

A new Hyphomycetes fungus from the Deccan Intertrappean Beds of Wardha District, Maharashtra

*K. S. Patil and **Kalpana Datar

*Smt. Kasturbai Walchand College, Sangli-416 416, India

**Department of Botany, Shivaji University, Kolhapur-416 004, India

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A well preserved Hyphomycetes fungus belonging to family Dematiaceae has been described from the Deccan Intertrappean exposures of Nawargaon-Maragsur area of Wardha District, Maharashtra. The fungus was found in ray tissue of a dicot wood and in the fruit wall of a fossil fruit. The fungus tallies with the living genus *Trimmatostroma* Corda and has been named *Trimmatostroma intertrappea* sp. nov. It is the first report of occurrence of fossil Hyphomycetes fungus from this locality.

Key-words – Hyphomycetes, *Trimmatostroma*, Conidia, Deccan Intertrappean, Wardha District, Maharashtra, India.

INTRODUCTION

FOSSIL fungal remains in the form of spores, hyphae and reproductive structures have been described from different Deccan Intertrappean localities of India. Sahni (1943), Sahni and Rao (1943) Chitale (1951, 1957), Dwivedi (1959), Mahabale (1968), Chitale and Sheikh (1971), Chitale and Patil (1972), Biradar and Mahabale (1974), Singhai (1974), Paradkar (1974,1975), Shete and Kulkarni (1977), Varadpande and Sampath (1979), Barlinge and Paradkar (1982), Karanjekar and Yawale (1985) have described these fossil remains from the Deccan Intertrappean beds of Mohgaonkalan, Chhindwara, Mahurzari and Sausar, Madhya Pradesh.

SYSTEMATIC DESCRIPTION

Class	–	Hyphomycetes
Order	–	Hyphomycetales
Family	–	Dematiaceae
Genus	–	<i>Trimmatostroma</i> Corda
Center	–	<i>Trimmatostroma</i> <i>intertrappea</i> sp. nov.

Pl. 1, Figs 1-4, Text, figs 1-8.

A well preserved septate mycelium has been found in a fossil dicot wood measuring 7.5 cm X 5.8 cm (specimen No. FWN-367). While examining the tangential longitudinal section of the wood, it was ob-

served that its ray tissue and adjoining tissues were heavily infected by an endogenous well preserved fungus (Pl. 1, fig. 1). Same type of fungal infection is seen in the fruit wall of a fossil fruit.

Mycelium is septate, thin to thick-walled, hyaline to yellowish and branched (Text-figs 1-8, Pl. 1, figs 1-4). Individual cells of the mycelium are circular to oval in shape (Text-figs 1-8, Pl.1, figs 2, 3, 4), 4-12 μ m in length and 4-8 μ m in breadth. Cells are thickened and sometimes these thick walled cells contain dark, black, coloured granular contents. Stroma is well preserved (Pl. 1, fig. 4)

At many places the mycelium shows dark brown to black coloured conidia (Text-figs 1-6, Pl. 1, figs 2, 3, 4). Conidia are sessile or having very short stalk. The conidiophores measure 8 μ m in diameter. The conidia are variously arranged in groups of 2-4. Conidia form kidney shaped structures and this arrangement seems to be very typical of this fungus. These quadrate conidia measure 16- 24 μ m X 8 – 16 μ m in diameter. Conidia are thick walled, smooth, brown to black. They are often very dark at their tips or along the edge. An individual cell in the quadrate of a conidium measures 1.5 μ m.

DIAGNOSTIC FEATURES OF THE FOSSIL FUNGUS

- 1) Mycelium is septate, branched, thin walled and hyaline to yellowish.

- 2) Individual cells in the mycelium are circular to oval in shape measuring 4–12 μm in length and 4–8 μm in breadth.
- 3) Thick-walled, dark brown coloured conidia are present on short conidiophores (8 μm in diameter)
- 4) Conidia are arranged in groups of 2–4 and they form kidney-shaped structures.
- 5) An individual cell in the quadrate of a conidium measures 1.5 μm .

COMPARISON

The diagnostic features exhibited by the present fungus show that it resembles with living members of the family Dematiaceae of the order Hyphomycetales (Barnett, 1960; Bessey, 1964; Clements & Shear 1931; Ellis 1960, 1971, 1976; Subramanian, 1971). It shows gross resemblance with the living genera like *Tetracoccusporium*, *Dictyoarthrinium*, *Trimmatostroma*, *Monodictys* and *Cerebella* of the family Dematiaceae. However, the genus *Tetracoccusporium* and *Dictyoarthrinium* differ from the present fungus in cross shaped arrangement of conidia. The genus *Monodictys* also differs from the present fungus in its nature of hyphae and conidia. It shows resemblance with genus *Cerebella* in the structure of mycelium and presence of stroma, but unlike the present fungus, in *Cerebella* the surface of stroma shows deep folds, cerebriform and it is hyper parasitic on the sclerotia of *Claviceps*. The present fungus thus, tallies more with the genus *Trimmatostroma*. The genus *Trimmatostroma* has four living species (Ellis, 1971, 1976). Amongst these species the present fungus closely resembles with *T. scutellare* Break & Br. in structure of stroma, nature of hyphae and conidia. Conidia are 10–13 μm X 8–25 μm in *T. scutellare* whereas they are 16–26 μm X 8–16 μm in present specimens. In both, the conidia are variously shaped, muriform, deeply lobed, mostly many celled, pale to

brownish and smooth. Individual cells are often very dark at their tips or along the edge. However, *T. scutellare* differs from the present fungus in conidiophore size which is 30 μm in length and 1–4 μm in breadth as against the present fungus in which it is 8 μm in length and 8 μm in breadth.

Fungal remains in the form of fossil spores, hyphae and reproductive structures have been described from different Tertiary sediments of India. So far 17 deuteromycetous fungi have been described from Deccan Intertrappean beds, viz., *Diplodia* (Mahabale 1968), *Helminthosporites mohagaoense* (Chitale & Sheikh (1971), *Phomites ebenoxyloni* (Chitale & Patil 1972), *Tetracoccusporium eocenum*, (Biradar & Mahabale 1974), *Mohgaonidium deccanii*, *Diplodia sahnii*, *Deccanodia eocenum* Singhai (1974), *Arbusculites dicotylophylli*, *Dicotylosporites dicotylophylli* (Paradkar 1974), *Chlamydosporites gramineum* (Paradkar 1975), Deuteromycetous fungal spore balls (Shete and Kulkarni 1977), *Diplodia intertrappea* (Varadpande and Sampath 1979), *Palaeoleptosphaeria intertrappeana*, *Helicominites salvinites*, *Monodictyites intertrappea*, *Botryodiplodia mohgaoensis*, *Ascochyites intertrappea* (Barlinge & Paradkar 1982), *Humicolites megasalvini* (Karanjekar & Yawale 1985). The present fossil fungus does not tally with any of the fossil fungi described so far. So, it is placed in the extant genus *Trimmatostroma* with which it shows close resemblance and is assigned to a new species, viz., *T. intertrappea* sp. nov. The specific epithet is after the name of Deccan Intertrappean Beds from where the present fossil was recovered. It is the first report of occurrence of fossil Deuteromycetes from Nawargaon.

SPECIFIC DIAGNOSIS

Trimmatostroma intertrappea sp. nov.

Mycelium septate, branched, thin walled, hyaline,

PLATE 1

Trimmatostroma intertrappea sp. nov. —————>

Fig. 1. A group of fungal filaments and adjoining ray tissue, X 15;

Fig. 2. A part of fungal filament magnified, to show the septate and branched hyphae, X 55;

Fig. 3. The same magnified to show the septate, branched hyphae

and kidney-shaped conidia, X 104;

Fig. 4. Part of filament magnified to show the stroma – S and quadrate conidium – C, X 156.

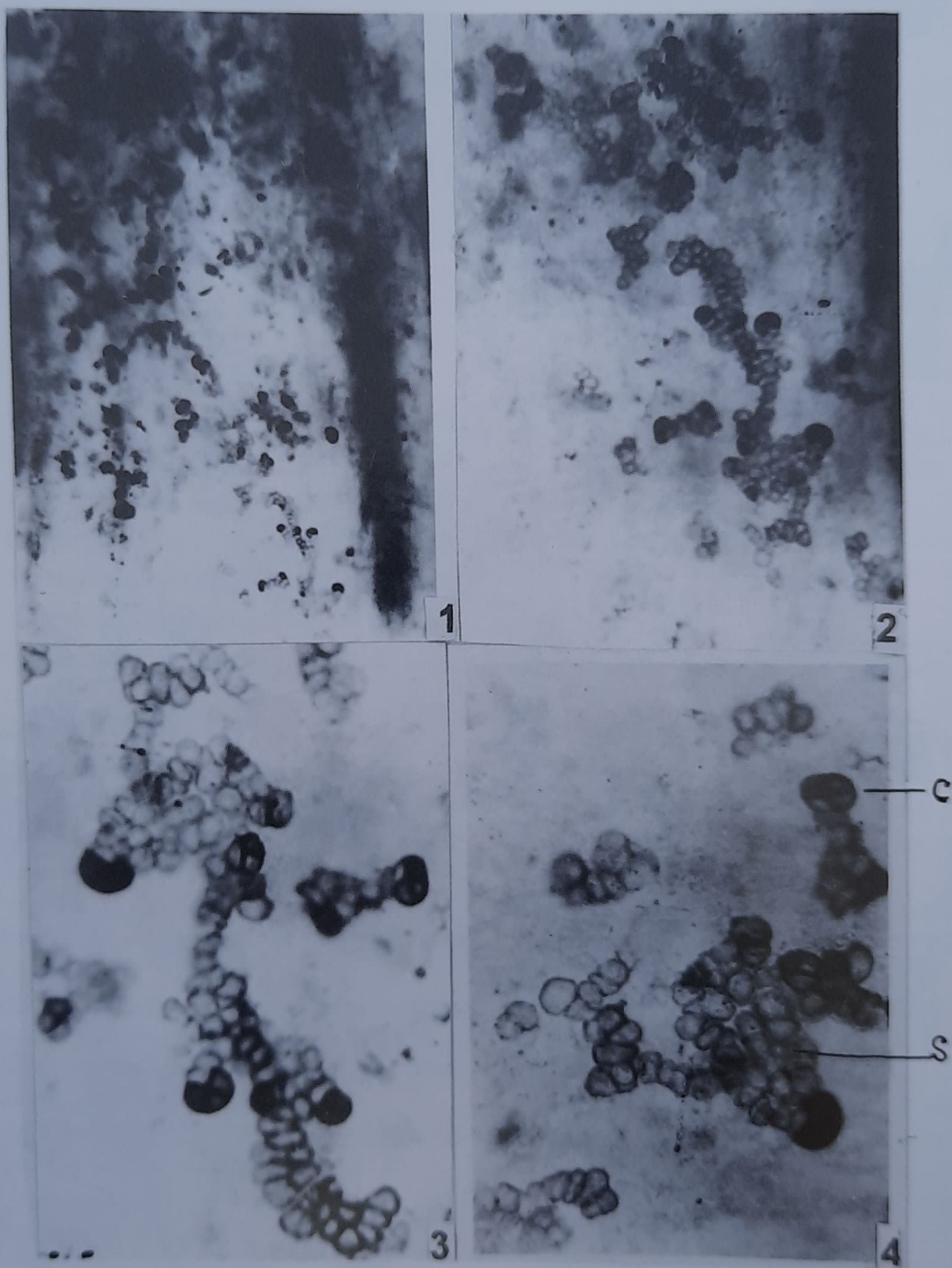
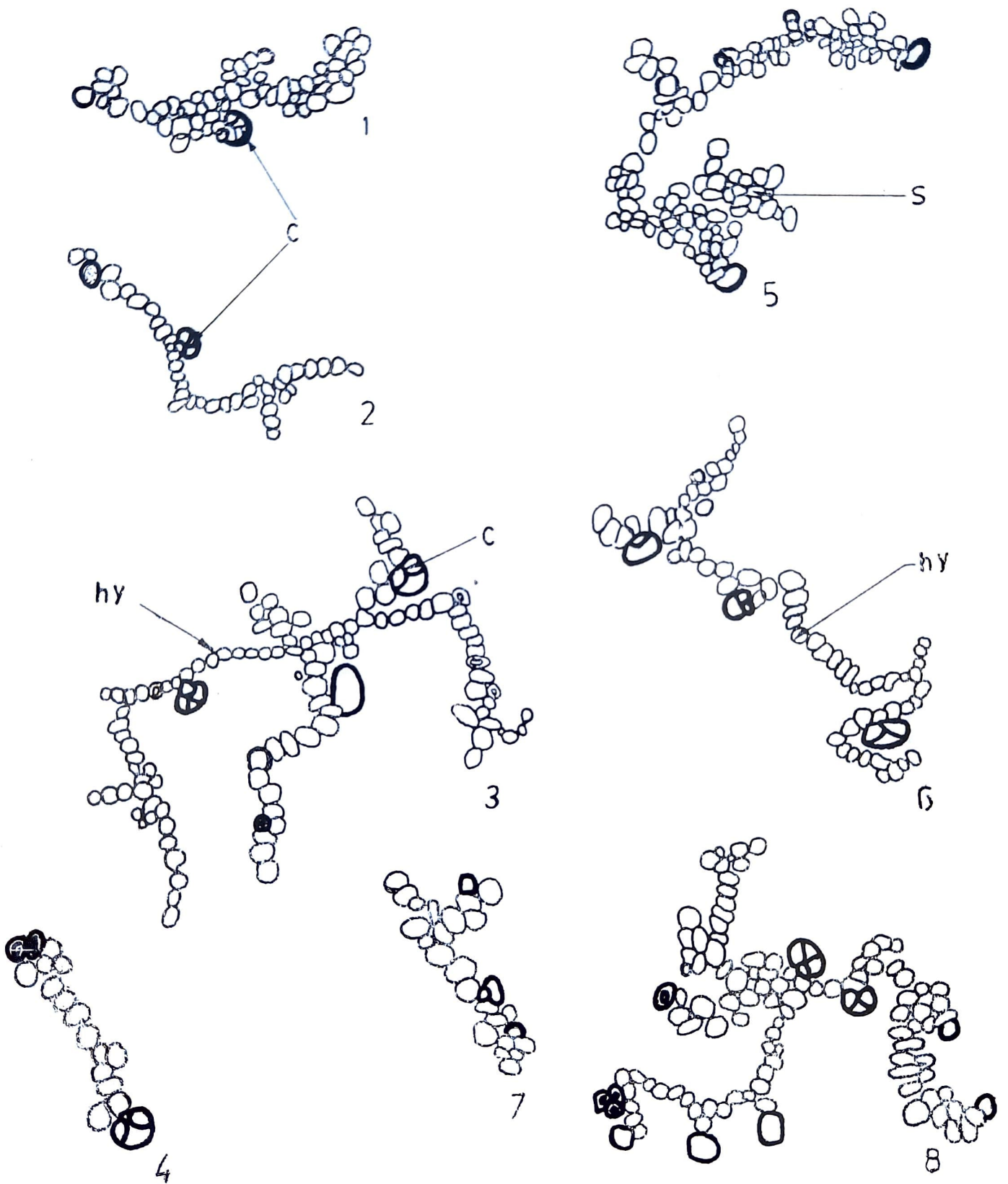


PLATE I



Text figs 1-8 *Trimmatostroma intertrappea* sp. nov.

Fig. 1. A branched septate hyphae showing kidney shaped conidium - C X 200 ;

Fig. 2, 4. A hypha showing conidia- C stalked on short conidiophores, X 200 ;

Fig. 3, 6, 8. Profusely branched septate hyphae, having 2-4 celled conidia- C stalked on short conidiophores X 200;

Fig. 5, 7. Profusely branched, septate hyphae showing pseudoparenchymatous stroma - S, X 200.

individual cells circular to oval, thin walled, 4 – 12 μm in length and 4 – 8 μm in breadth, dark brown coloured, quadrate conidia on short conidiophores, terminal, 16 – 24 μm X 8 – 16 μm and an individual spore in the quadrate conidium 1-5 μm in diameter. Conidiophore 8 μm long and 8 μm in breadth. Conidia kidney-shaped and many celled.

Holotype – FWN – 367, Department of Botany. Smt. K.W. College, Sangli, Maharashtra.

Locality – Nawargaon – Maragsur area, Wardha District, Maharashtra.

Horizon – Deccan Intertrappean Beds.

Age – Late Cretaceous – Palaeocene

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