V. THE PATHOGENS

A. Identification

Basidiocarps of both *Coriolopsis badia* and *Favolus brasiliensis* were identified by comparing these materials with those kept in Bose's Herbarium*, now located at Presidency College, Calcutta and also with those of the Mycological Herbarium of the Mycological Laboratory (Basic and Applied), Department of Botany, University College of Science, Calcutta. These specimens not only agreed closely with those specimens in morphological characters but also in anatomical details. These materials were recently sent to the Director, Royal Botanic Gardens, Kew, Richmond, Surrey, England, who confirmed their identity.

B. Descriptions

1. *Coriolopsis badia* (Berk.) Murr. (= *Trametes badia*),

   *London J. Bot.*, 1 : 151, 1842 as *Polystictus badius* Berk.

   (Plate I, Figs. 1-2).

   (a) Morphological

   Basidiocarp - Usually solitary, sometimes several growing together in imbricate manner, sessile, demidiate, generally thinning out towards the margin, broadest in the middle but with a comparatively broad base, tough to coriaceous, becoming

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* Dr S.R. Bose's Polyporaceae Herbarium, R.G. Kar Medical College, Calcutta.
rigid when dry, 6-7 cm. broad, 3-4.5 cm. deep and 0.5-0.7 cm. in thickness. Margin thin, dark brown, somewhat undulated, becoming slightly incurved on drying.

**Upper surface** - Faintly sulcate, sometimes with a few longitudinal depressions near the base, marginal zone prominently ridged, glabrous, somewhat rough, reddish brown in colour.

**Context** - Light brown, coriaceous, tough, azonate, 2-4 mm. thick.

**Hymenial surface** - Brown but darker than that of the upper surface; pore-mouths minute, regular, circular; pore-tubes single layered, dipping unequally into the tissue of the context, 2-3 mm. long, concolourous with the context; dissepiments 45-67/u thick.

(b) **Anatomical**

(i) **Basidia** - Clavate, tetraspore, tetrasterigmatic and quadrisporous, each with a simple clamp-connexion at the base, hyaline, dimension 20-30 x 6-8.5/u.

(ii) **Basidiospores** - Hyaline, cylindrical at maturity, thin walled, smooth, dimension 8.5-12.5 x 3.5-4.5/u.

(iii) **Hyphal system** - In hyphal composition of the basidiocarp, it appears to be trimitic according to Corner (1932). Generative, Skeletal, and Binding hyphae are present. Generative hyphae frequent; usually thin-walled,
sometimes the walls become thick with uniform linear lumen; branched extensively or sparingly; 2.0-4.5μ wide; hyaline; usually nodose septate and having simple clamp-connexion at each septum. Binding hyphae frequent; thick-walled; branched and often intertwining or twisted, usually coiling around skeletal and other thick-walled generative hyphae; nodulose or spiculiferous; without any clamp-connexion; hyaline to pale-yellow coloured; wall about 0.75-1.25μ thick; 1.5-2.75μ wide; wall thickness variable with linear narrow lumen or completely obliterated in older portions. Skeletal hyphae abundant; thick-walled; straight or slightly flexuous; unbranched, more or less longitudinal; without any clamp-connexion; hyaline to pale yellow in colour; about 3.5-5.75μ wide, wall thickness variable; wall about 1.25-2.25μ thick; lumen completely obliterated in some cases; apices usually thin-walled; aseptate, but rarely in some very distantly simple septa may be present (Text-fig. 2,a-h).

2. Favolus brasiliensis Fr. Syst. Mycol., 1: 332, 1821 as Daedalea brasiliensis Fr. (Plate I, Figs. 3-4)
(a) Morphological

Basidiocarp - Mostly gregarious, sometimes solitary; distinctly
stipitate or attached to the host by a narrow stem like base, reniform to flabelliform or unequally crateriform, tough when fresh, becoming rigid and brittle when dry, pileate portion 6-9 cm. deep and 0.1-0.3 (0.5) cm. in thickness. Margin thin, becoming incurved on drying, fimbriate to ciliate, concolourous with the upper surface.

Upper surface - Glabrous, azonate, faintly striate, white, cream coloured or ochraceous when fresh, becoming pale tan when dry.

Context - White, somewhat soft, 1.5 - 2.5 mm. thick.

Hymenial surface - Poroid to sublamellate, white to cream coloured, becoming yellowish or light bay when dry; pore mouths at first elongate-hexagonal (1-3.5 x 0.5-2 mm.) coalescing radially at places; pore tubes 1-3 mm. long; dissepiments thin, sometimes denticulate or fimbriate.

Stipe - When present lateral 1-3 cm. long, 0.2-1 cm. thick, marked with decurrent pore tubes, concolourous with the upper surface, somewhat pubescent or tomentose.

(b) Anatomical

(i) Basidia - Clavate, thinwalled, tetrasterigmatic and quadrisporous, hyaline, each with basal simple clamp-connexions, dimension 22-35 x 5-7/μ.
(ii) **Basidiospores** - Cylindrical or cylindric-ellipsoidal, hyaline, thin-walled, full of granulated and vacuolated protoplasm; dimension 8-10 x 5-4.5μ.

(iii) **Hyphal system** - Basidiocarp is trimitic according to corner (1932). All the three types of hyphae, viz., **Generative**, **Skeletal** and **Binding** are present.

**Generative** hyphae thin-walled; hyaline, frequent; much branched; septate with clamp-connexion at each septum; simple septa are also found; some hyphae are irregularly broad and swollen at the places; about 2-8μ wide; thin branches having clamp-connexions also; about 1.75-4μ wide; branches extensively or sparingly; usually nodose septate. **Skeletal** hyphae more abundant; thick-walled or double walled; straight or slightly flexuous; unbranched; but some time very distantly with a branch at right angles; whitish to slight yellow in colour; about 3-10μ wide and wall about 1.5-2.5μ thick; lumen very narrow and linear but sometimes completely obliterated at places in or near mature parts; apex thin-walled. **Binding** hyphae frequent; thick-walled; very narrow; much branched; without any septa or clamp-connexions; often inter-twining; nodulose mostly hyaline; but some are whitish to slight yellow in colour; about 1.5-2.5μ wide; wall
thickness variable with linear or obliterated lumen
(Text-fig. 3, a-g).

C. Synonymy

Bose (1937) has reported *Favolus brasiliensis* Fr. with *Polyporus crisatus* and *Favolus multiplex* Lev. as its synonyms. *Favolus multiplex* Lev. has been collected by hooker f. and later described by Berkeley. This species has been considered as synonym of *Favolus spatulatus* (Jungh.) Bres. by Butler and Bisby (1931). It has also been recorded as *Polystictus vivacinus* Fr. by Lloyd (1920-1921) which according to Butler and Bisby (1931) is a synonym of *Favolus spatulatus*. Lowe (1953) has regarded *Hexagona daedalea* and *Favolus caespitosus* as *Daedalea brasiliensis* Fr.. Lloyd has recognised these species as synonyms of *Favolus brasiliensis*.

Lloyd (1920-1921) has stated that *Trametes badia* named by Berkeley from the Philippines, *Trametes heterospora* by Montague from the East Indies, *Trametes fuscella* and *Trametes aspera* by Leveille from India and Java are closely allied. Butler and Bisby (1931) have mentioned that *Polystictus badius* Berk. is a synonym of *Trametes badia* which is recently named as *Coniolopsis badia* (Berk.) Murr.

D. Distribution

From the records (Bakshi, 1971) it has been revealed that *Coniolopsis badia* (Berk.) Murr. (= *Trametes badia*), is a native of
the Eastern Tropics (the Philippines, East Indies, Java, Ceylon and India). Within India it has been reported from Lokra hills, Assam by Bose (1937) and from Calcutta by Banerjee (1947).

**Favolus brasiliensis** Fr. on the other hand has been reported from India, Sikkim and North America (Saccardo, 1888; Bose, 1946; Bakshi, 1971). Bose (1946) has reported this species from Calcutta. In America, it commonly occurs in the gulf states of Tropical America (Lowe, 1953).

**E. Host range**

**Coriolopsis badia** (Berk.) Murr. can live both as a parasite and saprophyte. It has been reported to occur on logs of *Ficus religiosa*, stump of *Euphorbia merifolia*, dead trees of *Ficus benghalensis*, *Spondias mangifera*, and *Morus alba* (Bose, 1937; Banerjee, 1947; Bakshi, 1971).

**Favolus brasiliensis** Fr. also lives as parasite or saprophyte. It is known to occur on dead wood, on logs of *Dalbergia sissoo*, *Shorea robusta* (Bose, 1937; Bakshi, 1971), on dead wood of deciduous trees and on *Carya*, * Celtis*, *Quercus* and *Vitis* (Lowe, 1953).

**F. Economic importance**

**Coriolopsis badia** (Berk.) Murr. causes spongy rot and **Favolus brasiliensis** Fr. is responsible for sap rot in standing and felled timber (anonymous, 1950; Bakshi, 1971).