
Fungal flora of Burdwan District, West Bengal, India I.

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In India, the district of Burdwan (West Bengal) is a large district covering an area of 7001.4 sq.Km. and 5% of this area is occupied by forests but no comprehensive survey has ever been made to make a list of lignicolous macro-fungi occurring in this district. The author has been collecting fungi from different parts of this district since 1975 to make such a list. In the present paper ten species of Polyporaceae causing white rot have been described and attempts have been made to throw light on their hosts, their distribution and their ecology.

Key words : Polyporaceae, Burdwan district, white rot

INTRODUCTION

The purpose of this paper is to report on the lignicolous macrofungi occurring in the district of Burdwan (West Bengal), India. The area of this district is 7001.4 sq.km. and forests occupy only 5% of this area is occupied by forests (Bhattacharyya 1986). A comprehensive list of lignicolous macrofungi of this district has long been overdue. For this purpose the fungi of Burdwan district have been collected since 1975 and in the present paper 10 lignicolous species belonging to the family Polyporaceae causing white rot have been described and attempts have been made to throw light on their hosts, their distribution and their ecology. Voucher specimens have been deposited in the Mycological Herbarium, Department of Botany, Burdwan Raj College (BRCMH), Burdwan, West Bengal, India.

MATERIALS AND METHODS

Observations were based on fresh specimens collected by the author. Microscopic characters of the basidiocarps were studied from the free hand sections mounted in 10% KOH and stained with 1% cotton blue. The species have been arranged alphabetically.

DESCRIPTIONS OF BASIDIOCARPS

Cerrena leonina (Klotzsch) De [Figs. 1 & 2]

Int. J. Mycol. Lichenol. 3(1): 163, 1986. *Polyporus leoninus* Klotzsch, Linnaea 8:486, 1833.
Funalia leonina (Kl.) Pat., Ess. Tax. 95, 1900.

Basidiocarp annual, solitary, sessile with a broad base, dimidiate, corky to coriaceous, 3.5-10.0 × 3.0-8.0 × 2.0-4.0 cm; upper surface cream to pale brown, strigose-hirsute; context cream to cream-brown, corky, 0.5-5.0 mm thick, gradually merging into the strigose cover; hymenial surface cream to brownish, pores irregular, angular, often irpicoid, about 2 per mm, tubes nearly up to 1.0 cm long, showing yellow oil droplets on the hymenium and pore tubes in fresh condition.

Microscopic characters Hyphal system trimitic, hyphae hyaline. Generative hyphae this-walled, branched, with clamp connection, 2.5-7.5 µm wide, some thickwalled to solid and refractive, frequently broken at clamps, 2.8-4.2 µm wide. Skeletal hyphae thick-walled to solid, slightly tortuous, unbranched or with one to three terminal branches, occasionally showing septa in their apical ends, 2.5-6.0 µm wide. Binding hyphae thick-walled to solid, 1.8-4.2 µm wide in the context, much branched with tortuous long branches, in the trama branches short and greatly coiled giving a coralloid appearance. Basidia clavate, 19.6-23.8 × 6.8-8.0 µm, 4-sterigmate. Basidiospores hyaline, thin-walled, smooth, cylindrical, apiculate, 8.4-14.0 × 3.0-4.5 µm.

Host: *Mangifera indica* L., *Nerium odorum* Soland. and *Shorea robusta* Gaertn. f.

Distribution: This species does not occur very commonly. It has been collected from Burdwan (BRCMH 76282), Durgapur (BRCMH 76286), Memari (BRCMH 76287) and Ranigunj (BRCMH 76288).

Daedaleopsis flava (Lev.) Roy & Mitra [Figs.3 & 4]

Can. J. Bot. 61: 2979, 1982. *Daedalea flava* Lev., Ann. Sci. Nat. Ser. 3, 2: 198, 1844.

Basidiocarp annual, sessile to resupinate, with a thick short lateral or central stalk, 1-4 cm in length and 3.5-5.5 cm in diameter, dimidiate, fan shaped to circular, usually solitary to imbricate, 2.5-20 × 3-27 × 0.8-1.5 cm, upper surface when fresh white to cream and velvety, on drying glabrous and wood brown, finally zonate, thinly crustose towards the base in some basidiocarps, margin thin or thick, context coriaceous to corky, white to wood brown, 0.5-1.0 cm thick, hymenophore white to wood brown, may be poroid, daedaloid or lamellate, pore tubes concolourous with the context, 0.2-1.3 cm long.

Microscopic characters Hyphal system trimitic. Generative hyphae hyaline, clamped, branched, thin to slightly thick-walled, 1.5-2.5 µm wide. Skeletal hyphae subhyaline to pale brown, thick-walled to solid, occasionally encrusted, frequently swollen at intervals, unbranched or apically branched with several tortuous branches, 1.5-5.2 µm wide. Binding hyphae thick-walled to solid, hyaline, branched with long tapering branches, 1.3-2.6 µm wide, more common in the lower context than elsewhere. Cuticular cells somewhat isodiametric, occurring in the crustose part formed occasionally on the pileus surface. Basidia clavate, 14.3-22 × 3.6-7.5 µm. Basidiospores hyaline, thin-walled, short cylindric, slightly bent at one end, 5.2-8.7 × 2.3-3.6 µm. Hyphal peg present.

Host: *Bambusa arundinacea* Willd., *Casuarina equisetifolia* Forst., *Cocos nucifera* L., *Dalbergia sissoo* Roxb., *Mangifera indica* L., *Salmalia malabarica* scott. and Endl., *Shorea robusta* Gaertn. f., *Swietenia mahagoni* L., *Tectona grandis* L. f.

Distribution: This is a very common fungus in Burdwan district and has been collected

from Asansol (BRCMH 75101), Burdwan (BRCMH 75102), Dhatrigram (BRCMH 76103), Durgapur (BRCMH 76104), Gushkara (BRCMH 77105), Kalna (BRCMH 78106), Kanksa (BRCMH 78107), Memari (BRCMH 79108), Panagarh (BRCMH 80109), Ranigunj (BRCMH 801010), Satgachhia (BRCMH 821011) and Talit (BRCMH 851012).

Flavodon flavus (Kl.) Ryv. [Figs. 5 & 6]

Norw. J. Bot. 20:3, 1973. *Irpex flavus* Kl., Linnaea 8:488, 1833.

Basidiocarp annual, effused-reflexed, attached by a broad base, frequently resupinate, coriaceous to corky, 2.0-6.0 × 1.5-3.0 × 0.5 cm; pileus surface yellowish-brown, tomentose, with concentric zones; margin thin, entire; context yellow, corky, up to 1.5 mm thick; hymenial surface sulphur yellow to yellowish brown, irpicoid to dentate, poroid near the margin, pores 1-2 per mm, dissepiments tapering, 0.5 mm thick, up to 4 mm long.

Microscopic characters Hyphal system dimitic. Generative hyphae hyaline to sulphur yellow, thin- to slightly thick-walled, branched, simple septate, 2-3 µm wide. Skeletal hyphae yellowish to sulphur yellow, aseptate, thick-walled but showing lumina, rarely subsolid, unbranched, somewhat tortuous, 2.0-4.5 µm wide. Basidia narrow-clavate, hyaline, thin-walled, 4-sterigmate, up to 6.5 µm wide. Basidiospores hyaline, usually thin-walled, some slightly thick-walled, ellipsoid, 4.0-6.5 × 2.0-3.0 µm. Cystidia encrusted, formed of encrustation on terminal ends of skeletal hyphae and projecting into pores. Acanthophyses thin-walled and thick-walled and having warty projections towards their apical ends, present on the abhymenial surface and also in the hymenial layer.

Host : *Albizia lebbeck* Benth., *Artocarpus integrifolia* L., *Bambusa arundinacea* Willd., *Cocos nucifera* L., *Dalbergia sissoo* Roxb., *Ficus religiosa* L., *Lagerstroemia speciosa* Pers., *Pongamia pinnata* Vent., *Shorea robusta* Gaertn. f., *Tectona grandis* L. f.

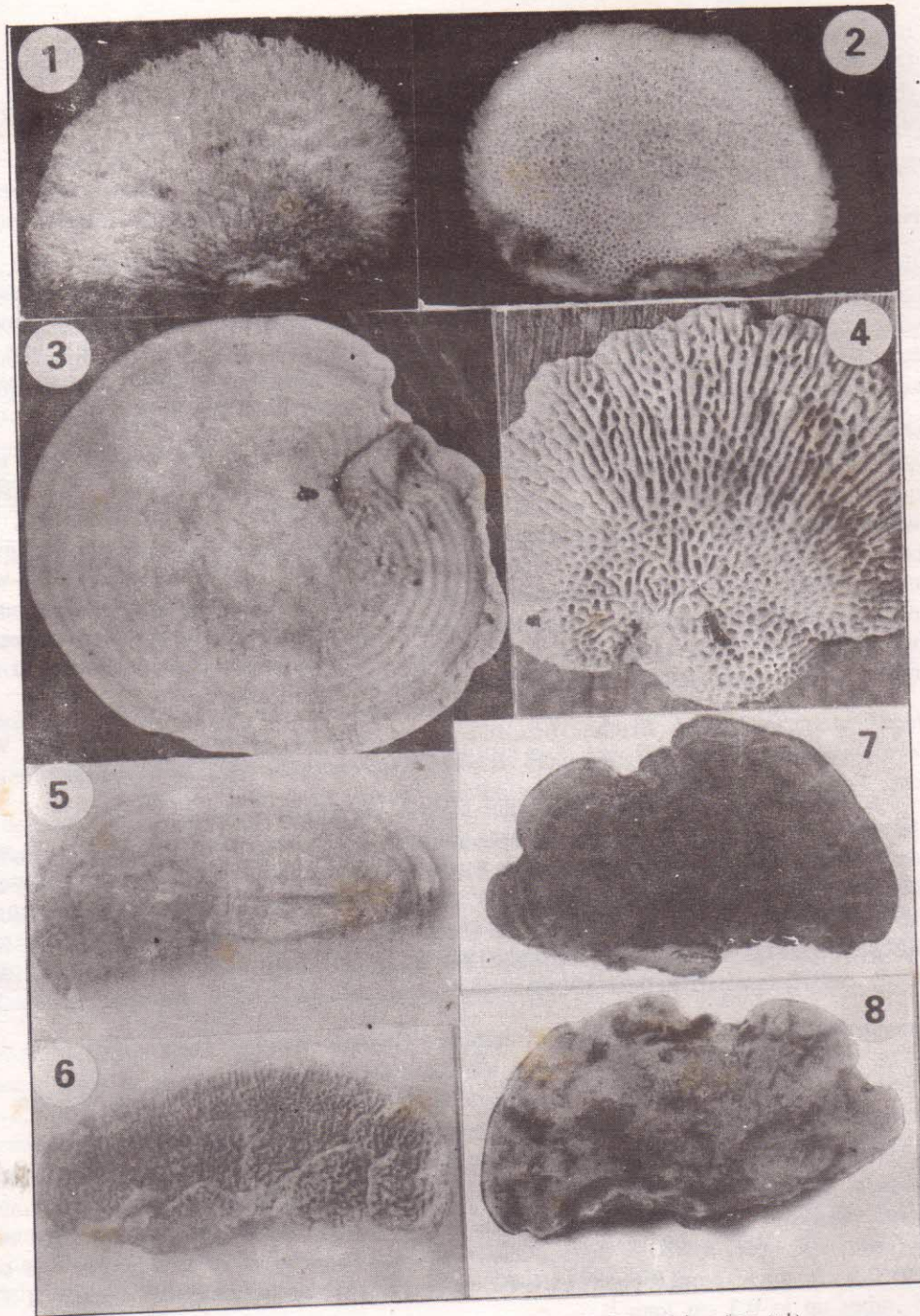
Distribution : It occurs frequently throughout the district of Burdwan. It has been collected from Andal (BRCMH 7521), Asansol (BRCMH 7522), Banpas (BRCMH 7523), Barakar (BRCMH 7524), Budbud (BRCMH 7525), Burdwan (BRCMH 7526), Durgapur (BRCMH 8027), Jamalpur (BRCMH 8128), Kanksa (BRCMH 8229), Kalna (BRCMH 82210), Katwa (BRCMH 83211), Memari (BRCMH 83212), Palsit (BRCMH 84213), Panagarh (BRCMH 86214) and Ranigunj (BRCMH 89215).

Hexagonia badia (Berk.) Imaz. [Figs. 7 & 8]

Bull. Govt. For. Exp. Sta. 57: 112, 1952. *Trametes badia* Berk., Hook. Lond. Journ. Bot. 1:151, 1842.

Basidiocarp annual, solitary or imbricate, sessile with a thick base, coriaceous or corky, dimidiate, 5.0-8.0 × 3.0-5.5 × 0.5-0.8 cm; upper surface cinnamon brown to dark reddish brown, subzonate to zonate, glabrous, often thinly crusty, sometimes showing small raised areas with age; margin sterile, thin or thick; context brown, more or less fibrous and silky, up to 0.5 cm thick; hymenophore dark brown, pores circular to somewhat angular, 1-3 per mm, tubes up to 0.3 cm long.

Microscopic characters Hyphal system trimitic. Generative hyphae clamped, usually hyaline, thin-walled, some pale brown, thick-walled, often broken at clamps, showing lateral outgrowths of coralloid outlook, occurring in the lower context, 2.8-4.2 µm wide. Skeletal



Figs. 1&2. *Cerrena leonina*. 1. Upper surface (x1) 2. Hymenial surface (x1).
 Figs. 3&4. *Daedaleopsis flavidia*. 3. Upper surface (x1) 4. Hymenial surface (x1).
 Figs. 5&6. *Flavodon flavus*. 5. Upper surface (x1) 6. Hymenial surface (x1).
 Figs. 7&8. *Hexagonia babia*. 7. Upper surface (x1) 8. Hymenial surface (x1).

hyphae subhyaline to yellowish brown, thick-walled, usually aseptate, occasionally showing 2-3 septa at the apex, 4.2-7.0 μm wide. Binding hyphae hyaline to yellowish brown, thick-walled to solid, much branched, 1.4-2.8 μm wide, some with coralloid branches and occurring particularly in the lower context and also in trama, others with a little longer but flexuous branches and appearing mostly in the upper context. Pseudoparenchymatous cells hyaline to pale brown, thin- to slightly thick-walled, occurring in the crusty part of the pileus surface. Basidia clavate, 4-sterigmate, 20.0-22.0 $\times$ 5.6-7.0 μm . Basidiospore hyaline, thin-walled, cylindrical, 8.4-9.8 $\times$ 3.5-4.2 μm . Hyphal pegs present.

Host : *Ficus benghalensis* L., *Ficus religiosa* L., *Shorea robusta* Gaertn. f.

Distribution It has been collected from Burdwan (BRCMH 75151), Durgapur (BRCMH 75152), Panagarh (BRCMH 85153) and Saktigarh (BRCMH 90154).

Návisporus floccosus (Bres.) Ryv. [Figs. 9 & 10]

Prelim. Polypore F1. East Afr., 443, 1980. *Trametes floccosa* Bres., Ann. Roy. Inst. Bot. Roma 6: 179, 1896.

Basidiocarp annual, solitary, sessile with a broad base, resupinate or reflexed, large, usually 12-20 $\times$ 10-12 $\times$ 4-7 cm, hard and woody, somewhat sapy when fresh, on drying very hard and light in weight; margin thick, rounded and sterile below; upper surface usually smooth, glabrous, buff brown to yellowish to reddish brown, azonate; context light buff or pale cinnamon; fleshy when fresh, suberose on drying, distinctly zoned, 1-3 cm thick; hymenial surface white to pale cinnamon brown, pores mostly circular, at places elongated, 2-3 per mm, pore tubes reddish brown, up to 3.8 cm long.

Microscopic characters Hyphal system dimitic. Generative hyphae hyaline, much branched, with clamp connections, frequently inflated thin-walled or slightly thick-walled, 2-4 μm wide, often empty, collapsed, partly gelatinized, and formed by anastomosis of small pseudoparenchymatous scattered patches in the deeper context and in trama. Skeletal hyphae hyaline, thick-walled, more easily visible in fresh material, dextrinoid, flexuous usually with distinct lumina, often irregularly inflated, unbranched, occasionally with two or more much narrower tortuous apical branches, 3.5-7.0 μm wide. Basidia large clavate, 25.0-32.2 $\times$ 5.6-9.6 μm , 4-sterigmate, collapsed in dry basidiocarp. Basidiospores hyaline, slightly thick-walled, smooth, navicular to fusiform, guttulate, 11.2-12.6 $\times$ 4.2-5.6 μm . Cystidia present, extending beyond the hymenial layer, hyaline, slightly thick-walled, swollen and fusoid, weakly dextrinoid, 35.0-42.0 $\times$ 14.2-21.0 μm .

Host *Aegle marmelos* Corr., *Casuarina equisetifolia* Forst., *Ficus religiosa* L., *Saraca indica* L., *Tamarindus indica* L.

Distribution It is not a very common fungus and has been collected from Burdwan (BRCMH 78141), Chittaranjan (BRCMH 80142) and Memari (BRCMH 90143).

Polyporus arcularius Batsch. ex fr. [Figs. 11 & 12]

Syst. Mycol. 1:342, 1821.

Basidiocarp annual, stipitate, stipe central, up to 3.5 cm long and 0.4 cm thick, white to light brown, pileus circular, soft, up to 2.5 cm in diameter and 3 mm thick; pileus surface

white to light brown, becoming darker on drying, with or without scales, may also be glabrous; margin with or without hairs; context white, straw coloured on drying, less than 1 mm thick; hymenial surface white to brownish, pores regular, large, hexagonal, 1-2 per mm, dissepiments thin, becoming lacerate, pore tubes up to 2 mm thick.

Microscopic characters Hyphal system dimitic. Generative hyphae hyaline, clamped, thin-walled or thick-walled, but lumina prominent, branched, 2.5-5 μ m wide, some inflated, up to 12 μ m wide. Binding hyphae hyaline, thick-walled to solid, branched, 2-10 μ m wide, much narrower branches often arising from wider stems, up to 15 μ m wide. Basidia 4-sterigmate, 18-25 $\times$ 5-6 μ m. Basidiospores hyaline, thin-walled, cylindric, slightly curved, smooth, 7-9 $\times$ 2.5-3 μ m.

Host *Shorea robusta* Gaertn.f.

Distribution It has been collected from Asansol (BRCMH 78121). Burdwan (BRCMH 78122), Khana (BRCMH 92123) and Ranigunj (BRCMH 88124).

Polyporus grammacephalus Berk. [Figs. 13 & 14]

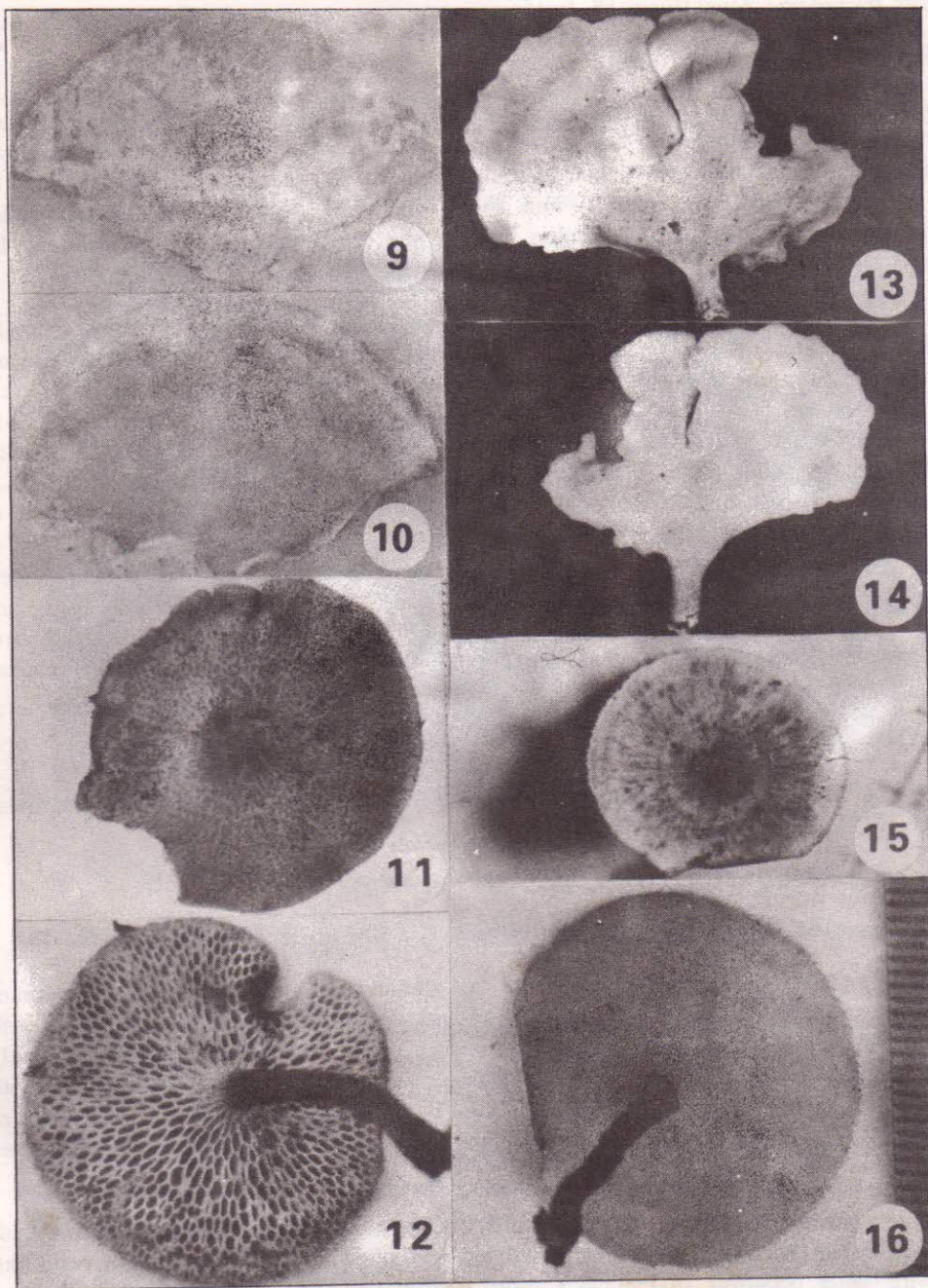
Hooker's London J.Bot. 1: 148, 1842. *Tyromyces grammacephalus* (Berk.) Cunn., N. Z. Dept. Sci. Ind. Res. Bull. 164, p.135, 1965.

Basidiocarp annual, solitary, laterally stipitate, with small stalk, tough when fresh, rigid on drying; pileus fan-shaped, obovate or reniform, 9-12 $\times$ 6-9 $\times$ 0.1-0.3 cm; upper surface smooth, glabrous, usually with fine striations, ochraceous to reddish brown; margin thin, entire or wavy; context straw coloured, corky, up to 0.2 cm thick; hymenial surface biscuit coloured to brownish, pores circular, 3-5 per mm, pore tubes up to 1 cm long; stalk up to 2 cm long, 0.6-0.9 cm thick.

Microscopic characters Hyphal system dimitic. Generative hyphae - (i) hyaline, generally thin-walled, occasionally slightly thick-walled, branched, clamped somewhat inflated, 2-5.6 μ m wide; (ii) hyphae pale brown, slightly thick-walled, bearing simple septa, up to 5 μ m wide; (iii) pale brown, slightly thick-walled to solid hyphae bearing clamp connections as well as simple septa and with interlocking projections, 2.8-4.2 μ m wide, formed at the pileus surface. Binding hyphae - (i) hyaline, aseptate, slightly thick-walled to subsolid to solid, freely branched with long tapering often kinked branches, up to 4.2 μ m wide, highly predominating in every region; (ii) frequently encountered hyaline, aseptate, thick-walled to solid fibre hyphae, 2.2-3 μ m wide arising as branches from wider, thick-walled to solid stems, 5-7.5 μ m wide. Slightly thick-walled, pale brown mass of pseudoparenchymatous cells found only at the base of the stipe. Basidia clavate, hyaline, thin-walled, 4-sterigmate, 18-21 $\times$ 6-8 μ m. Basidiospores hyaline, thin-walled, smooth, oblong, 5-7.5 $\times$ 2.4-3.2 μ m. Cystidiole hyaline, thin-walled, 20-24 $\times$ 5-6.4 μ m.

Host *Artocarpus integrifolia* L., *Butea monosperma* Taub., *Cocos nucifera* L., *Ficus religiosa* L., *Shorea robusta* Gaertn.f.

Distribution Asansol (BRCMH 7512), Bhedia (BRCMH 7513), Burdwan (BRCMH 7511), Durgapur (BRCMH 7514), Monteswar (BRCMH 7515), Panagarh (BRCMH 7616), Ranigunj (BRCMH 7917) and Satgachhia (BRCMH 8918).



Figs. 9&10. *Navisporus floccosus*. 9. Upper surface (x1/3) 10. Hymenial surface (x1/3).

Figs. 11&12. *Polyporus arcularius*. 11. Upper surface (x2) 12. Hymenial surface (x2).

Figs. 13&14. *Polyporus gramocephalus*. 13. Upper surface (x1/2) 14. Hymenial surface. (x1/2)

Figs. 15&16. *Polyporus tricholoma*. 15. Upper surface (x1¹/₄) 16. Hymenial surface (x2).

Polyporus tricholoma Mont.[Figs. 15 & 16]

Ann. Sci. Nat. Bot. II, 8: 365, 1837.

Basidiocarp annual, solitary, centrally stipitate tough when fresh, rigid on drying; pileus circular, convex to umbilicate, 1-3 cm diameter, 0.5-3 mm thick, yellowish or straw coloured, glabrous; margin very thin, densely ciliate with fine small hairs, involute on drying; context white, less than 1 mm thick; hymenial surface white, pores entire, somewhat angular 3-6 per mm, pore tubes up to 1 mm long; stipe brownish, glabrous, 1-3 × 0.15-0.3 cm.

Microscopic characters Hyphal system dimitic. Genetative hyphae - (i) hyaline, generally thin-walled, branched with clamp connections and simple septa, 1.5-3 µm wide, some are slightly thick-walled and inflated, up to 7 µm wide; (ii) pale brown, thin-walled to very slightly thick-walled, branched, with simple septa and clamp connections, 4-5 µm wide, found only in the pileus surface. Binding hyphae hyaline, aseptate, irregularly wide, slightly thick-walled to subsolid, up to 8 µm wide, frequently with abruptly attenuate, subsolid to solid ends, freely branched, branches long, tapering, subsolid to solid, fibre-like and of uniform width, 1.5-3 µm wide. Thin to very slightly thick-walled pale brown mass of pseudoparenchymatous cells found only in the central depression on the pileus surface. Chlamydospores hyaline, thick-walled, oval to dumbbell shaped, 11-28 × 8-10 µm, intercalary. Basidia hyaline, broadly clavate, 4-sterigmate, 7-12 × 3-5 µm. Basidiospores hyaline, smooth, thin-walled, oblong, apiculate, 3.5-7 × 2-4 µm. Hyphal pegs conical, projecting 30-35 µm beyond the level of the basidia.

Host *Tectona grandis* L.f.

Distribution It is a very rarely occurring species and has been collected only from Burdwan (BRCMH 75111).

Trametes cingulata Berk. [Fig.17]

Hook. J. Bot. 6:164, 1854

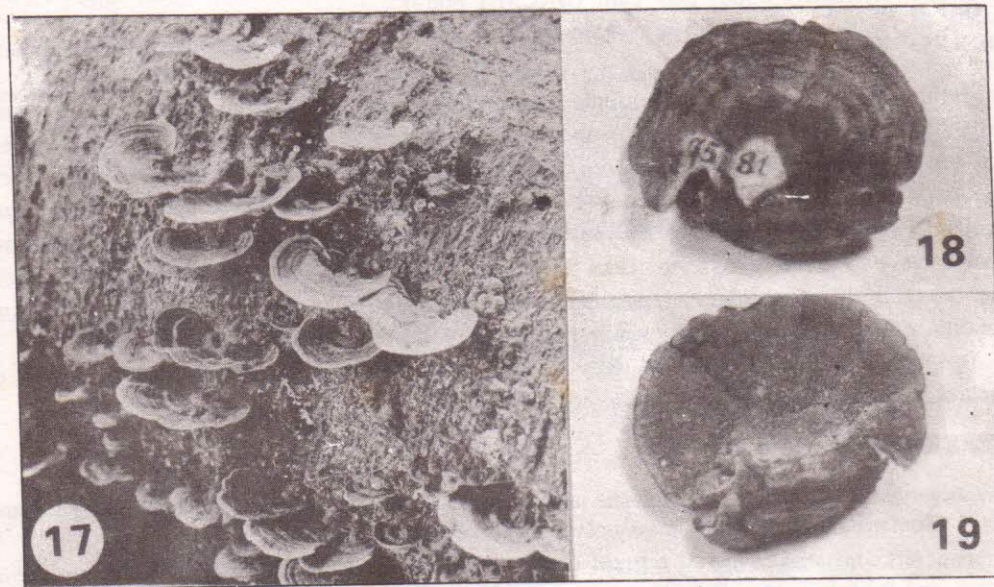
Basidiocarp annual, mostly solitary, sessile to dimidiate, rarely imbricate, sometimes substriptate, coriaceous when fresh, soft corky on drying, 4-8 × 3.5-5 × 0.3-0.5 cm; margin sterile, acute; upper surface white to cream, later becoming sooty black, finely matted tomentose when young, glabrous later, concentrically zoned, sometimes with prominent black zone lines; context up to 3 mm thick, cream coloured; hymenial surface white, with a silky sheen particularly when fresh, pore circular to slightly angular, 3-5 per mm, pore tubes white, up to 3 mm long.

Microscopic characters Hyphal system trimitic. Generative hyphae hyaline, thin-walled, clamped, 2-3.5 µm wide, some terminally inflated and filled up with dark brown resin-like contents, the latter occurring in the black sooty part of the pileus surface. Skeletal hyphae hyaline, thick-walled to solid, more or less straight, unbranched or rarely with short branches at distal ends, 2.5-4.5 µm wide. Binding hyphae hyaline, thick-walled to solid, with long or short branches, branches flexuous with tapering ends, 1.5-2.5 µm wide. Basidia cylindric-clavate, 4-sterigmate, 9-15 × 4-5.5 µm. Basidiospores hyaline, thin-walled, smooth, short cylindric, 3-5.5 × 2-3 µm.

Host : *Cocos nucifera* L., *Shorea robusta* Gaertn.f.

Distribution It occurs very frequently. It has been collected from Anda (BRCMH 7541), Asansol (BRCMH 7542), Bhedia (BRCMH 7543), Burdwan (BRCMH 7544), Durgapur (BRCMH 7645), Kalna (BRCMH 7746), Memari (BRCMH 7847), Panagarh (BRCMH 7848),

Trametes hirsuta (Wulf. ex. Fr.) Pil. [Figs.18 & 19]



Figs. 17. *Trametes cingulata*. 17. Upper surface (x1/4).

Figs. 18&19. *Trametes hirsuta*. 18. Upper surface (x1/2) 19. Hymenial surface (x1/2).

Atl. Champ. Europe 3: 265, 1939. *Polyporus hirsutus* Wulf. ex Fr., Syst. Mycol. 1:367, 1821.

Basidiocarp usually annual, occasionally reviving in the second season, sessile or effused-reflexed, solitary or imbricate, dimidiate, applanate, sometimes reniform, corky-coriaceous when fresh, rigid on drying, $2-6 \times 2.5-8 \times 0.1-1$ cm; upper surface white or yellowish, strongly hirsute, often velvety, concentrically zonate; margin thin, even; context white to woody-brown, coriaceous, up to 0.5 cm thick; hymenial surface white to yellowish brown, smooth, pores regular, circular or angular, 2-3 per mm, pore tubes up to 0.5 cm long.

Microscopic characters Hyphal system trimitic. Generative hyphae hyaline, thin-walled, clamped, $2-4 \mu\text{m}$ wide. Skeletal hyphae hyaline, thick-walled to solid, straight or slightly tortuous, rarely branched, with tapering apex, $2.8-5.6 \mu\text{m}$ wide. Binding hyphae hyaline, thick-walled to solid, of two types (i) with long, tapering branches, $2-4.2 \mu\text{m}$ wide, (ii) with short, much curled branches, giving a coralloid appearance, $1.5-3 \mu\text{m}$ wide. Basidia clavate, 4-sterigmate, $12.6-16 \times 4-5.6 \mu\text{m}$. Basidiospores hyaline, thin-walled, cylindrical,

apiculate, $4.5-7.2 \times 1.5-3 \mu\text{m}$. Hyphal pegs conical, composing a bundle of thin-walled generative hyphae and projecting $17.5-24.5 \mu\text{m}$ beyond the hymenial layer.

Host *Acacia arabica* Willd., *Salmalia malabarica* Schott. & Endl., *Shorea robusta* Gaertn.f.

Distribution It is a very commonly occurring fungus. It has been collected from Asansol (BRCMH 8088), Burdwan (BRCMH 7581), Durgapur (BRCMH 7689), Katwa (BRCMH 7682), Ketugram (BRCMH 7883), Panagarh (BRCMH 7884), Ranigunj (BRCMH 7985), Saktigarh (BRCMH 8086) and Talit (BRCMH 8087).

DISCUSSION

In India *Polyporus tricholoma* Mont. has been recorded only from Burdwan (Bilgrami *et al.* 1979, 1981; Sarbhoy *et al.* 1986) and it was reported by Roy and De (1977). However, of the ten species described here 6 are trimitic and 4 are dimitic. Of the 4 dimitic species, *Flavodon flavus* possesses generative and skeletal hyphae while 3 species of *Polyporus* namely *Polyporus arcularius*, *Polyporus gramocephalus* and *Polyporus tricholoma* possess generative and binding hyphae. Due to presence of dimitic and trimitic hyphal systems all the ten species of polypores described here have been able to cope up with the climatic condition of Burdwan district which remains dry during the greater part of the year. This is in accord with the view of Roy (1982) who opined that the hyphal anatomy of a species is closely linked with its ecology.

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(Accepted for publication 10 August 1996)