

A NEW FOSSIL FUNGUS FROM THE DECCAN INTERTRAPPEAN BEDS OF MADHYA PRADESH, INDIA

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ABSTRACT

A new species of *Stagonospora*, *S. intertrappea* has been described from the Deccan Intertrappean beds of Madhya Pradesh, India. The genus *Stagonospora* is for the first time recorded from the Indian Tertiary deposits. The present species of the fungus has been compared with the fossil fungi known from the Intertrappean beds and also with the extant species of *Stagonospora*.

INTRODUCTION

LITTLE is known about the fossil fungi that occur in petrified condition. Fungal remains have been reported from the Deccan Intertrappean beds of Sausar by the late Prof. B. Sahni & Rao in 1943. Mrs. Chitale (1950) described four celled fungal spores comparable to *Chaetosphaerites* sp., Dwivedi (1959) described *Shuklania* and Lakhanpal et al (1967) reported a rust fungus from the Intertrappean beds of Mohgaon kalan. Mahabale (1969) described a species of *Diplodia* an imperfect fungus from this locality.

The material for the present investigation came from Mohgaon kalan, in Chhindwara district, M.P., India. On sectioning, a chert revealed many fruiting bodies with numerous, 2-4 septate fungal spores still enclosed within them.

The spores and mycelia are very well preserved and show all the details. Repeated attempts have failed to reveal any sex organs of this fungus.

DESCRIPTION

Five pycnidia are seen in cross section, they are well preserved, three have spores within them while the remaining two, probably immature, are without spores (Text-fig. 1). Pycnidia are 0.2-0.25 mm long and 0.10-0.15 mm broad, somewhat pyriform, pycnidial pores are not clearly visible. Pycnidial wall is parenchymatous, single cell layer thick, its cells are broader than long. It is seen that near the apex

of pycnidium the cells of the wall have dark contents.

Host tissue has almost completely decayed but at the base of the pycnidia, parenchymatous cells are still preserved (Text-figs. 4 & 6; Pl. 1, Figs. 1 & 4).

In close association with the pycnidia, branched septate hyaline hyphae can be seen (Text-fig. 5; Pl. 1, Fig. 5).

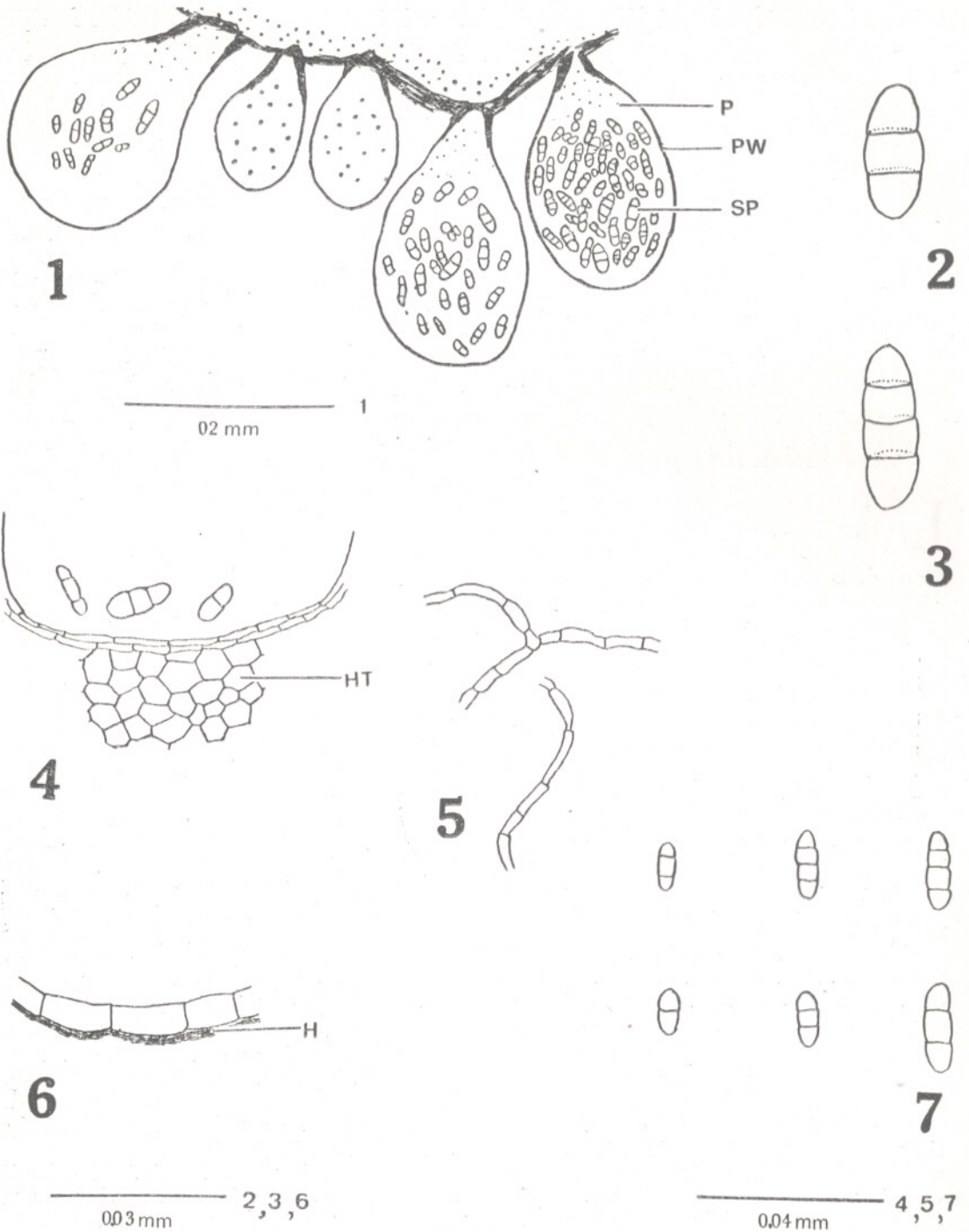
Numerous, 2-4 celled, well preserved spores enclosed within the pycnidium can be seen. They are longer than broad, oblong linear, fusoid or ellipsoid in shape, 20-23 \times 7-10 μ in size when mature (Text-figs. 2, 3 & 7; Pl. 1, Fig. 3). They have 1-3 septa, spore wall is smooth and quite firm. It has been observed that middle septa of the spore is darker in colour and is without any opening (Pl. 1, Fig. 2).

DISCUSSION AND COMPARISON

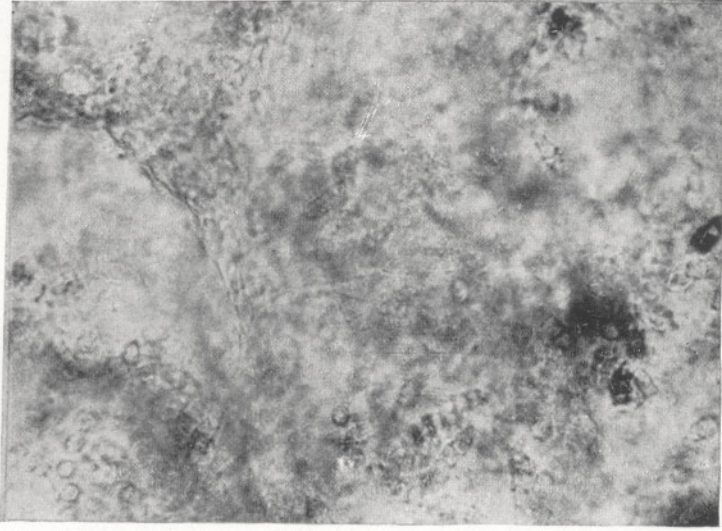
The fungus described here is characterized by the presence of 1-3 septate spores which are enclosed in pycnidia. These spores have been compared with the fossil fungi described from the Deccan Intertrappean series and also with living genera.

Stagonospora intertrappea sp. nov. described here does not resemble any fossil fungus reported so far. *Diplodia rodei* (Mahabale, 1969) shows only a remote resemblance with it. However, the two differ in many characters. In *Diplodia rodei* spores are two celled, oval or elongate, 17.8 \times 7.50 μ in diameter and with characteristic striations, while in the present fossil, the spores are 2-4 celled, mostly four celled, oblong, elongate or fusoid, 20-23 \times 7-10 μ and embedded in pycnidium.

Closer scrutiny reveals that the fossil fungus closely resembles the living genus *Stagonospora* of the group Coelomycetes (Fungi imperfecti). *Stagonospora* is characterized by the presence of pycnidium without stroma, spores being colourless usually straight, oblong or linear generally obtuse at the ends with two or more distinct septa.



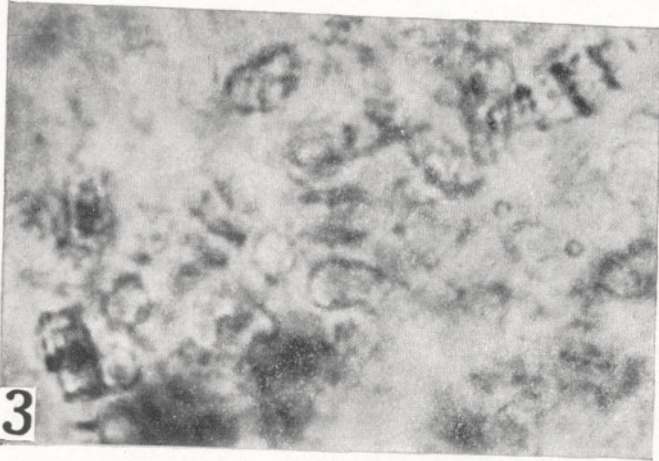
TEXT-FIGS. 1-7 — Five pycnidia of which three have septate spores (P, pycnidium; PW, pycnidial wall; SP, spore). 2. Three celled septate spore. 3. Four celled septate spore. 4. Basal part of the pycnidium enlarged showing single cell wide pycnidial wall and host tissue (HT). 5. Few hyphae enlarged showing distinct septa. 6. A part of the pycnidial wall showing disorganized host tissue (H). 7. Different kind of spores found in a pycnidium.



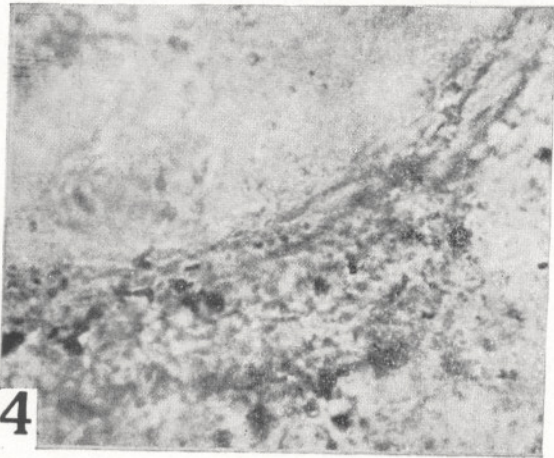
1



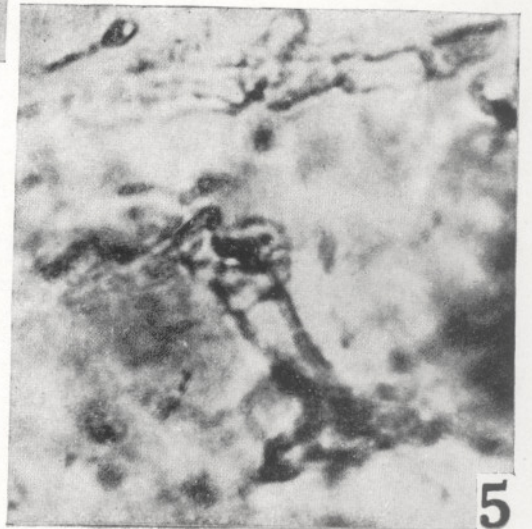
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5

The living species of *Stagonospora* occur on the leaves and stems of large number of plants (Groove, 1935).

Genera like *Scirpus* (Carter, 1852) and *Sparganium* (Mahabale, 1953) are reported to occur as fossils in the Intertrappean beds. As this fungus has a very large host range including these plants it may have occurred in them.

Fossil fungus described above closely resembles the living genus *Stagonospora* in almost all details but it does not resemble any living species of the genus (Saccardo, 1884; Groove, 1935), hence a new specific name *intertrappea* is proposed.

DIAGNOSIS

Pycnidia without stroma, 0.2-0.25 mm long and 0.10-0.15 mm broad; pycnidial wall parenchymatous, single celled. Spores oblong, linear fusoid or ellipsoid, $20-23 \times 7-10\mu$.

in size with 1-3 transverse septa, middle septa dark in colour, without septal opening; mycelium septate and branched.

Type Specimen — No. M/307 slides and specimen in B. S. Trivedi's collection, Botany Department, University of Lucknow, Lucknow.

Locality — Mohgaon kalan ($22^{\circ}1'N$; $79^{\circ}11'E$), in Chhindwara district, M.P. India.

Age & Horizon — Tertiary (Early Eocene), basal part of the Deccan Intertrappean series.

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EXPLANATION OF PLATE

PLATE 1

1. Pycnidia showing many spores within them $\times 60$.
2. Four-celled spore showing three distinct septa $\times 650$.

3. A part of the pycnidium enlarged showing many septate spores $\times 180$.
4. Basal part of the pycnidium enlarged showing the pycnidial wall and host tissue $\times 90$.
5. Few hyphae enlarged showing distinct septa $\times 90$.