

ASCOMYCOTINA



c) Result and Discussion :

Family - Ophiostomataceae, Muller & Von Arx. ⁱⁿ The Fungi An
Advanced Treatise, 4 A: 621, 1973.

This family belongs to the order Sphaeriales (Pyrenomycetes) and characterised by its well developed hyaline superficial mycelium. Perithecia spherical, dark brown to black mostly immersed with long beak, astomatous. Ascospores, small, mostly brown, one-celled, spherical, smooth. This family include four genera (Muller & V.Arxx, 1973).

G. - CERATOCYSTIS

Ceratocystis Ellis and Halsted; N.J.Agr.Expt. Sta. Bull. 76 :
14, 1890; Jour. Mycol., 7: 1, 1891.

Ellis and Halsted established the genus Ceratocystis in 1890. It belongs to the family Ophiostomataceae (Pyrenomycetes) and characterised by dark coloured perithecia with long necks, frequently ornamented with ostiolar hyphae; asci irregularly arranged and evanescent; ascospores unicellular, thick-walled and dark. The genus is known by 210 species and 5 varieties. Four species are known ^{from} in India.

Type species : C. fimbriata Ell. and Halsted

C. angusticollis Wright and Griffin, Can.J.Bot., 46, 697, 1968.

(Text Plate-VII - Figs. 1-2)

Overgrowing on the colonies mostly on lower side of the leaf. Mycelium branched, septate, and hyaline 2-3 μ m wide. Perithecia superficial, black, glabrous, 40-100 μ m at the basal part in diameter, neck often swollen at the base upto 200-250 μ m long. Asci evanescent and not seen, slimy mass of ascospores come at the mouth of the ostiolar neck after the asci which have been evanescent. Ascospores unicellular, brown, elliptical, 2-5 μ m long, thick-walled and smooth.

Habit : Overgrowing on the colonies of Meliola memecyli Syd. & Syd. on the leaves of Memecylon umbellatum Brum. CF. - Melastomataceae), Anmod (K.S.), 23-1-1995, Miss Anjali M.Patil, HClO No. 2 and WIF. No. 1

Remarks : Wright and Griffin (1968) have recorded this species on woods of Abies balsmea, L.Mill. Pinus resinosa Art and P. strobus, L. from Ontario (Canada). The present collection as to compare with this species matched well in respects of morphology and dimensions of perithecia and ascospores and thus, referred to it. It makes a new record to the fungi of India. Present collection differs from this species only in respect of its mycoparasitic habit, otherwise it is quite identical.

Family - Dimeriaceae Muller and v. Arx, Die gattungen der didymosporen pyrenomyceten Beitr. Kryptog Flora schweiz II, 2 922, 1962.

This family was established by Muller & v. Arx in 1962. It is characterised by its parasitic mycelium mostly superficial, septate, branched, brown and parasitic species enter the host through the stomata. Pseudothecia superficial borne on or from the hyphae, mostly dark glabrous or setose usually ostiolate. Asci parallel or fasciculate, cylindrical or saccate and bitunicate. Ascospores ellipsoidal or fusiform one or many septate, hyaline or brown, paraphyses mostly filamentous, septate and hyaline. The family having about 17-19 genera (v. Arx & Muller 1975). Conidial states forming small blastoconidia in pycnidial cavities with form genera viz. Ectosticta and Cininnobella are known in taxa which are generally mycoparasitic especially foliicolous ectoparasites viz. Asterinaceae and Meliolaceae genera. v. Arx & Muller (1975) have key out the genera

Type genus : Dimerium Sacc. and Sydow

Key to mycoparasitic genera of this family studies :

I	Ascospores 2-celled (rarely one-celled)	...	2
I	Ascospores 3 or many celled	...	<u>Phragmeriella</u>
2	Ascomata setose (especially around the ostiole) ..	<u>Phaeodimeriella</u>	
2	Ascomata glabrous	...	3
3	Ascospores brown when ripe	...	<u>Dimerium</u>
3	Ascospores hyaline	...	<u>Dimerina</u>

G. - DIMERINA

Dimerina Theissen, Beih. Bot. Centbl. II. 29 : 46. 1912.

Theissen has established this genus in 1912 with the type species D. andirae (P.Henn.) Hansford and the genera viz. Plactogene Theiss. (1916), Dimerinopsis Syd. (1917) and Stigma Syd. (1917) were made as synonyms (Muller et al., 1975). It belongs to the family Dimeriaceae and characterised by pseudothecia superficial on the mycelium, globose to ovoid, glabrous, dark brown to dark olivaceous brown, wall parenchymatous, soft to leathery, membranous, usually with apical pore. Asci many, basal, fasciculate, bitunicate, saccate to cylindrical, 8-spored and sub-sessile. Ascospores one-septate, hyaline, oblong, thin-walled and smooth. It is known by 12 species. There is no record of this genus in India (Bilgrami et al., 1979, 81). The species are mostly mycoparasitic on Meliolaceous fungi. It has its conidial state that belongs to form genus Ectosticta Spegazzini. Hansford (1946) has studied many species and also provided the key. It is a new generic record to the fungi of India.

Type species : D. andirae (P.Henn.) Hansford.

D.parasitica (Sacc.) Hansford, Mycol. Pap., 15 : 55, 1946.

Basio. = Melanopsamma parasitica Sacc., Hedwigia, 38, Beibl, 113, 1899.

(Text PL VII - Figs. 3-4)

Overgrowing on the follicolous colonies mostly on upper side of the leaf. Mycelium branched, subhyaline, septate, reticulate and 1.5-3 μ m wide. Pseudothecia superficial, scattered, dark olivaceous-brown, smooth, ostiolate, globose and 50-90 μ m in diameter. Asci clavate, bitunicate, cylindrical, subsessile, 8-spored and 25-35 X 8-15 μ m. Ascospores biseriate, hyaline, smooth, one-septate, slightly constricted and 11-13 X 4-6 μ m. Conidial state not observed.

Habit : Overgrowing on the colonies of Meliola canthi Hansf. on the leaves of Canthium umbellatum Wt. (F.-Rubiaceae) and M. puerariae sp. nov. on the leaflets of Pueraria ruberosa DC. (F.-Fabaceae), Vishalghar (Dist.- Kolhapur) and Kankumbi (K.S.), 25-11-1994 and 24-1-1995, M.S.Patil and Miss T.V.Shinde respectively. HCIO Nos. 9 and 6 and WIF. Nos. 9 and ?

Herb
not?

Remarks : Saccardo (1899) has reported this species as Melanopsamma parasitica Sacc. on the colonies of Meliola woodianae Bl. on Woodia sp. (F. - Asclepiadaceae) from Natal (S.Africa). Then, Hansford (1946) restudied Saccardo's collection and transferred this species to the genus Dimerina on the basis of the small, medium sized, smooth, ostiolate ascomata and 2-celled, hyaline ascospores and proposed a new combination as D.

parasitica (Sacc.) Hansford. The present collection (as to) compare with this species matched well in respects of morphology and dimensions of ascomata as well as ascospores which are hyaline, smooth, one septate and thus, referred to it. It makes a new record to the fungi of the India.

(G.) - DIMERIUM

Dimerium Sacc. and Sydow, Syll. Fung., 17 : 537, 1905.

Saccardo and Sydow have established this genus in 1905 with D. pulveraceum (Speg.) Theissen as the type species and Bolosphaeria Syd. (1917), Phaeostigma Syd. (1917), Porostigma Syd. (1917) Phaeocapnodinula Speg. (1923), Pseudodimerium Petrak (1924) and Episoma Syd. (1925) were merged with it as synonyms (v. Arx and Muller, 1975). It belongs to the family Dimeriaceae and characterised by its pseudothecia which are superficial, globose to ovate, conoid, smooth and brown to dark brown. Ascospores elongate, pale to dark brown, 1-septate, thin-walled and smooth. It is known by 16 species. In India, six species have been reported (Bilgami et al., 1979⁸¹). The species are mostly parasitic on the members of the family Meliolaceae. Its conidial states belonged to the form genera viz. Cicinnobella Speg. and Ectosticta Spegazzini.

Type species : D. pulveraceum (Speg.) Theissen

(1979, '81)

D. meliolicola (Petrak) Hansford, Mycol.Pap., 15 : 77, 1946.

Basio. = Pseudodimerium meliolicolum Petrak, Ann.Mycol.Berl.,
22 : 21, 1924.

(Text PL. VII - Figs. 5-6)

Overgrowing on the foliicolous colonies mostly on both sides of the leaf. Mycelium branched, subhyaline, septate, and 2.5-3.5 μ m wide. Pseudothecia superficial, scattered, dark brown, smooth, non-ostiolate, globose and 95-115 μ m in diameter. Asci numerous, bitunicate, paraphysate, sessile, clavate, 8-spored and 55-70 X 11-15 μ m. Ascospores biseriate, one-septate, thin-walled, smooth, brown and 11-15 X 3-4.5 μ m. Conidial state not observed.

Habit : Overgrowing on the colonies of Meliola memecyli H. and P.Syd. on the leaves of Memecylon umbellatum Brum. (F.- Melastomataceae), Kankumbi (K.S.), 24-1-1994, Miss T.V.Shinde, HCIO No. 9 and WIF. No.)

Remarks : Petrak (1924) has reported this species as Pseudodimerium meliolicolum Petrak on the colonies of Meliola nidulans on the leaves of Vaccinium myrtillus Mora. (Ericaceae) from Proto Rico. Hansford (1946) restudied Petrak's collection and transferred it to the genus Dimerium on the basis of its medium sized, smooth, dark-brown ostiolate ascomata; 2-celled, brown coloured ascospores and proposed a new combination as D meliolicola (Petrak) Hansford. The present collection as to

compare with this species, matched well in respects of morphology and dimensions of ascomata as well as ascospores which are brown, smooth, one-septate, constricted at the septa and thus, referred to it. It makes a new record to the fungi of India.

G. - PHAEODIMERIELLA

Phaeodimeriella Spegazzini, Rev. Mus. La Plata, 15: 13, 1908.

= Chaetostigmella Syd., Ann. Mycol. Berl., 15 : 199, 1917.

Spegazzini has established this genus in 1908 based on its type species viz. P. occulta (Rac.) Theissen. Sydow's genus Chaetostigmella has been merged with it as a synonym (v. Arx and Muller, 1975). It belongs to the family Dimeriaceae and characterised by its mycoparasitic habit on foliicolous ascomycetous fungi. Pseudothecia superficial, globose, dark brown, setose, usually with an ostiole. Asci basal, cylindric, 8-spored and bitunicate. Ascospores one-septate, small, brown coloured, oblong and smooth. The genus is known by its 10 species (v. Arx & Muller, 1975). In India only one species has been recorded (Thirumalachar, M.J. and R.C. Lacy 1951). The species are mostly parasitic on Meliolaceous fungi and without conidial state. *known!*

Type species : P. occulta (Sacc.) Theissen

P. cantareirensis (P.Henn.) Hansford, Mycol. Pap., 15 : 67, 1946.

Basio. = Asterina cantareirensis P.Henn., Ann.Mycol. Berl., 10:8, 1912.

(Text PL. VII - figs. 7 & 8).

Overgrowing on the foliicolous colonies mostly on upper side of the leaf. Mycelium branched, subhyaline, septate and 2 μ m wide. Pseudothecia in groups, 50-90 μ m in diameter, ostiolate, brown and setose. Setae olivaceous-brown. Simple, straight, spreading all over the surface and 50 μ m long. Asci numerous, bitunicate, clavate-cylindric, 8-spore and 40-55 X 6-10 μ m. Ascospores one-septate, hyaline, non-constricted, smooth and 7-2 X 4 μ m.

Habit : Overgrowing on the colonies of Asteridiella atricha (Speg.) Hansford on the leaves of Eugenia sp. (F.-Myrtaceae) and Meliola mappiae Patil on the leaves of Mappia foetida Miers. (F. - Icacinaceae). Amboli (M.S.) and Jamboti (K.S.), 22-2-1989 and 25-1-1994, C.R.Patil and Miss T.V.Shinde respectively, HClO. Nos. 9 and 9 and WIF.Nos. 9 and 9.

Remarks: Hennings, P. (1908) has reported this species as Asterina cantareirensis P.Henn. on the leaves of Couepia sp. (F.-Rosaceae) from Brazil. Then Hansford (1946) restudied Hennings collection and transferred it to the genus Phaeodimeriella on the basis of its small, setose ascomata as well as ascospores which are one-septate, hyaline and smooth and thus, proposed a new

combination as P. cantareirensis (P.Henn.) Hansford. The present collection as to compare with this species, matched well in respects of morphology and dimensions of ascomata as well as ascospores which are hyaline, smooth, one-septate and also myco-parasitic on Meliola and thus, referred to it. It makes a new record to the fungi of India.

G. - PHRAGMERIELLA

Phragmeriella Hansford, Mycol.Pap., 15: 89-90, 1946.

Hansford has established this genus in 1946 with the type species viz. P. ireninae Hansford. It belongs to the family Dimeriaceae and is characterised by pseudothecia which are superficial, almost black, setose, globose, 80-100 μ m in diameter with ostiole; setae erect spreading, straight, acute, thin-walled, hyaline, septate. Asci basal, bitunicate, paraphysate, clavate cylindrical and 8-spored. Ascospores hyaline, fusoid-ellipsoid with rounded ends and 3-septate. It is known by only its type species. There is no record of this genus in India. It is myco-parasitic on Meliolaceous fungi and without conidial state. It is a new generic record to the fungi of the India.

Type species - P. ireninae Hansford

Key to species :

- | | | | |
|----|--|-----|-------------------------|
| 1. | Pseudothecia dark brown to black | ... | 2 |
| 1 | Pseudothecia almost hyaline (colourless) | ... | 3 |
| 2 | Ascospores fusoid-ellipsoid, 3-septate and
13-15 X 4-5 μ m. | ... | <u>P. ireninae</u> |
| 2 | Ascospores ellipsoid, 3-septate,
18-20 X 8-9 μ m. | ... | <u>P. pachydermatus</u> |
| 3 | Pseudothecia less than 100 μ m in diameter | ... | <u>P. fusiformis</u> |
| 3 | Pseudothecia more than 100 μ m in diameter | ... | 4 |
| 4 | Ascospores clavate - fusoid, 3-septate,
guttulate and 29-31 X 4-5 μ m. | ... | <u>P. clavatispora</u> |
| 4 | Ascospores fusiform, 4-septate, central cell large
and septa confined to terminal, 30 X 6 μ m | ... | <u>P. quariseptata</u> |

P. clavatispora sp.nov.,

(Text Fig. VII - Figs.1-3; Text PL.VIII - Figs. 1 & 2)

Mycelium in plagulis Meliola parasitans; hyphis hyaline, septatis, ramosis, dense reticulatis, 2-3 μ m latus. Pseudothecia superficialia, dispersa, hyalinis, setosis, globosa, 130-170 μ m in diametro. Setae desepse, superficies, septatus, 55-65 μ m longa. Asci clavato-sessile, 8-sporae, apophysati bitunicati, 60-80 X 12-15 μ m. Sporae clavato-fuscoides, hyalinis, 3-septatus, guttulatus, 30 X 5 μ m, pachyermatus, glabrus; conidial status non visa.

Holotypus : Mycoparasitans in plagulis Meliola memecyli H.& P.
in
Syd. Memecylon umbellatum Burm./foliis Memecylon (F.- Melastomataceae), Kankumbi (K.S.). 24-1-1994, Miss T.V.Shinde et positus in HCIO No. 9 (a typus). ——— 9 Kerala

Overgrowing on the foliicolous colonies mostly on upper side of leaf. Mycelium branched, hyaline, septate and 2-3 μ m wide. Pseudothecia superficial, scattered, hyaline, ostiolate, globose, setose and 130-170 μ m in diameter. Appendages spread all over the surface, septate, crowded and hyaline, thick-walled, tapering towards the apex, and some measured 55-65 μ m long. Asci clavate, bitunicate, sessile, 8-spored, apophysate and 60-80 X 15-20 μ m. Ascospores clavate-fusoid, 3-septate, upper cell short, basal cells long, guttulate, 30 X 5 μ m, hyaline, smooth, thin-walled and non-constricted at the septa. Conidial state not observed.

Holotype : Overgrowing on the colonies of Meliola memecyli H. and P. Syd. on leaves of Memecylon umbellatum. Burm. (F.-Melastomataceae), Kankumbi (K.S.). 24-1-1994, Miss T.V.Shinde, HCIO No. _____ (a type) *Herb nos?*

Remarks : So far the review of the literature is concerned, it is found that the genus Phragmeriella is known by only its type species viz. P. ireninae Hansford. It is mycoparasitic on Ireninae tremae (Speg.) Hansf. on the leaves of Trema guineensis L. The present collection has been compared with the type species (Table 10). It is observed that, the present collection differs from the type species in respects of pseudothecia which are hyaline and large; setae appendages hyaline and septate; asci longer; ascospores are clavate-fusoid, longer and guttulate and therefore, a new species has been proposed viz P. clavalispora sp. nov. to accommodate the present collection.

Etymology : (L. Clavatus, club-shaped; spore, seed) referring to the morphology of the ascospores which are club-shaped.

P. fusiform sp.nov.,

(Text Fig. VII - figs. 4-6; Text PL. VIII - Figs 3 & 4)

Mycelium in plagulis Meliola parasitans; hyphis hyalinis, septatis, ramosis, dense reticulatis 2-4 μ m latus. Pseudothecia superferrficialia, dispersa, hyalinis, setosus, globosa and 60-90 μ m in diametro. Setae desperse holo hyper superficies, septatus

30-60 μm longa. Asci clavato, sessiles, 8-sporae, aparthysati, 33-43 X 12-6 μm . bitunicati, ascosporeae hyalinis, fusiformis, lenis, 3-septatus, 11-13 X 4.5-5 μm . Conidial status non-visa.

Holotypus : Mycoparasitans in plagulis Meliola diospyri H. and P. syd. in foliis Diospyrus montana L. (F.- Ebenaceae), Kankumbi (K.S.), 24-1-1994, Miss T.V.Shinde et positus in HCIO No.

(a typus).

Overgrowing on the foliicolous colonies of Meliola mostly on upper side of the leaf. Mycelium sparse, branched, hyaline, septate and 2-2.5 μm wide. Pseudothecia superficial, scattered, ostiolate, hyaline, scattered all over the surface, crowded, straight, rigid / septate or non, taper thin-walled, 30-60 μm in length. Asci clavate, sessile, bitunicate, 8-spored, aparthysate and 33-43 X 12-16 μm . Ascospores hyaline fusiform, smooth, 3-septate, all cells are of equal length, sometime with vertical septum, 11-13 X 4.5-5 μm , thin walled, non-constricted at the septum.

Holotype : Overgrowing on the colonies of Meliola diospyri H. and P.Syd. on the leaves of Diospyrus montana L. (F.- Ebenaceae). Kankumbi (K.S.), 24-1-1994, Miss T.V.Shinde, HCIO Nos.

(a type).

Remarks : So far the review of the literature is concerned, it is found that the genus Phragmeriella is known by only its type species viz. P. ireninae Hansford. The present collection has been compared with the type species (Table 10). It is observed

that the present collection differs from the type species in respects of ~~pseudothecia~~ which are hyaline; appendages are scattered, many and hyaline; asci and ascospores are also smaller. Some ascospores rarely having vertical septa; and therefore, a new species has been proposed viz. P. fusiformis sp. nov. to accommodate the present collection.

Etymology - (L. Fusiformis fusiform) referred to the shape of the ascospores which are fusiform.

P. pachydermatus sp. nov.

(Text Fig. VIII - Figs.1-3; Text PL.VIII - Figs.5 & 6).

Mycelium in plagulis Meliola parasitans, hyphis, hyaline, septatis, ramosis, dense reticulatis 2-3 μ m latus Pseudothecia superficialia, dispersa, hyalinis, setosis, globosa 80-100 μ m in diameter. Appendicula dispersa, holo hyper superficies, ^{non} septatus. 50-70 μ m longa. Asci clavato-cylindric, sessile, a paraphysati, 8-sporae 33-43 X 12-16 μ m. Spores ellipsoide, hyalinis, lenis, 11-13 X 4.5-5 μ m. — Septatus? Cuds? ?

Holotypus : Parasitans in plagulis Meliola memecyli H. and P.Sydow, in foliis Memecylon umbellatum Burm. (F.-Melastomataceae) Kankumbi (K.S.), 24-1-1994, Miss T.V.Shinde et positus in HCIO No. and WIF. No. Herb not?

Overgrowing on the foliicolous colonies of Meliola mostly on upper side of the leaf. Mycelium branched, hyaline, septate,

and 2-3 μm wide. Pseudothecia superficial, scattered, hyaline; globose, setose and 80-100 μm in diameter. Appendages spread all over the surface, ^{non} septate, crowded, hyaline straight or tapering towards apex measured 50-70 μm long. Asci clavate, sessile, 8-spored, bitunicate aparaphysate and 33-43 X 12-16 μm . Ascospores ellipsoid, hyaline, smooth, 3-septate all cells of equal length, non-constricted, thick-walled and 18-20 X 8-9 μm . conidial state not observed.

Holotype : Overgrowing on the colonies of Meliola memecyli H. memecylon and P.Syd. on the leaves of umbellatum Burm. (F.-Melastomataceae), Kankumbi (K.S.), 24-1-1994, Miss T.V.Shinde, HCIO No. and WIF. No.

Remarks : (So) far the review of literature is concerned it is found that the genus Phragmeriella is known by only its type species viz. P. ireninae Hansford. It has been recorded as parasitic on Irenina tremae (Speg.) Hansf. on the leaves of Treme guineensis L. The present collection as (to) compare with the type species shows ^a number of differences (Table 10). It differs in respects of the colour of pseudothecia which are hyaline appendages numerosus and also hyaline, septate and longer, asci slightly longer, ascospores thick-walled, non-constricted at the septa and also larger and therefore, a new species viz. P. pachy sp.nov. has been proposed to accommodate the present collection.

Etymology : Pachy (Gr. Pachus, thick) referring to ascospores having thick wall.

P. quadriseptata sp.nov.

(Text Fig. VIII - Figs. 1-3; Text PL.VIII - Figs. 7-8)

Mycelium in plagulis Meliola parasitans, hyphis hyalinis, septatis ramosis, dense reticulatis 2-3 μ m latus. Pseudothecia superficialia, dispersa, hyalinis, setosus, globosa 120-150 μ m in diameter. Appendicula desperse holo hyper superficies, 30-50 μ m longa, septatus. Asci clavato, sessile, 8-sporae, aparaphysati, 75-86 X 15 μ m, sporae hyalinis fusiformis, levis, 4-septatis, 30 X 6 μ m.

Holotypus : Parasitans in plagulis Meliola memecyli Syd. and Syd. in foliis Memecylon umbellatum Brum. (F.- Melastomataceae), Kankumbi (K.S.), 24-1-1994, Miss T.V.Shinde et positus in HCIO No. and WIF. No.

Overgrowing on the follicolous colonies mostly on both side of leaf. Mycelium branched, hyaline septate, branched 2-2.5 μ m wide. Pseudothecia superficial scattered, hyaline, globose, setose and 120-150 μ m in diameter. Appendages hyaline, scattered all over the surface, septate, crowded smooth, straight thick-walled measured 30-50 μ m in length. Asci clavate-cylindric; bitunicate, 8-spored, aparaphysate and 75-86 X 15 μ m. Ascospores hyaline, fusiform, 4-septate, with larger central cell and terminal cells smaller due to the septa confined to terminal ends thin walled, non-constricted at the septa.

Holotype : Overgrowing on the colonies of Meliola memecyli H. and P.Syd. on the leaves of Memecylon umbellatum Burm. (F.-Mela-stomataceae), Kankumbi (K.S.), 24-1-1994, Miss T.V.Shinde, HCIO Nos. and WIF No.

Remarks : So far the review of literature is concerned, it is found that the genus Phragmeriella is known by only its type species P. ireninae Hansf. which is parasitic on Ireninae tremae (Speg.) Hansf. on the leaves of Trema guineensis. The present collection is also parasite on Meliola memecyli H. and P. Sydow, therefore, it has been compared with type species (Table 10). It differs from the type species in respects of Pseudothecia hyaline, larger, appendages many, septate, hyaline. Asci longer and ascospores fusiform hyaline, 4-septate central cell large, septa confined to both the ends and larger and therefore, a new species has been proposed viz. P. tetrasetata sp. nov. to accommodate the present collection.

Etymology : (L.- quator, four, L. septum - partition, pl. - septata).

Table 10 - Table of Comparison

No. Characters	<u>Phragmotiella</u> <u>ireniinae</u> Hansf.	Present collection No.1.	Present collection No.2	Present collection No.3.	Present collection No.4
1. Mycelium	Hyaline, branched, indistinctly septate 2-4 μ m wide	Hyaline, septate, branched and 2-2.5 μ m thick	Hyaline, septate branched and 2-3 μ m thick	Hyaline, septate branched and 2-2.5 μ m thick	Hyaline, septate, branched and 2-3 μ m thick.
2. Pseudothecia	Superficial, scattered black, setose, 80-100 μ m in diameter.	Superficial, scattered hyaline, setose 60-90 μ m in diameter.	Superficial, scattered, hyaline setose, 80-100 μ m in diameter.	Superficial, scattered, hyaline, setose, 130-170 μ m in diameter.	Superficial, hyaline, scattered, setose 120-150 μ m in diameter.
3. Appendage setae	Hyaline, scattered all over the surface crowded & dense, septate	Hyaline, scattered all over the surface, septate septate.	Hyaline, scattered all over the surface septate	Hyaline, scattered all over the surface, septate, many	Hyaline, scattered all over the surface septate, many
4. Asci	Clavate, apara- physate, bitunicate, sessile, or subsessile, 8-spored 50 X 10-14 μ m.	Clavate, sessile bitunicate, 8-spored, apapophysate, 33-43 X 12-16 μ m.	Clavate, sessile bitunicate, 8-spored, apapophysate 40-60 X 12.0 μ m	Clavate, sessile bitunicate, 8-spored apapophysate 40-60 X 12-0 μ m	Clavate, sessile, bitunicate, 8-spored apapophysate 75-80 X 15 μ m.
5. Ascospores	Hyaline, fusoid- ellipsoid with rounded ends smooth, 3-septate, slightly constricted 13-15 X 4-5 μ m.	Fusiform, hyaline smooth, 3-septate all cells of equal length, some has with vertical septum 11-13 X 4.5-5 μ m.	Ellipsoid, non- constricted, hyaline, 3-septate, upper cell short terminal 8-9 μ m, thick walled and smooth. guttulate 30 X 5	Clavate-fusoid, 3-septate, upper cell short terminal cell long, guttulate 30 X 5	Fusiform, hyaline, 4-septate, with central large cell and septa confined to both ends 30 X 6 μ m.
6. Fungus Host.	= <u>Asteridiella</u> <u>trema</u> (Speg.) Hansf. <u>Irenina tremae</u> Speg.	<u>Meliola diospyri</u> H. & P. Syd. <u>Meliola memecyli</u> Syd. H. & P.	<u>Meliola memecyli</u> Syd. H. & P.	<u>Meliola memecyli</u> Syd. H. & P.	<u>Meliola memecyli</u> Syd H. & P
7. Angiospermic Host	<u>Trema gunneensis</u> L. <u>montana</u> L. <u>Memecylon</u> <u>umbellatum</u> Burm.	<u>Memecylon</u> <u>umbellatum</u> Burm.	<u>Memecylon</u> <u>umbellatum</u> Burm.	<u>Memecylon</u> <u>umbellatum</u> Burm.	<u>Memecylon</u> <u>umbellatum</u> Burm.

which are these?

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