ADDITIONS TO SOOTY MOULDS OF MAHARASHTRA-III

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Abstract

The present paper describes *Meliola blepharidis* on *Blepharis asperrima* Nees. (Acanthaceae), *Clypeolella tectonae* on *Tectona grandis* L. (Verbenaceae) as new species and *Spiropes guareicola* (Stev.) Cif. on *Mangifera indica* L. (Anacardiaceae) as new host record and *Leptoxyphium bahiense* Bat & Cif. on *Gossypium arboreum* Linn. (Malvaceae) a new record from Maharashtra.

Introduction

The climatic conditions in Western Ghats are most suitable for the growth of Sooty mould fungi. A large number of Sooty mould fungi from this region have been reported by Thite and Kulkarni (1973, 1975, 1976) and Thite and Patil (1978, 1983). The present paper is in continuation of the previous studies in which four sooty mould fungi were described. The materials have been deposited in the Herbarium Cryptogamiae Indiae Orientalis, Division of Mycology and Plant Pathology, Indian Agricultural Research Institute, New Delhi.

1. *Meliola blepharidis* sp. nov.
(Text-fig. 1)

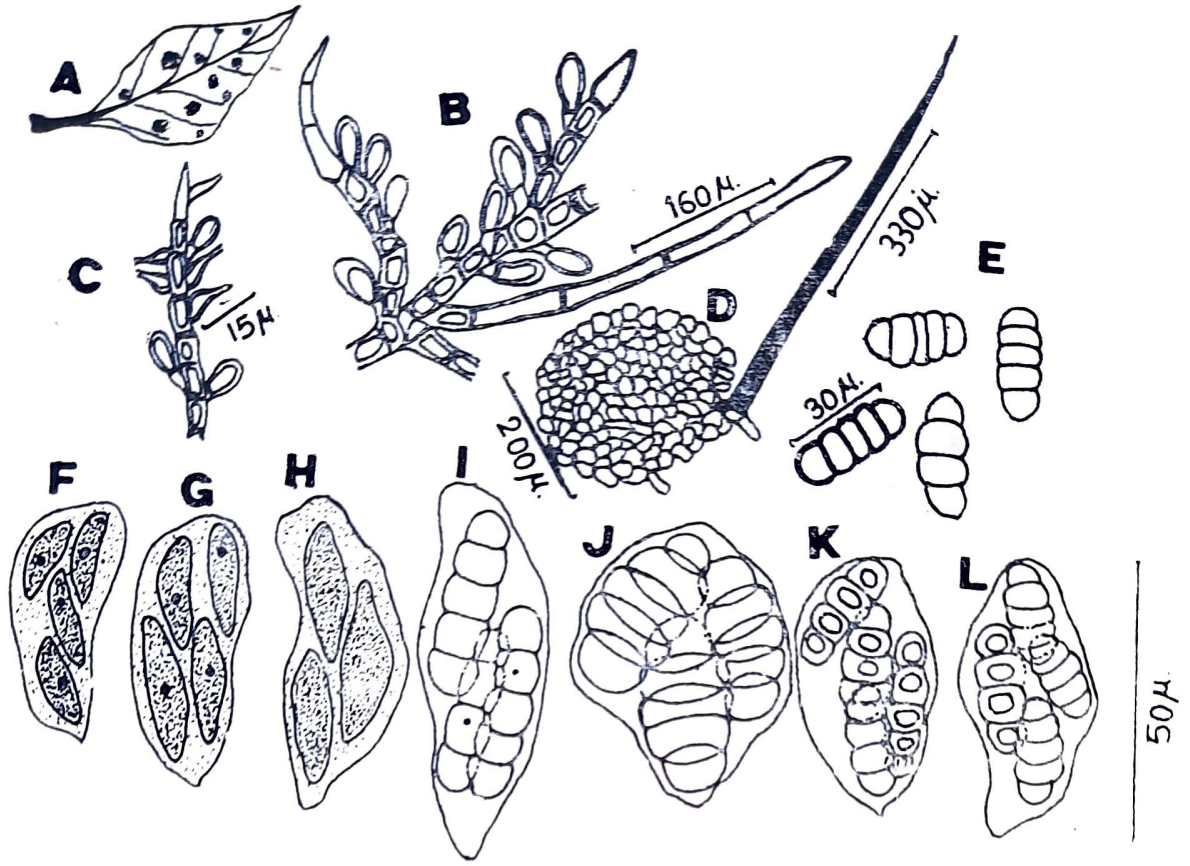
On the leaves of *Blepharis asperrima* Nees. (Acanthaceae) at Anmode & Amboli; Oct., 1976; A. N. Thite; Herb. No. HCIO 36360.

Hansford (1961) has reported about 12 species of *Meliola* Fries. on different hosts from the family Acanthaceae. *Blepharis asperrima* is a new host for the species of *Meliola*. In addition to host specificity the present fungus is not suitable to accommodate in any of the species because of its morphological characters. Therefore, it is described as a new species.

Infection amphigenous, colony up to 1.5 mm in diameter, colonies on upper surface thin and less than that of lower surface; velvety, mycelium setose and hyphopodiate; hyphae substraight, branching alternate or opposite with acute angles, closely reticulate; hyphal cells 13-20 × 10 μm; capitate hyphopodia alternate, straight or slightly bent, 18-24 (23.5) μm, stalk cell cuneate, 3-7 μm long, head cell ovate, 15-17 × 7-9 μm; mucronate hyphopodia mixed with capitate hyphopodia, opposite or alternate, ampulliform, 13-17 × 5-7 μm; neck elongate. Mycelial setae mostly around the perithecia, straight, flexuous, simple, obtuse-400 μm (mostly 390 μm) × 6-10 μm; perithecia scattered, elongate, globose, sub-ellipsoid, 300 μm in diameter. Ascospore ellipsoid, four septate, slightly constricted at septa, 30-35 × 13-17 μm and germinates by capitate hyphopodia in nature.

The present fungus differs from rest of the species by larger perithecia and ascospores. Asci are rarely two spored and generally four spored.

Thite (1973) has reported the two types of ascosporogenesis in *Meliola* Fries. In *Meliola osyridicola* Hansf. & Thirum; at eight nucleate stage of the ascus two quadri-



Text-fig. 1 : *Meliola blepharidis* : A—Habit; B—Mycelium with capitate, hyphopodia and setae; C—Mycelium with mucronate, hyphopodia; D—Ascocarp with setae; E—Ascospores; and F-L—Four spored Asci showing various stages of ascospores.

nucleate spores are formed which grow up to maturity. While in *Meliola jasminicola* P. Henn. *Meliola diospyricola* (Patil, 1984) and *Meliola circinance* (Graff, 1932) at eight nucleate stage four binucleate ascospores are formed. Out of these four only two grow to maturity and remaining two degenerate. In the present fungus during ascosporogenesis at eight nucleate stage four binucleate spores are formed, all of which grow to maturity. And there is no nuclear degeneration found in other species. So the mature asci are four spored. Very rarely two spored asci are also seen.

Meliola blepharidis sp. nov.

Dignosis—Infectio amphigenus, coloniae 1.5 mm diamitro, epiphyllus coloniis tenues et minor, hypophyllus coloniis plures velutinus, mycelium setoso; hyphae subrectae, ramificatione opposita vel alternata cum acutae argulos, arcte reticulatus, cellulae plerumque 13-20 × 10 μm; hyphopodia capitatae, alterna, rectae vel leniter flexus 18-24 (23.5) μ, cellulae stipitis cuneate, 3-7 μ, cellulae capitalis ovatus, 15-17 × 7-9 μm. Hyphopodis mucronata mixta capitatis hyphopodiis, alternata vel opposita, ampiilliformis 13-17 × 5-7 μ, collum elongato. Setae myceliales dispositae circa perithecia, simplices, obtusal, rectae, flexuosus, 400 × 6-10 μ. Perithecia dispersa, globosa subellipsoideus, 300 μ diamitro. Ascosporae ellipsoideus, 4-septatae; 30-35 × 13-17 μ. Ascosporae germino capitate hyphopodia.

Hab. in foliis *Blepheris asperrima* Nees. (Acanthaceae) ad

Anmode and Amboli, Oct. 1976, Leg. A. N. Thite, Herb. No. 36360.

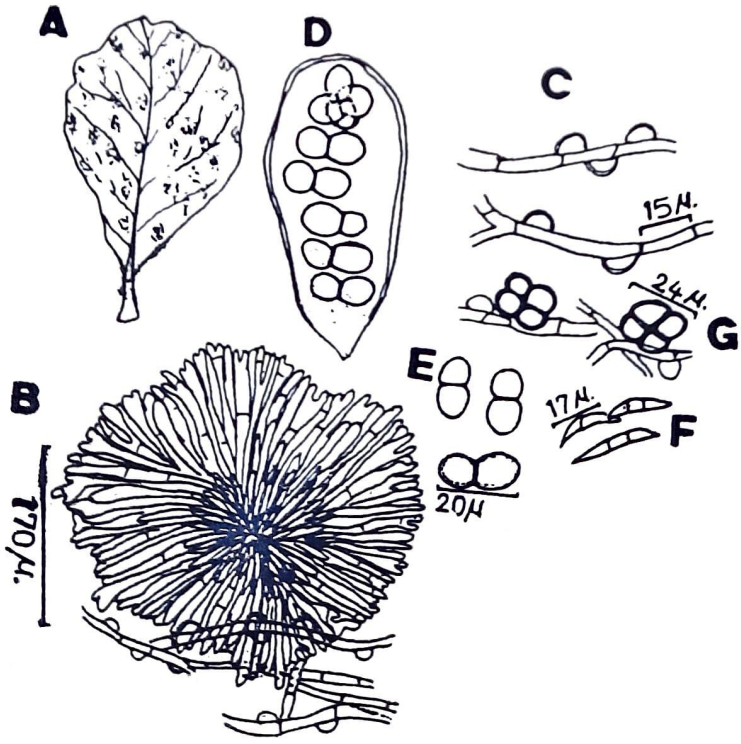
2. *Clypeolella tectonae* sp nov.
Text-fig. 2.

On the leaves of *Tectona grandis* L. (Verbenaceae) at Pet-lond, District-Sangli, Maharashtra, 21-12-81, C. R. Patil. Herb. No. H. C. I. O. 36359.

There are about 20 species of *Clypeolella* Hohnel described on the different hosts of the flowering plants from different family. But there is no previous report of the *Clypeolella* sp. on any host of the family Verbenaceae. On the basis of comparison of morphological characters and host specificity the present species of *Clypeolella* is described as a new to Science.

Colonies amphigenous, appear as minute spot, mycelium black or light brown, widely effuse, thin and subdense. Hyphae substraight, irregularly branched to form anastomous net work, 10-20 × 5-7 μm. Hyphopodia numerous simple, alternate, unilocular, semiglobose, rounded, one celled, 3-10 μm broad. Thyriothecia irregular, spreading orbicular, 100-200 μm in diameter, basal membrane hyaline, hyphae irregular, radiating, growing below the mycelium, asterinoid. At maturity contains numerous asci which are bitunicate, paraphysate, ovate, elliptical to clavate, eight spored, 30-50 × 9-17 μm. The ascospores elliptical, rounded at both ends, two-celled cells are unequal, constricted, 10-20 × 10 μm. Mycelium as that of *Schiffnerula* bears two type of conidia. The long *Helminthosporium* type conidia 17-20 × 4-7 μm, two septate, borne singly on short conidiophores. The globose *Sarcinella* type conidia are dark brown on short conidiophores, tetralocular, 24 μm in diameter.

The present fungus differs from rest of the species having larger thyriothecia and *Sarcinella* type quadrangular conidia and smaller ascospores.



Text-fig. 2 : *Clypeolella tectonae* : A—Habit, B—Thyriothecium, C—Hyphopodiate mycelium; D—Ascus with Ascospores, E—Ascospores, F—*Helminthosporium* type conidia, and G—*Sarcinella* type conidia.

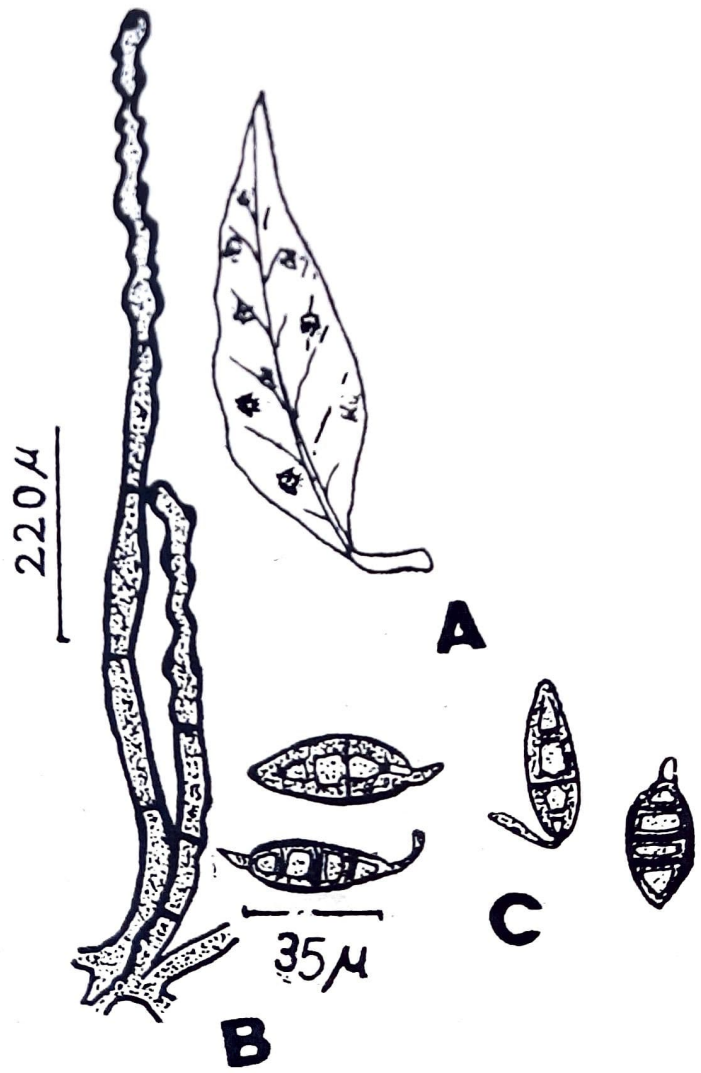
Clypeolella tectonae sp. nov.

Diagnosis—Plagulae amphigenae parum plerumque tenues, plus minus effusae. Mycelium nigricans vel brunneolus; Hyphae subrectae, reticulato ramosis, vel irregularis, sparsis et anastomosantibus 10-20 × 5-7 μ. Hyphophodiis simplex numerosa, alternatia vel unilocularibus, globosis vel subglobosis 3-10 μm lat. Thyriothecii irregularibus sparisis, orbicularis 100-200 μm diamitro; membruna basali hyalina Strato tegente pallide brunneo ex hyphis irregulariter radiantibus peripheriam; Asciis numerosi, bitunicatae, aparaphysate, ovati, ellipticus vel clavatus, octosporis 30-50 × 9-17 μm. Ascosporae ellipticus rotundatus ad uterque terminalis, bilocularis in aequalis, constrictis, 10-20 × 10 μm.

Conidis in mycelio sparsis, *Helminthosporium* typus conidis bilocularibus vel trilocularibus, terminalis ad uterque acutatis 17-20 × 4-7 μ. *Sarcinella* typus conidis globosus, fuscus, quadrangularus vel tetralocularibus, 24 μ diamitro.

Hab. in foliis *Tectona grandis* L. (Verbenaceae) ad Pet-lond, Dec. 1981, Leg. C. R. Patil, Herb. No. 36359.

3. *Spirospes guareicola* (Stev.) Cif. Sydowia, 9 : 303, 1955.
Text-fig. 3



Text-fig. 3. *Spirobis guaricola* : A—Habit, B—Conidiophores; and C—Conidia.

On living leaves of *Mangifera indica* L. (Anacardiaceae) at Pet-lond, (Dist. Sangli) Maharashtra, India, 10.1 83, C. R. Patil. Herb. No. H. C. I. O. 36361.

Ciferri (1955) has reported that this fungus was overgrowing as hyperparasite on colonies of *Asteridiella*, *Frenopsis* and *Meliola* on many different flowering plants. Subramanian (1956) has reported that *Spiropes guareicola* (Stev.) Cif. is growing on living leaves of unidentified host from Castle rock (Karnataka) and Maharashtra. The authors have collected it on living leaves of *Mangifera indica* L. Therefore this is a new host record for *Spiropes guareicola* (Stev.) Cif.

4. *Leptoxyphium bahiense* Bat. and Cif.

On the living leaves of *Gossypium arboreum* L. (Malvaceae), at Rajarampuri, Kolhapur (Dist. Kolhapur), Maharashtra, India; 12.2.84, C. R. Patil.

The species of *Leptoxyphium* Speg. occurring in the form of mixed effuse sooty moulds on leaves or frequently as nearly pure colonies, localised and restricted to scattered and solitary or to agreegated glandular trichomes on leaves.

Balasubramanian (1982) has reported *Leptoxyphium bahiense* Bat. & Cif. infecting the leaves of *Gossypium arboreum*, *G. barbadense* and *G. hirsutum* from Maras. The author has collected the same fungus on *Gossypium arboreum* Linn. from Kolhapur, which is a new record to the State of Maharashtra.

Acknowledgements

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References

BALASUBRAMANIAN, R. (1982). Occurence of *Leptoxyphium bahiense* Bat. & Cif. on the midrib of cotton leaves. *Curr. Sci.*, **51** : 941.

BILGRAMI, K. S., JAMALUDDIN & RIZWI, M. A. (1979). *Fungi of India. Part-I. List and References*. Today and Tomorrow's Printers and Publishers, New Delhi. pp. 467.

BILGRAMI, K. S., JAMALUDDIN & RIZWI M. A. (1981). *Fungi of India. Part-II. Host Index and Addenda*. Today and Tomorrow's Printers and Publishers, New Delhi.

BUTLER, E. J. & G. R. BISBY (1931). *Fungi of India*. ICAR, New Delhi, India. *Sci. Monograph. I. : XVIII;* Calcutta, pp. 237.

CIFERRI, R. (1956). (As cited by) Sydowia, **9** : 303.

ELLIS, M. B. (1971). *Dematiaceous Hyphomycetes*. Commonwealth Mycological Institute, Kew, Surrey, England. pp. 595.

GRAFF, P. W. (1932.). The morphological and cytological development of *Meliola circinance*. *Bull. Torrey Bot. Club.*, **59** : 241-266.

HANSFORD, C. G. (1961). The Meliolaceae—A monograph. *Sydowia : Ann. Mycol. Ser. II*, pp. 803.

HUGHES, S. J. (1976). Sooty moulds. *Mycologia*, **68** : 693.

PATIL, S. D. (1984). *Studies of some Indian fungi*. M. Phil. Thesis, Shivaji University.

SUBRAMANIAN, C. V. (1971). *Hyphomycetes*, ICAR, New Delhi, India pp. 903.

SUBRAMANIAN, C. V. (1956). Hyphomycetes I. *J. Indian bot. Soc.*, **35** : 53-91.

THITE, A. N. (1973). Taxonomical, cytological and developmental and cultural studies of some Indian fungi. *Ph. D. thesis, Shivaji Univ.* Kolhapur, India.

THITE, A. N. & KULAKARNI U. K. (1973). Additions to Sooty moulds of Maharashtra-I. *J. Shivaji Univ.*, **12** : 161-166.

THITE, A. N. & KULKARNI, U. K. (1975). Additions to Soody moulds of Maharashtra-II. *J. Shivaji Univ.*, **15** : 125-129.

THITE, A. N. & KULKARNI, U. K. (1976). Studies of Indian Meliolaceae-I. *J. Shivaji Univ.*, **18** : 209-217.

THITE, A. N & PATIL, S. D. (1983). Studies of Indian Meliolaceae-III. *Geophytology*, **13** : 124-126.

1-3. Developmental states of ascospores of *Meliola holigarrnae* Stev.