The stipe alone is about 25 cm long and 4-5 cm in diameter. The exterior of the stipe is covered with long coarse,

fibrillose, lacerate overlapping scales which show a tendency to peel off (Pl. 1, Figs. 4-6).

The peridium opens in a circumcissile manner and its membranous outer layer falls off in one piece (Pl. 1, Fig. 4), exposing the glebal contents - spores, elaters and collapsed capillitium. Only rarely, remnants of the membranous peridial layer are seen adhering to the fertile spore bearing portion (Pl. 1, Fig. 5).

During emergence the fruiting body emits a foetid smell attracting flies. The activity of the visiting flies appears to help in spore dispersal to some extent. However, the main agents of spore dispersal are the highly hygroscopic elaters and the wind. The spore dissemination by elaters in the present taxon is functionally analogous to that found in the sporangia of Myxomycetes and sporophytes of Liverworts.

IDENTITY OF THE TAXON

The presence of peculiar tracheid-like elaters in the gleba, the characteristic circumcissile dehiscence of the sporocarp, massive volva at the base of the fruiting body and the lacerate scales on the stipe lead us to identify the present taxon as *Battarea stevenii* (Lib.) Fr.

The genus *Battarea* Pers. is widely distributed and found in sandy soils of U.S., Europe, South America, New Zealand (Bessey 1968) and rarely in Pakistan and India (Ahmed 1939, 1952). The genus comprises only two species, namely *B. phalloides*

(Diks.) Pers. reportedly endemic to Southern England (Ainsworth 1971, Dring 1973, 1974) and *B. stevenii* reported from Rohtak, Punjab, North India by Ahmed (1939). A perusal of the literature (Ahmed 1939, 1952; Bessey 1968, Rangaswamy *et al.* 1970, Dring 1973, 1974; Biligrani *et al.* 1979) reveals that the present finding forms the first record of *B. stevenii* from South India. Further, Ahmed (1939, 1952) reported the presence of three-sheathed volva in the form described by him, while the present taxon is found to possess a consistently single-sheathed volva. Further, the solid stipe, peridium and volva are consistently larger in size in the present form.

A systematic study of the higher fungi in and around Mysore would definitely reveal the occurrence of many more interesting species.

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REFERENCES

- AHMED, S. (1939): Higher fungi of the Punjab plains. I. The gasteromycetes. *J. Indian Bot. Sci.* 18: 47-58.
- AHMED, S. (1952): Gasteromycetes of West Pakistan. Punjab Univ. Press, Lahore.
- AINSWORTH, G.C. (1971): Dictionary of the Fungi. A.B. Commonwealth Mycological Institute, Kew, Surrey.
- BESSEY, E.A. (1968): Morphology and Taxonomy of Fungi. Hafner Publishing Company, New York & London.
- BILIGRAMI, K.A., JAMALUDDIN & M.S. RIZWI (1979): Fungi of India. Part-I, List and references. Today and Tomorrow's Printers and Publishers, New Delhi.
- DRING, D.M. (1973): Gasteromycetes. In: The Fungi - An advanced treatise Vol. IV B. A taxonomic review with Keys: Basidiomycetes and Lower Fungi. (Eds. Ainsworth, G.C.; Sparrow, F.K. and Sussman, S.S.).
- DRING, D.M. (1974): An Introduction to the Gasteromycetes. Academic Press, New York.
- RANGASWAMY, G., V.S. SESHADRI & K.A. LUCY CHANNAMMA (1970): Fungi of South India. University of Agricultural Sciences, Bangalore & United States Department of Agricultural Research Service, International Programmes Division for Eastern Regional Research. Pl. 480.



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new record from south India." *The journal of the Bombay Natural History
Society* 92, 149–150.

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